



2012 | Report to Congress on

Sustainable Ranges

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2012

Report to Congress on

Sustainable Ranges



Foreword

This is the ninth *Sustainable Ranges Report (SRR) to Congress*, which details how the Department of Defense's (DoD's) actions provide for the long-term sustainability of its training ranges. The Department's Sustainable Ranges Initiative (SRI) is the mechanism by which DoD manages sustainability of its ranges. Although this report focuses on DoD training ranges only, the SRI's efforts are much broader in scope.

In December 2001, the Deputy Secretary of Defense directed the Under Secretary of Defense for Personnel and Readiness (USD(P&R)), in partnership with the Deputy Under Secretary of Defense for Installations and Environment (DUSD(I&E)), the Director, Operational Test and Evaluation (DOT&E), and the Military Departments, to form an Integrated Product Team (IPT). The IPT was to act as the coordinating body for all encroachment issues affecting DoD ranges, operating areas (OPAREAs), and other locations where the military trains, tests, or evaluates new weapons and sensors. The result was a broad-based, multi-faceted initiative, now known as the SRI. The goal of the SRI is to address encroachment and range sustainment through policy formulation, programming activities, leadership and organization structuring, legislative and regulatory initiatives, compatible land use activities, engagement and partnering efforts, and comprehensive reporting to Congress.

The SRI reflects DoD's recognition that access to military installations, ranges, OPAREAs, and other lands, seaspace, airspace, and frequency spectrum is essential. Having access to these areas provides soldiers, sailors, airmen, and marines, and their associated equipment, with the realistic training and testing environments needed to prepare them for the diverse peacetime and wartime missions they support around the globe.

Access to live training and testing resources has been increasingly challenged by several factors, such as urban sprawl, frequency spectrum competition, changing climatic conditions, and national energy needs. These and other factors, collectively known as encroachment, have increasingly impeded the military's ability to use its installations, ranges, airspace, and other OPAREAs to conduct effective and unencumbered training and testing over the past several decades.

Working under the direction of the Senior Readiness Oversight Council (SROC), DoD established the Overarching Integrated Product Team (OIPT). The OIPT is tri-chaired by the Deputy Assistant Secretary of Defense for Readiness (DASD(R)), the DUSD(I&E), and the Principal Deputy, Operational Test and Evaluation. Its members include senior officials from all of the Military Departments and other related offices within the Office of the Secretary of Defense (OSD). The Working Integrated Product Team (WIPT) is the staff-level working body that supports the OIPT by coordinating and communicating ongoing sustainment activities.

Over the past 10 years, this SROC-led initiative has succeeded in numerous efforts including:

- ▶ Issuing new and updated range sustainment policies and guidance

- ▶ Developing and implementing an assessment methodology to gauge the health of military ranges in terms of capability attributes and encroachment factors
- ▶ Obtaining conservation partnership authority and annual Congressional funding for compatible land use buffers under the Readiness and Environmental Protection Initiative (REPI) program (10 U.S.C. 2684(a))
- ▶ Establishing broad-based partnerships for sustainable planning, including the Southeast Regional Partnership for Planning and Sustainability (SERPPAS) and the Western Regional Partnership (WRP)
- ▶ Facilitating the sharing of geographic information systems (GIS) and decision-support information to foster community-driven planning and compatible land use partnerships
- ▶ Establishing a DoD Siting Clearinghouse to facilitate fully-coordinated Department positions on the compatibility of proposed projects for energy developers, government agencies, and other concerned parties

Currently, seven specific focus areas established by the OIPT and affirmed by the Deputy Secretary of Defense guide the activities of the SRI. These seven focus areas are:

- ▶ Mitigating pressures on training and test activities from competing landspace and seaspace uses
- ▶ Addressing frequency spectrum competition
- ▶ Meeting military airspace challenges
- ▶ Managing increasing military demand for range lands
- ▶ Addressing impacts from new energy infrastructure and renewable energy initiatives
- ▶ Anticipating climate change initiatives
- ▶ Managing current and emerging environmental issues

These focus areas are specifically addressed in Chapter 4, Military Services' Goals and Milestones. As the SRI evolves, it will continue to address DoD's abilities to train, test, and focus on the direction provided by the DASD(R) to sustain the required capabilities.

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Introduction

The need to train as we fight is fundamental to our armed forces. Ranges are some of the Department of Defense's (DoD's) most valued assets because they closely resemble the operational environments of assigned military missions around the globe. Installations are also critical for maintaining military readiness and mission effectiveness by serving as extensions of the ranges for support activities. As a result of their value to U.S. armed forces, ranges and installations must be available when and where needed, and have the capabilities necessary to support current and future military mission requirements. Creating and sustaining a network of ranges requires a management framework that effectively addresses mission requirements, environment and natural resource management, and local community interests.

DoD developed the Sustainable Ranges Initiative (SRI) to serve as a framework for addressing these fundamental issues. Strategic elements of this initiative include policy, programming, leadership and organization, legislation and regulation, outreach and engagement, an information enterprise, and comprehensive reporting to Congress. A key component of the SRI is this annual report to Congress.

The 2012 SRR updates DoD's prior annual reports and addresses:

- ▶ Military Service methodologies and approaches for determining current and future range requirements (Chapter 2)
- ▶ Military Service-specific mission-based assessments using standardized range capability attributes and encroachment factors (Chapter 3)
- ▶ Critical range-related issues identified by the Military Services (Chapter 3)

- ▶ Progress toward the Office of the Secretary of Defense (OSD) and Military Service-based goals and key milestones for developing a sustainable range management program (Chapter 4)
- ▶ Approaches for reducing encroachment through partnerships with state and local governments, other federal agencies, and non-governmental organizations (Chapter 4)
- ▶ Current and planned funding associated with sustaining military ranges (Chapter 4)
- ▶ New program directions, priorities, and management initiatives (Chapter 5)

The 2012 SRR specifically:

- ▶ Limits discussion of test and evaluation (T&E) ranges to the aspects of their use in supporting training

- ▶ Addresses overarching issues that may impact DoD's training range capabilities (e.g., energy siting considerations and frequency spectrum limitations)
- ▶ Updates Military Service-specific information on progress towards existing and new goals and milestones
- ▶ Emphasizes "Military Service Special Interest" issues for each branch of the military and identifies critical ranges issues
- ▶ Responds to specific commentary offered by the U.S. Government Accountability Office (GAO) on the 2011 SRR

1.1 Background

To properly prepare U.S. forces for mission success, DoD must train at ranges that have the types of natural conditions and operational contexts personnel and systems may encounter during their deployments. As such, sustaining a diverse set of range resources is critical to ensuring readiness and military effectiveness. Using realistic training ranges allows DoD to:

- ▶ Foster the development and maintenance of operational proficiency and mission readiness
- ▶ Enable increased force operational survivability and mission success
- ▶ Provide realistic environments needed for the development of tactical operational and strategic concepts, as well as tactics, techniques, and procedures (TTPs)
- ▶ Support the testing, evaluation, and improvement of system maneuverability, reliability, and effectiveness in the range environment outside of the laboratory or development facility

Increased operational tempo (op-tempo) and overseas deployments, specifically to support operations in Iraq and Afghanistan, have strained the ability of some existing range resources and infrastructures to continue supporting training at the required levels. Together with increasing constraints on range activities resulting from expanding urban and rural communities and their associated economic development, sustaining range health and readiness pose very real concerns for the Military Services.

In addition to training activities, some ranges also support tactics development and other similar activities. Other ranges principally support T&E activities related to system

development and validation. Sustaining ranges that are primarily focused on supporting T&E activities is critical to national security if the United States is to maintain its leadership role in defense activities. Importantly, capability requirements and encroachment impairments can be quite different, depending on whether the primary focus of the activity in question is training or testing based. For example, frequency spectrum conditions that may be acceptable for one community at a given range may not be sufficient for another.

To sustain these valuable assets, the SRI emphasizes a comprehensive approach to the management of all ranges. It provides visibility to senior leadership through the OIPT which is composed of senior leadership from the training, testing, and installations and environmental communities in OSD and the Military Services. The SRI advocates for policy and funding in support of range sustainability, and facilitates coordination between OSD and the Military Services. The SRI also provides a common framework for developing partnerships with other federal and state agencies, local governments, and non-governmental organizations, so these groups can work cooperatively on issues of mutual concern. Examples of this cooperation include the SERPPAS, the multi-partner efforts included in many REPI projects, and the Office of Economic Adjustment's Compatible Use Program.

DoD does not exclusively use DoD-managed areas to conduct training and testing/evaluation activities. It also utilizes land that is owned or managed by other federal agencies (e.g., Bureau of Land Management [BLM]), states, non-governmental organizations (NGOs), and even some that is privately held. With the permission of other nations, DoD also utilizes various land, air, sea, and undersea spaces as well as international areas for training. DoD works collaboratively with these various stakeholders to create the conditions required to best sustain ranges, support mission activities, and ensure stakeholders' interests are met.

1.2 Legislative Requirements and GAO Comments to the 2011 Report to Congress on Sustainable Ranges

The 2012 SRR is an update to the 2011 report. The SRR is developed in response to Section 366 of the 2003 National Defense Authorization Act (NDAA)^{1, 2} in which Congress requires DoD to develop a comprehensive plan to address training constraints caused by limitations on the use of available military lands, marine areas, and airspace in the United States and overseas. Section 366 also requires DoD to

1 See Appendix A: National Defense Authorization Act Language for the full text of the cited sections.

2 Section 366 was enacted in the Bob Stump National Defense Authorization Act for Fiscal Year 2003, Public Law 107-314. The terms "range" and "operational range" were given statutory definitions in the FY2004 NDAA. Consequently, the terms and coverage of Section 366 from FY2003 are not entirely consistent with the later enacted definitions. Because DoD interprets Congress' intent for Section 366 to encompass more than operational ranges (as defined in the law), and because it is DoD's objective to provide Congress with an accurate and definitive statement of our training requirements, this report does not apply statutorily defined terms of "range" or "operational range." While this report does use the term "range," it does so in the context of that term's usage in Section 366, which is clearly broader than provided for in the statutory definition in 10 United States Code (U.S.C) 101(e).

submit an annual progress report to Congress along with the President's budget through fiscal year (FY) 2013.

NDAA Section 366 requires GAO to provide Congress with an independent evaluation of DoD's annual report on sustainable ranges. In its assessment of the 2011 SRR, GAO acknowledged that:

- ▶ DoD meets the annual reporting requirement to describe progress made in implementing its sustainable ranges plan and on any additional actions taken, or to be taken, to address training constraints caused by limitations on the use of military lands, marine areas, and airspace
- ▶ DoD continues improving the Defense Readiness Reporting System (DRRS), and plans to have a fully functional range assessment model by June 2012

GAO made the following suggestions for DoD to further improve the fidelity of the SRR for 2012:

- ▶ To clearly measure year-to-year progress, and improve how the Military Service goals and milestones are tracked and reported by including a brief narrative to describe progress made for each action and milestone
- ▶ To improve clarity, require the Military Services to explain why projections for some funding categories are excluded (e.g., Army Compatible Use Buffer Program), and explain significant funding fluctuations from one year to the next

1.3 Linking the 2012 Report to Congress on Sustainable Ranges to Other Reporting Requirements

DoD notes that the *REPI Report to Congress*, required separately under Section 2822 of the FY2006 NDAA, describes funding, partnerships, and actions that protect habitat and ensure compatible land use around installations. The REPI report provides substantive information on how DoD has effectively employed the Congressional authority granted under Section 2684a of the FY2003 NDAA to enter into agreements with private organizations and state or local governments to limit incompatible development, and to preserve diminishing open space around military ranges and installations. As such, the REPI report compliments this report in addressing actions taken by DoD to mitigate encroachment on military installations and ranges that require, or may reasonably require, safety or operational buffer areas. The SRR and REPI report both respond to Congressional reporting requirements, but target different aspects of DoD's comprehensive efforts to fully capture mission requirements, current asset capability, and current and future risks to these capabilities from encroachment.

The focus of the SRR is on training. While the report also touches on T&E ranges, it does so only to the extent that these ranges support training activities and in the broader perspective of DoD's overall SRI. Beginning with the 2012

Strategic Plan for T&E Resources, the DoD test community began reporting biennially on the encroachment factors impacting research, development, test, and evaluation activities. This reporting is based on the assessment survey process developed for the training ranges in the SRR. However, it has been modified to fit the needs of the T&E community to ensure encroachment issues become a key consideration in the planning and maintaining of a robust T&E infrastructure throughout DoD.

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2 Current and Future Training Requirements

Having access to high quality range resources and infrastructure is fundamental to ensuring military readiness. The U.S. military operates the largest and most diverse training enterprise in the world. Its ability to train in realistic environments directly affects its current readiness and future mission success. Military Service members must continue to receive training that covers all the skills needed to deploy safely and achieve mission success and survival. The Military Services must also clearly communicate their range requirements to the training support and range communities. While the Military Services use similar processes to develop their training requirements, those processes are not identical. Each Service provides a structure to systematically develop requirements, based on a series of strategic guidance documents and other information sources, including:

- ▶ The National Security Strategy of the United States
- ▶ The National Military Strategy of the United States
- ▶ Guidance for Development of the Force
- ▶ Guidance for Employment of the Force
- ▶ The Chairman's Joint Training Guidance
- ▶ Operational and functional profiles of the weapons and related systems that are available today and are expected to be available in the near future
- ▶ The lessons learned from military experience, training evolutions, and experimentation

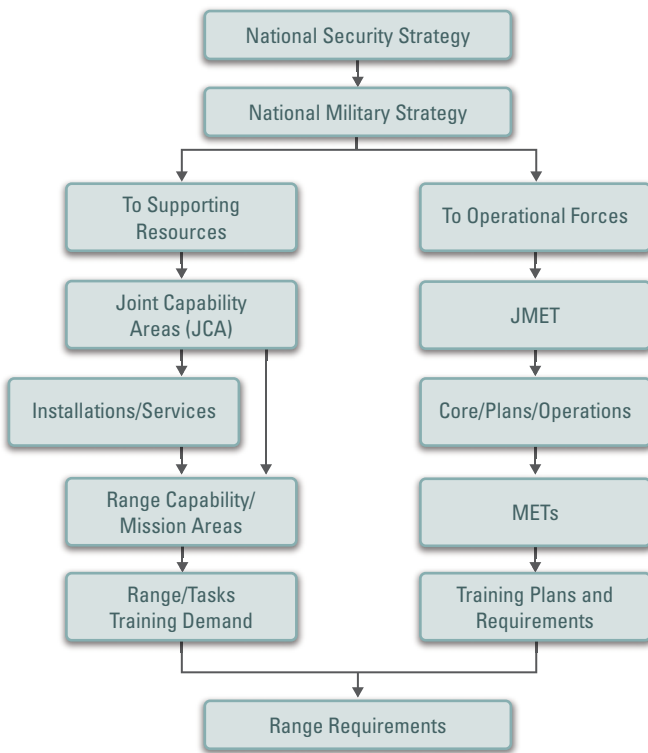
The Military Services determine how they will operate in the future by examining strategic guidance documents and exploring more specific tactics, techniques, and procedures (TTPs). Next, they identify and develop Mission Essential Tasks (METs) based on planned operations, the UJTL, and

the Joint Mission Essential Task List (JMETL). The Military Services then create training plans to ensure that their forces are proficient in executing the METs. These training plans serve as the basis for developing range resources and capabilities to support Military Services' METs execution. Figure 2-1 details this process for the development of range requirements.

2.1 Assessing Current and Future Requirements

Each Military Service generates training requirements specific to its own mission and command structure, and these requirements are used to develop, document, and execute training objectives and requirements. The set of processes used link training strategies and requirements to a standard training curriculum, based on both Military Service-specific and joint tasks identified in the UJTL and Mission Essential Task Lists (METLs). Common elements of requirements development across the Services include assessing current and future requirements, data collection, and a management system tool

Figure 2-1 Training Requirement and Range Requirement Development Process



to assist in assessing and quantifying encroachment impacts and the supporting documentation and plans that guide implementation. A variety of publications, including doctrinal reports, guidance documents, instructions, and annual messages or updates, prescribe these processes thoroughly and precisely.

Future training requirements can be grouped into two categories: near-term and long-term. Near-term training requirements can be generated with a higher degree of fidelity because the Military Services can more easily anticipate the near-term strategic environment, operating concepts and technological capabilities. The ability to anticipate these elements originates from intelligence forecasting, trend analysis, training provided in current and evolving military tactics, strategic planning, educational opportunities with regard to transformational concepts, and knowledge of existing and planned system acquisition activities.

Assessing long-term training requirements is significantly more challenging, because of greater uncertainty surrounding the strategic environment, operating concepts, and technological capabilities. Platforms, weapons, and systems are getting more

capable and more technologically advanced; aircraft and vehicles travel farther and faster; sensors detect at longer distances, platforms accurately deliver weapons at greater distances; and communications systems carry and transmit more data, all requiring changes in training and realignment of training resources. Additionally, as the strategic environment, doctrine, and tactics change in the future, the Military Services will need to change the way they train and prepare for future missions.

Changes in training will put new and, perhaps, unforeseen demands on range resources and infrastructure to address new or additional requirements to maintain readiness and support mission success. New weapon systems' performance parameters have started to force Service trainers to look at solutions like tradeoffs between the mix of live, virtual, and constructive (LVC) training.

2.1.1 Emerging Challenges

Challenges to training and the resources necessary to perform training can take many forms and are generated from external interests, as well as those within DoD. Three current challenges involve the demand for frequency spectrum, the growth in unmanned aerial systems (UAS) operations, and the need to weaponize cyber warfare. Each topic will shape the future of DoD training and ranges.

2.1.1.1 Frequency Spectrum

The growing prevalence of wireless technology and the demand for additional frequency conflicts with the DoD's requirement to train increasingly complex missions using higher performance weapons. Already, frequency competition from the growth of wireless devices has pushed DoD out of portions of commonly used bands within the radio spectrum.³ On the horizon is the National Broadband Plan, a Congressional mandate to ensure every American has "access to broadband capability." Among other initiatives, the plan calls for making "500 megahertz (MHz) of spectrum newly available for broadband within 10 years, of which 300 MHz should be available for mobile use within 5 years."⁴

In the spring of 2010, the National Telecommunications and Information Administration (NTIA) introduced sharing and reallocation proposals for 11 specific frequency bands to support the Federal Communications Commission's (FCC's) plan to free up the required 500 MHz of spectrum. Changing the allocation for some of these proposed frequency bands would directly impact military training, testing, and operations. Depending on the outcome of the deliberations, challenges posed to training would include the ability to move

³ US Government Accountability Office Report to Congressional Committees, Spectrum Management-NTIA Planning and Processes Need Strengthening to Promote the Efficient Use of Spectrum by Federal Agencies, April 2011

⁴ <http://www.broadband.gov/plan/executive-summary/>

out of the currently occupied bands within the allotted timeframe, and the associated monetary and physics challenges that are implied.

It is evident that competition for frequency spectrum will continue to increase for the foreseeable future. This portends the need for DoD to more efficiently use the spectrum allocated to it through technological innovation and scheduling. Emerging capabilities such as live sensor stimulation with synthetic threats to mitigate shortfalls in the live environment are being threatened by efforts to sell off spectrum historically used by training instrumentation. DoD's efforts to include additional participants such as Command and Control, Intelligence, Surveillance, and Reconnaissance (C2ISR) platforms and ships in live instrumented training enabling the training of entire command, control, and execution action chains will likewise be threatened.

2.1.1.2 Growth in Unmanned Aerial Systems Operations

UAS are a historic leap in warfare technology that have come into their own in support of Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF). Not only have UASs evolved into a proven weapons system, but the number and variety of these systems has grown exponentially over the last 10 years. DoD had 146 UAS units based at 63 continental United States (CONUS) locations as of 2010.⁵ By 2015, the Joint UAS Center of Excellence (JUAS COE) estimates DoD will have 197 units at 105 locations; a 35 percent increase in units and 67 percent increase in number of locations (reference Figure 2-2).⁶

The high demand for UAS in today's combat theater has led to a situation where most day-to-day continuation training is accomplished under in-theater combat conditions in real-world contingencies. The Military Services, however, will require comprehensive continuation and joint-forces training to facilitate effective use of UAS in the peacetime environment at beddown and selected joint-training locations as forces draw down in-theater and re-deploy.

UAS training brings with it several challenges:

- ▶ There is the need for frequency spectrum, which is complicated by the National Broadband Plan discussed in Section 2.1.1.1 above.
- ▶ Airspace configuration and access issues have to be resolved. For example, most airspace over Army ranges was configured for artillery safety fans, and the size and shape of existing special use airspace (SUA) at proposed beddown locations needs to be examined for adequacy to support this new or competing airspace demand.

Figure 2-2 Planned DoD 2015 UAS Locations



- ▶ Infrastructure to support a yet-to-be-determined training concept of operations (CONOP) for UAS has to be examined for adequacy, and alternative plans may have to be made or resources acquired.

Failure to prepare for the coming additional training demand that is inevitable will result in a loss of combat-gained experience with UAS.

2.1.1.3 Cyber Warfare

Although this report has traditionally dealt with the need to train for waging warfare in traditional mediums (air, land, sea), the need to train for warfare in a digital environment is today's reality. In 2010, DoD stood up the U.S. Cyber Command (USCYBERCOM). USCYBERCOM is charged with defending DoD information networks and conducting full-spectrum military cyberspace operations. Additionally, each of the Military Services has a component command specializing in cyber.

Just like traditional soldiers, sailors, marines, and airmen, this new breed of warriors needs a practice field to hone their skills. Cyber ranges, like the Defense Advanced Research Project Agency (DARPA) National Cyber Range, the Defense Information Systems Agency (DISA) Information Assurance Range, and the Joint Staff's Joint Information Operations (IO) Range, are either in the process of being developed or have achieved operational capability.

These ranges have very different characteristics and challenges than traditional air, land, or sea ranges. However, there are some challenges for cyber ranges that are common with traditional ranges. For instance, both cyber and traditional ranges are challenged by competition for frequency spectrum from cellular phone networks. Additionally, integration of

⁵ TUAS Executive Committee NAS Access Working Group, National Airspace System Access Plan for Federal Public Unmanned Aircraft Systems, October 2010

⁶ Joint Unmanned Systems Center of Excellence, National Airspace Integration, March 2010

cyber range capabilities with traditional live training and testing ranges presents a new and complex set of challenges.

2.2 DoD Training Transformation Program

SRI activities and efforts support and complement DoD’s Training Transformation Program. The program was developed to address near-term training challenges associated with an uncertain and increasingly complex strategic environment, as well as an increasing need for joint training and interoperability. The program provides dynamic, capabilities-based training for DoD personnel in support of evolving national security requirements across the full spectrum of integrated operations. Detailed information on the Training Transformation Program can be found in the *Strategic Plan for the Next Generation of Training for the Department of Defense*.⁷

2.2.1 Joint National Training Capability

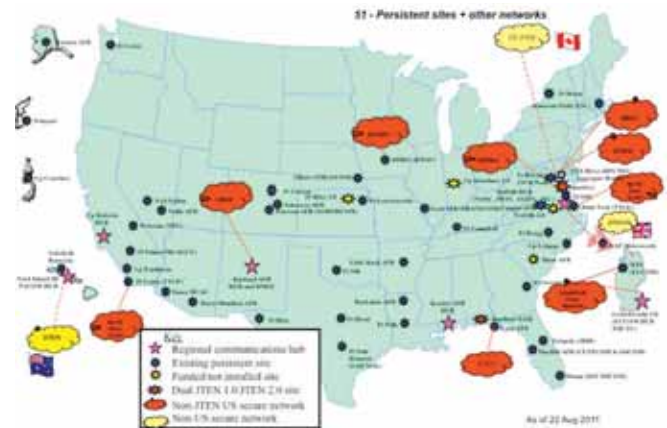
Formally established in January 2003 under Management Initiative Decision 906, the underlying concept of the Joint National Training Capability (JNTC) is to train and prepare forces to operate globally through adding joint context to Military Service training and the development of a joint training infrastructure. This infrastructure has four requirement pillars that guide training design:

- ▶ credible and adaptive opposing forces
- ▶ instrumentation that provides a common ground truth among the participants
- ▶ effective data sharing
- ▶ high quality feedback to improve the assessment of joint training events

The JNTC has made a significant addition to DoD’s training infrastructure. It has achieved its initial vision of providing a permanently installed global communications network (i.e., the Joint Training and Experimentation Network [JTEN]), which is designed to significantly reduce the amount of time required to configure and execute training in live and synthetic training environments. With the connectivity barrier removed, trainers and training organizations have leveraged this capability to provide new and innovative training to both home-station and forward deployed units. Figure 2-3 shows the current deployment of persistent communication nodes at ranges and other locations that are part of the JTEN network. The JTEN brings 24x7x365 connectivity to supporting LVC training at compatible ranges.

The JNTC is relevant to the SRR because it addresses range sustainability and modernization efforts, and recognizes LVC

Figure 2-3 Current U.S. JTEN Sites



training strategy and policy as a component of near-term and long-term future training requirements. It also highlights LVC training and the role LVC plays in addressing training requirements, readiness, and reporting systems. Reporting on LVC is responsive to the NDAA Section 366(a)(2)(B) requirement that DoD address the adequacy of current resources, including virtual and constructive training assets. An overview of LVC training and the increasingly important role it plays in providing realistic, comprehensive, and cost-effective training is detailed in the following paragraphs.

It should also be noted that the Army now has a program of record to provide LVC training solutions called LVC-Integrating Architecture (LVC-IA). The Air Force just received approval for the Integrating Architecture for Air and Space LVC Environment (IA-ASLVCE) from the Joint Requirements Oversight Council (JROC). This data provides evidence of continued use of LVC to address training requirements. These requirements and programs have linkages to the Military Services’ training ranges.

2.2.2 Live, Virtual, and Constructive Training

The following definitions clarify LVC in the training environment. The individual components of LVC training are identified and described in Table 2-1.

The DoD Training Environment allows integrated forces to conduct LVC training operations that simulate real-world operations. This tool provides a seamless environment with fully functional interaction between participants, to the limit of their respective operational system capabilities. The Defense Training Environment, as shown in the high-level operational concept (Figure 2-4), is an evolutionary family-of-systems approach, linking a network of interoperable LVC components

⁷ *Strategic Plan for the Next Generation of Training for the Department of Defense*, 23 September 2010, Office of the Under Secretary of Defense (Personnel and Readiness), Readiness and Training Policy and Programs.

Table 2-1 Live, Virtual, and Constructive Training

LVC Training Component	Description
Live	<ul style="list-style-type: none"> ▶ Live Training—Training where the training audience operates their operational systems and platforms (including their full range of mobility and capability) in the physical environment for which they were intended. ▶ Live Training Domain—The training domain where participants operate operational systems and platforms (including their full range of mobility) in the physical environment (land, sea, air) for which they were intended. The many parameters defining the live domain are fixed in physics rather than synthetic scenario generation, and constrained by the real environment (e.g., weather) that exists, to which the virtual and constructive domains must align in the integrated LVC training environment. Simulations used in the live training domain are used to maintain scenario validity during training. These models, i.e., “scoring simulations” are used to automatically in the real time, assess hard and soft weapon effects on targets, incorporating countermeasure effects and other participant actions or behaviors that affect the outcome of the event. Synthetic entities can be injected into live sensors and systems to enhance the live environment. Neither the use of scoring simulations nor presence of synthetic entities makes the live environment a synthetic environment. This domain is commonly enhanced by the extensive employment of training systems (instrumentation and simulations) embedded in the live environment.
Virtual	<ul style="list-style-type: none"> ▶ Virtual Training—Training where training audience operates simulators, emulators, or operational systems in a synthetic environment. ▶ Virtual Training Domain—The training domain where participants operate simulators, emulators, or operational systems in a synthetic environment. Fidelity may vary from “lightweight” laptop emulations, to full motion, domed simulators. Virtual components provide a very flexible capability, predominantly used for individual training in the specific platform or function being simulated, but may be linked to provide additional complexity and fidelity to the virtual training environment. Participants from the virtual domain can be injected as entities into live training operations through sensor stimulation, adding depth and breadth to the operation for those that can detect, display, and interact with the virtual entities. Virtual entities can also be injected into constructive simulations as entity participants in the synthetic mission-space. Collective applications include stand alone virtual mission training of combined forces, and integrated with live training providing individual platform augmentation to live force training.
Constructive	<ul style="list-style-type: none"> ▶ Constructive Training—Training where the training audience, typically command and staff trainees, conducts activities in an environment constituted by a constructive simulation. The trainees provide stimulus to simulated forces at different levels and act upon consequences generated by the simulation. ▶ Constructive Training Domain—The training domain where the participants, typically command and staff trainees, conduct activities in an environment constituted by a constructive simulation. The trainees provide stimulus to simulated forces at different levels and act upon consequences generated by the simulation. A constructive simulation may be “wrapped around” a live operation, adding breadth and complexity to the scenario, providing more challenge to the training audience. Constructive discrete entities may also be injected into live and virtual operations, adding depth and breadth to the operation for those that can detect, display, and interact with the constructive entities. Light constructive simulations can be used to train individuals, small units, teams, and elements of staffs with less preparation than is needed for large-scale simulations.

to provide the appropriate Joint context required for training and mission rehearsal.

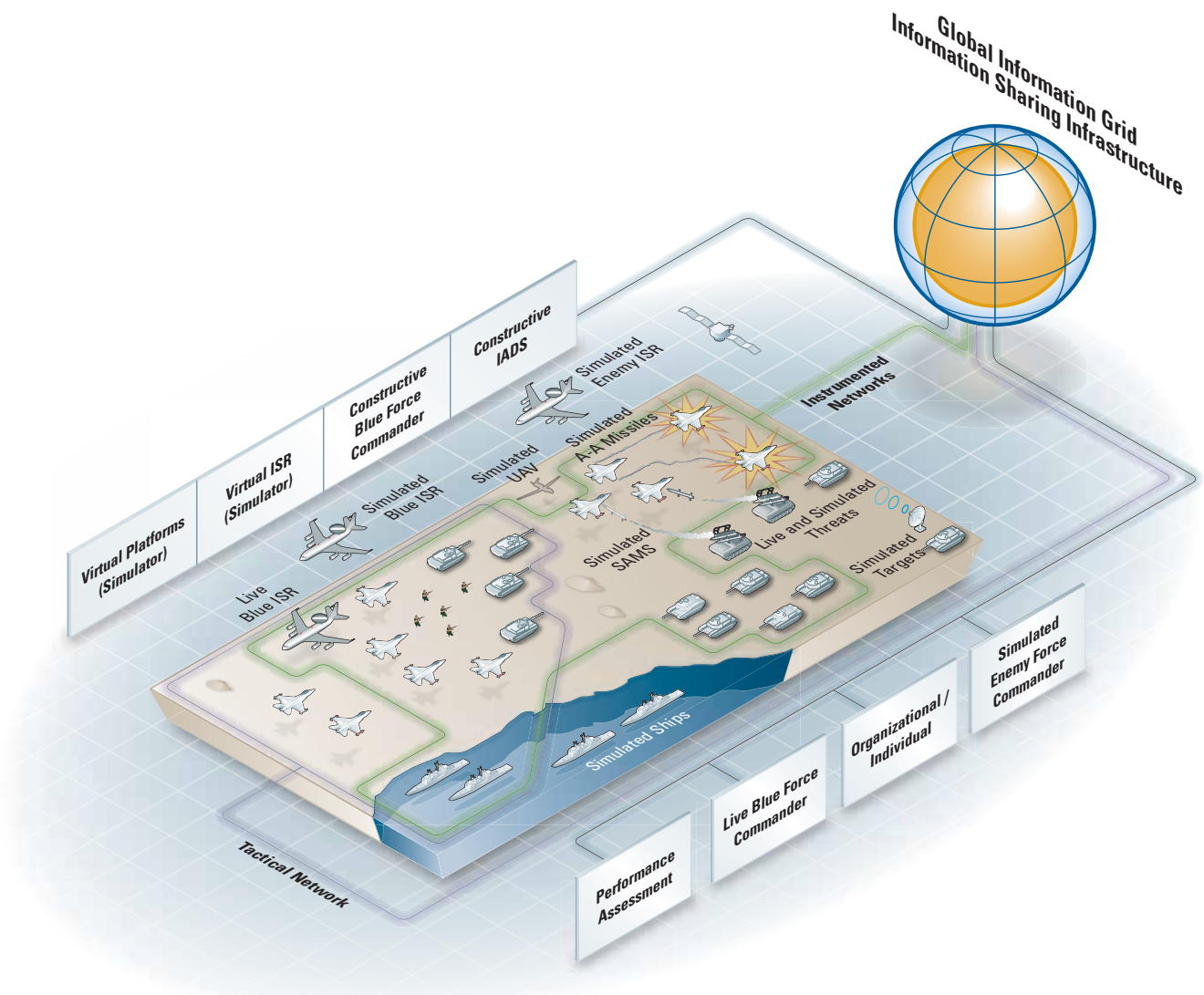
The capability will provide a comprehensive training environment that includes:

- ▶ Interoperation of live participants and their operational systems
- ▶ Realistic LVC representations of non-participant friendly warfighting capabilities across the full range of military operations (ROMO)
- ▶ Realistic LVC representations of opposing forces (OPFOR), as well as neutral and factional entities that may be required for the scenario (It is impossible to produce a level of adversary support sufficient to stress these high-technology platforms and sensors in the live domain without the integrated joint threat emitter [JTE] and its inherent capability to stimulate live sensors with synthetic entities.)
- ▶ Architecture for easy and rapid integration of those representations into scalable, realistic, and dynamic training environments

- ▶ Interfaces to warfighter equipment (e.g., operational platforms [ships, aircraft, ground vehicles], command, control, and communications [C3], intelligence, surveillance, and reconnaissance [ISR] systems) through connectivity to local and globally distributed venues
- ▶ A means to train on critical joint missions like fires, close-air support (CAS), and missile defense, so joint capable forces can be produced and provided by the Military Services and United States Special Operations Command (USSOCOM)

Virtual and constructive training are not intended to replace the value of live training; however, they can supplement, enhance, and complement live training to sustain unit proficiency, readiness, and mission effectiveness. There have been several success stories where training on DoD ranges was made possible, or more operationally realistic, by using virtual capabilities to replicate systems units would have in theater, but that were not available for training. Additionally, training on complex joint tasks has been enabled by linking operators at various sites together so that they can train like they fight from a command, control, and decision-making perspective.

Figure 2-4 The LVC Training Environment



2.3 DoD Training Range and OPAREA Requirements

As explained in Chapter 1, DoD installation and range assets serve as the foundation of the nation's security because they are critical to maintaining Military Service readiness and mission effectiveness. These assets must be available and adequately resourced when and where needed, and have the capabilities to support current and future military requirements. Likewise, the Military Services must be able to train at ranges with the types of natural conditions and operational contexts personnel and systems may encounter during their deployments. As such, sustaining a diverse set of range resources is critical to ensuring mission readiness and military effectiveness.

Additionally, mission and training objectives for each of the respective Military Services directly influence current and future training range and operating area (OPAREA) requirements. The following paragraphs provide insight into

the Military Services' specific assessments of current range capabilities and encroachment challenges requirements that resonate across DoD. These sections highlight current range capabilities and encroachment challenges and how these challenges impact the Military Services' abilities to meet current and future training objectives.

2.3.1 Army Requirements

Overview

For the near-term, Army ranges continue to support OEF in accordance with the Army Force Generation Model (ARFORGEN). ARFORGEN is the Army's model/plan to maintain balance, and meet force demands at an op-tempo that is predictable and sustainable for the all-volunteer Army.

Army range facilities are currently adequate to meet the throughput and surge requirements necessary to support training for the Range of Military Operations (ROMO).

However, funding the operation of range facilities under the expanded training schedule required to keep pace with ARFORGEN is challenging.

The Army resources its range operations on a home-station training schedule; however, Army installations are operating their ranges, particularly collective training and urban operation training facilities, on a round the clock schedule to support ARFORGEN. For example, range staff at Camp Atterbury, Indiana, and Camp Shelby, Mississippi, have doubled the number of range personnel to accommodate expanded training schedules.

Attaining funding to operate ranges under these conditions has become increasingly difficult with Commanders having to use Overseas Contingency Operations (OCO) funds to supplement range operations above peacetime levels. Further, as the Army implements a nine-month deployment cycle, periods of home-station training will be extended, which will exacerbate this problem.

For the mid-term, anticipated Army end strength, force structure, and stationing will change range demand and use dynamics. There will be fewer units; however, with OEF demand decreasing, there will be more units at home-station competing for finite range assets.

The Army is undertaking a campaign to revitalize its home-station training. This initiative will include a review of range functionality, capacity, and throughput, aligned to the evolving Army Campaign Plan. The Army has already adopted a Regional Collective Training Capability (RCTC) concept that will ensure ranges on select CONUS and Outside the Contiguous United States (OCONUS) installations are sufficient to support ARFORGEN maneuver and live fire training aim points for its active and reserve components.

Many of the Army's range facilities have not been modernized to meet new weapons systems requirements or satisfy changes in training standards and doctrinal requirements. This deficiency strains the ability of existing range facilities to support current and near-term future requirements. To address this challenge, the Army is assessing its range assets and constructing new ranges in a continuous and integrated management approach through the Sustainable Range Program (SRP) modernization planning process. This process integrates mission support, environmental stewardship, and economic feasibility at the installation, Army Command, Installation Management Command (IMCOM), and Headquarters Department of the Army (HQDA) levels to effectively support current and future range and training land requirements.

The modernization planning process begins at the installation level with an analysis that determines the range and training land requirements. These requirements are derived from the Army Stationing and Installation Plan (ASIP), Army standards, training strategies, and individual unit METs. The

process assesses ranges and training lands against current assets, utilization rates, environmental conditions and requirements, and infrastructure to determine range and training land shortages and excesses. The Army Range and Training Land Program Requirements Model (ARRM) automates this analysis, and provides the installation and HQDA with a report identifying facility shortages and excesses, as well as the number and type of ranges and the associated maneuver acres necessary to support live training for tenant units. Based on this analysis, installations submit to their commands a prioritized list of range projects needed to correct shortages and modernize existing range facilities. Range projects are incorporated into each command's annual prioritized Military Construction (MILCON) submission.

At the installation level, this planning process results in the creation of a Range Complex Master Plan (RCMP). The RCMP is a sustainable range operations tool that supports long-range planning and day-to-day integrated decision-making. Each installation's RCMP is incorporated into its Real Property Master Plan (RPMP).

The Army continues to work toward modernization goals to best match range capabilities with Army training requirements. The Army Campaign Plan provides direction for range investments to meet unit transformation and stationing. Achieving range and training land capabilities that enable modular forces to train for Unified Land Operations remains a top Army priority. The Army is continually working to modernize its ranges to more effectively support training for multiple purposes, weapons, and combined arms by incorporating new capabilities, instrumentation, and digital technologies into standard range designs.

The Army has 39 types of modernized ranges. The capabilities and standard configurations for these ranges are found in Training Circular 25-8 (TC 25-8), which is currently being updated to include changes to meet new doctrinal requirements, new weapons systems, and new training standards. The ranges described in the circular represent the inventory of standard and modernized Army facilities categorized into major subgroups as small arms ranges, urban operations training facilities, and collective training ranges.

A key component of the Army's overall modernization process is the construction of the next generation of Army ranges. These large, instrumented live fire ranges, such as Digital Multipurpose Range Complexes (DMPRCs) and Battle Area Complexes (BAXs), provide centerpiece capabilities that enable decisive action training events. Such key training assets allow soldiers and units to exercise digital command and control (C2) in a live fire training environment and afford unprecedented situational awareness, tailored scenarios, and immediate feedback required to support commanders' assessments regarding their units' abilities to conduct operations in a hybrid threat environment.

New ranges have been added to the inventory of modernized ranges as a result of new doctrinal changes, including the Convoy Live Fire Course and the Digital Air-Ground Integration Range (DAGIR). Changes in existing range designs have been made to increase range capabilities, add technology, and increase throughput capacity to match new training standards and support new weapons systems qualifications. The new family of modernized ranges will replace older types still in the Army’s inventory that cannot accommodate new training or weapons systems requirements. Next generation Army digital ranges are identified and described in Table 2-2.

The Army needs large training areas to enable Army Campaign Plan training objectives in support of Unified Land Operations doctrine, now and into the future. The Army’s operating concept, executed through decisive action, dictates a focus on the core competencies of combined arms maneuver and wide area security. Training to employ these core competencies in the operational environment requires maneuver training areas that realistically replicate the size and variety of the areas of operation in which modular brigade combat teams (BCTs) must be prepared to operate. While Army end strength and force structure changes will reduce the total number of soldiers and units competing for training areas, the transition to the operating concept of Unified Land Operations will require larger and more flexible training environments.

To prioritize training land investments in support of current and future training objectives, the Army developed the Range and Training Land Strategy (RTLTS), which was approved as a component of the Army’s Sustainable Range Program to address the Army’s long-term training land requirements. The RTLTS helps the Army prioritize its training land investment, and optimize the use of range and training land assets. The RTLTS provides a long-range plan for the Army to make available the best range and training land assets, and a framework for the Army to select the most appropriate course of action to address training land shortfalls where they exist.

The Army does not focus on high operational tempos or surge requirements when analyzing land requirements. Instead, the Army conducts its training requirements planning based on the peacetime assumption that all units are at home-station and available to conduct training. The Army is currently reviewing and updating the RTLTS. The final revision will capture Chief of Staff, Army ARFORGEN guidance on home-station training requirements and the level of maneuver training required for Active Component and Reserve Component units. This guidance and analysis could affect overall maneuver training requirements and adjust the total Army training land shortfall. The revised final RTLTS is anticipated to be complete by the end of FY2012.

Table 2-2 Next Generation Army Digital Ranges

Range Type	Description
Digital Air Ground Integration Range (DAGIR)	The DAGIR is replacing Digital Aviation Gunnery Ranges. The DAGIR is designed to train and qualify Army Aviation (helicopter) crews, teams/platoons, and companies/troops. It will support aerial operations, reconnaissance, and target engagements, such as joint tactical engagements and convoy live fire training. The DAGIR will include open and urban terrain, and targets supporting simultaneous, integrated air and ground operations. The DAGIR will be included in the updated version of TC 25-8, Training Ranges.
Battle Area Complex (BAX)	The BAX provides a collective live fire training facility for all elements in the Stryker Brigade Combat Team (SBCT). SBCT crews and dismounted soldiers train to detect, identify, engage, and defeat stationary and moving combined arms targets in both open and urban terrain environments. The BAX supports live fire operations independently of, or simultaneously with, supporting vehicles in free maneuver. All targets are fully automated, utilizing event-specific, computer-driven target scenarios and scoring.
Digital Multi-Purpose Range Complex (DMPRC)	The DMPRC complex is used to train armor, infantry, and aviation crews, sections, squads, and platoons to detect, identify, engage, and defeat stationary and moving infantry and armor targets. Combined Arms Live Fire Exercises may be conducted on this facility. The DMPRC supports dismounted infantry platoon live fire operations independently of, or simultaneously with, supporting vehicles. All targets are fully automated, utilizing event-specific, computer-driven target scenarios and scoring.
Digital Multi-Purpose Training Range (DMPTR)	The DMPTR complex is used to train crews and dismounted infantry squads to detect, identify, engage, and defeat stationary and moving infantry and armor targets. The complex is specifically designed to meet the training and crew qualification requirements for armor, infantry and aviation crews, and sections. The DMPTR supports dismounted infantry squad live fire operations independently of, or simultaneously with, supporting vehicles. All targets are fully automated, utilizing event-specific, computer-driven target scenarios and scoring.

The Army also seeks to improve training capability through targeted and prioritized training land acquisition when specific feasibility criteria are met. Feasibility criteria include large, contiguous land holdings; low population densities; minimal environmental restrictions; and low land costs. Candidate parcels must provide a significant solution to an existing installation deficit before being considered for purchase. The Army will enter the marketplace and purchase training land only when these factors exist, and the acquisition is feasible from both fiscal and community relations perspectives. This strategic approach helps the Army offset anticipated encroachment by moving training away from more densely populated areas. Training land is one of the Army’s most critical assets. The Army is dedicated to sustaining and optimizing training land use to ensure soldier readiness now and into the future.

Additional Army Information on Expansion Initiatives

The Army's strategy for acquiring training land is based on an assessment of Army Campaign Plan requirements against current land assets by installation. Based on further demographic, geographic, and environmental analysis, the Army identifies which installations have expansion potential. Installation-specific requirements and proposals are captured locally in the installation RCMP. The RCMP is reviewed, updated, and approved annually. The following bullets describe Army ongoing land expansion projects that have been approved by OSD.

- ▶ **Fort Polk**—OSD initially approved the Fort Polk expansion proposal in July 2008, and granted final approval to proceed with land purchase in April 2010. The National Environmental Policy Act (NEPA) process began in April 2009, and the final Environmental Impact Statement (EIS) and Record of Decision (ROD) were completed in the summer of 2010. The Army Corps of Engineers (the Corps) made the first offer to purchase property in February 2011. In February 2012, the Army closed on the purchase of the first acquisition parcel, adding over 4,900 acres of critical maneuver training land to Fort Polk. Actions are underway to close on additional parcels during 2012 and 2013.
- ▶ **Fort Benning**—OSD initially approved the Fort Benning expansion proposal in January 2010. The NEPA process began in August 2010. Due to pending Army force structure decisions, revisions to institutional training requirements, and the need to conduct additional analysis to address significant community and Congressional concerns related to socio-economic and environmental impacts from the land acquisition, Fort Benning has chosen to delay completion of the final EIS and ROD. Fort Benning will reassess the land acquisition following the announcement of Army force structure and stationing decisions. The Corps has completed the initial real estate planning report.
- ▶ **Texas Army National Guard (ARNG)**—OSD approved the South Texas Training Site (approximately 85 miles due south of San Antonio) expansion proposal in March 2008. The NEPA process was initiated in December 2010, and the Corps has completed the real estate planning report.
- ▶ **Montana ARNG, Limestone Hills Training Area**—OSD approved the Limestone Hills Training Area Withdrawal (18,644 acres of land located in Broadwater, MT) in early 2002. The Montana Guard (MTARNG) and other units have used the training area since 1952. A right-of-way agreement was signed in 1984 as a means to formalize a longer term authorization; in 1993, BLM requested that MTARNG submit an application for withdrawal. The required Legislative Environmental Impact Statement

(LEIS) has been completed and the Notice of Availability (NOA) for the LEIS was published in September 2011. BLM and the Army are currently coordinating to prepare proposed legislation for the withdrawal. The estimated completion date for the land withdrawal is February 2014.

- ▶ **Fort Irwin, National Training Center (NTC)**—NTC land acquisition actions are complete; however, delays continue to impact the opening of expansion areas for training. The final expansion areas were expected to be opened for training in 2013; however, due to significant ongoing delays and costs related to management and mitigation of endangered species (Desert Tortoise), Fort Irwin has decided to delay the opening of the western expansion area. Work will continue, however, to reclaim training land in the southern expansion area. The southern expansion area will be open for training in FY2013, assuming there are no additional legal challenges or delays.
- ▶ **Fort Carson, Pinon Canyon**—OSD approved the Fort Carson, Pinon Canyon expansion proposal in February 2007. The Army currently has no plans to expand Fort Carson, Pinon Canyon and has not requested any funds be programmed in the Department of Army budget (FY2013–2017) for land acquisition at Fort Carson, Pinon Canyon. In addition, the Army will consult with the Colorado Congressional delegation, Senate and House defense committees, and local communities before taking any action to request funding for land acquisition at Fort Carson, Pinon Canyon.

Current and Future Range Requirements

The Army Campaign Plan directs the planning, preparation, and execution of Army operations within the context of transformation. The Army Campaign Plan is the framework that organizes and synchronizes the many changes underway as the Army builds a campaign-capable, joint and expeditionary force. The Army Campaign Plan components that have driven changes to Army training range and OPAREA requirements include Modularity, Global Defense Posture and Realignment (GDPR), Base Realignment and Closure (BRAC), Overseas Contingency Operations (OCO), and the Grow the Army Initiative. Training requirements and operational activities associated with these components are creating readiness challenges by increasing the density of units at key installations, and the level of training being conducted in the United States. These challenges, coupled with new weapons systems capabilities and new doctrinal maneuver space requirements, continue to place pressure on existing range and training land assets.

Through Army transformation, units at all levels are doctrinally required to train for land operations across a significantly larger area of operation. The result of this

increased doctrinal requirement is that the Army is facing greater needs for training land. Technological advances, such as UAS, Stryker Infantry Combat Vehicles, and Mission Command Systems, create the capability to detect targets and conduct operations over terrain larger operational area than ever before. The Army must exploit these technological advantages by training soldiers, leaders, and units to exercise their equipment and logistics to the fullest capabilities, while operating across large areas in a unified and decisive manner.

Stationing changes directed by BRAC 2005 have concentrated Army units and service schools at key installations in the United States. Recent changes in the Army's global posture and readiness cycles have increased the pressure on Army land assets. The GDPR is moving units from overseas locations to the United States. This movement increases training land needs, because there are no new domestic Army installations being created.

In addition, ARFORGEN-based training increases the emphasis on home-station collective training. This, in turn, increases installation range and training land requirements because collective training events are inherently large in order to replicate actual operational environment. Future Army range capabilities must support operating forces training for Unified Land Operations. Unified Land Operations are executed through decisive action (offensive, defensive, stability, defense support of civil authorities) by means of the Army's two core competencies: combined arms maneuver and wide area security.

At the same time the Army is seeking to develop and resource the training support facilities necessary to enable training in support of this operational concept, it is also implementing changes to the ARFORGEN model. In the future, there will be a lower demand to support current operations; thus, the Army is transitioning to more units that may not deploy—Contingency Expeditionary Forces (CEFs)—and fewer Deployable Expeditionary Forces (DEFs). The Army's near term goal is to achieve a 1:2 (Active Component)/1:4(Reserve Component) Boots On Ground (BOG) Dwell ratio. Effective January 1, 2012, most Army units will deploy for only nine months BOG, resulting in longer dwell times at home-station. This change will significantly affect throughput on key installations, and require more home-station range capabilities than the Army has seen over the last seven years.

To support ARFORGEN-based training requirements and meet Army Campaign Plan objectives to support training for Unified Land Operations into the future, the Army is developing a plan to revitalize home-station training, and appropriately resource home-station training and 21st century leader development. The Army will accomplish this objective by creating training strategies and committing resources that ensure home-station training is as demanding, complex, challenging, relevant, and realistic as soldiers can expect to encounter during military operations. A major Army training

strategy in support of home-station training revitalization is the Regional Collective Training Capability (RCTC). RCTC installations will apply an enterprise approach to supporting collective training. That approach will focus unit collective training on select installations to ensure the Active Component, ARNG, and U.S. Army Reserves achieve ARFORGEN training aim points. RCTC will optimize regional home station Training Support Systems (TSS) capabilities, and will support the established Army rotational readiness model, ARFORGEN. RCTC will inform future TSS investments to enable ARFORGEN training aim points for the Active and Reserve Components, and provide ready contingency forces.

Selected installations have been identified as RCTC host installations, including Active Component installations, ARNG installations, and U.S. Army Reserve installations. OCONUS locations in Europe and the Pacific are also included in the RCTC construct. The Army will resource TSS (i.e., ranges, mission command training support, simulators and simulations) at RCTC installations to support unit collective training requirements based on ARFORGEN. The Army will resource non-RCTC installation TSS requirements for feeder squad level and below collective training, as well as for institutional training.

The Army expects to undergo end-strength reductions that may result in changes to operational force structure, institutional training throughput, and stationing. Range and training land capability, availability, and sustainability will be key factors in determining overall training capabilities and unit stationing during this process.

Mission Areas

Current and future range requirements are based upon the capability of ranges and training lands to support Army warfighting functions or mission areas. A mission area is a group of tasks and systems (people, organizations, information, processes) united by a common purpose, that commanders use to accomplish mission and training objectives. These mission areas are listed in Table 2-3, and defined in Appendix B.

Effective live training is the cornerstone of operational success. Individuals, crews, platoons, and companies must learn mission critical tasks to be combat ready. Ensuring that sufficient live fire ranges and maneuver areas are available, and continuing to improve these ranges and facilities remains the key to Army readiness. Live fire ranges, facilities, and training areas are expected to be even more important as the Army implements the ARFORGEN strategy. ARFORGEN will place all units continuously in a reset, train/ready, or available status, incurring greater cumulative training demand on ranges and training areas.

Table 2-3 Army Mission Areas

Mission Areas	
Movement & Maneuver	Sustainment
Fire Support	Command and Control (C2)
Intelligence	Protection

Army doctrine requires multi-echelon combined arms training, based on teamwork and synchronization among units as they prepare for the operational environment. Proficiency in the decisive action core competencies results from regular practice of combat missions and tasks in the live domain, and starts with developing individual skills that, when combined and practiced, build unit proficiency from crew through brigade task force. The modernization of Army ranges under the SRP, supported by the Range Modernization Requirements Planning Process, supports this doctrine.

2.3.2 Marine Corps Requirements

Overview

Marines, Marine units, and Marine Air-Ground Task Forces (MAGTFs) require operational ranges that meet the training demands of modern warfare, including sufficient land area, airspace, seaspace, frequency spectrum, and training range infrastructure to safely and effectively accomplish the full spectrum of mission-essential training.

The Marine Corps’ Mission Capable Ranges program, executed by the Training and Education Command (TECOM), guides Marine Corps range planning and investment. The objective of this initiative is to develop and sustain a comprehensive portfolio of modern ranges and controlled airspace that supports the entire training continuum, from individual training to large-scale exercises of the MAGTF. Live fire training events are a hallmark of, and critical to, the Marine Corps’ approach to preparing for combat, and its range modernization and transformation programs reflect this focus.

Identifying operational range requirements is a dynamic process because range requirements depend on training needs, and are determined by changing operational requirements. Marine Corps ranges must continue to support training cycles for wartime deployments. Furthermore, range capabilities must be enhanced to support both current and future training with mission-capable ranges. Marine Corps range planning is centered on six cornerstone objectives:

- ▶ Preserving and enhancing live fire combined arms training, including the capability to support large-scale exercises

- ▶ Recapturing littoral training capabilities at Camp Lejeune and Camp Pendleton
- ▶ Leveraging technology to provide feedback for better training
- ▶ Lessening encroachment
- ▶ Facilitating cross-service utilization
- ▶ Supporting the Joint National Training Capability

Continued analysis and the fielding of new systems may cause other requirements to surface in the future; however, the current gaps in training capability include:

- ▶ The inability to exercise a large scale MAGTF in a “live” training scenario, including expeditionary maneuver from the sea and distributed operations
- ▶ The lack of a capable East Coast aviation training range to accommodate the increased airspace and weapons requirements of precision guided munitions and the Joint Strike Fighter (JSF)
- ▶ Inadequate training opportunities for Marine units stationed in Hawaii and the Western Pacific

The Marine Corps is actively addressing these gaps by proposing land acquisition and airspace expansion at Marine Corps Air-Ground Combat Center (MCAGCC) Twentynine Palms, assessing the feasibility of expanding existing aviation range capabilities in the eastern United States, and investing in long-term planning for enhanced training capabilities in the Western Pacific.

A significant force relocation issue is the inter-governmental agreement between the United States and Japan to relocate some existing Marine Corps forces from Okinawa to Guam. The Marine Corps is heavily engaged in providing the necessary planning support to the Joint Guam Program Office and the Commanding General, Marine Forces Pacific.

Marine Corps installations are managed to maximize efficient use of training land and resources; however, internal and external limitations can constrain its ability to meet training requirements. Encroachment into the vicinity of Marine Corps installations, operational ranges, and training areas can result in resource (land, air, water, frequency spectrum) usages that are incompatible with current and future military training and general mission activities.

The Marine Corps is confident that it will continue to receive the support and resources necessary to provide the range capabilities required to fully train Marines, sailors, units, and MAGTFs.

Current and Future Requirements

The Mission Capable Ranges program supports the Commandant of the Marine Corps' Vision and Strategy 2025 Initiative. Vision and Strategy 2025 advances a modernization strategy, focused on range requirements of future ground and aviation weapon systems. It includes required linkages between Marine Corps installations and other Military Service ranges and the execution of training in LVC environments. Vision and Strategy 2025 also advances the Marine Corps encroachment control program, focusing on initiatives that optimize access to training ranges, airspace, and frequency spectrum required for training.

Identifying future operational range requirements is an inherently dynamic process, in that range requirements depend on training needs determined by changing operational requirements. Marine Corps ranges must support training cycles necessary to prepare individual Marines and Marine Corps units for current wartime deployments, which is an immediate concern. Furthermore, range capabilities must be continuously enhanced to support current, emerging, and future training requirements with modern ranges that are relevant to the full spectrum of conflict. Several factors affect operational range requirements, both Marine Corps-wide and at particular installations, including:

- ▶ Developing operational doctrine
- ▶ Evolution of TTPs
- ▶ Fielding new weapons and systems
- ▶ Evolving missions of the training ranges
- ▶ Training load (throughput)

As the Marine Corps reorganizes and reconstitutes to succeed in the post-OEF security environment, each of these factors will result in significant changes to range requirements. The Marine Corps is in the process of transforming policies and programs that guide training of Marines, operational units, and MAGTFs of all sizes in those skills required to execute multiple missions in increasingly complex security environments. Evolving operational doctrine, implemented through new TTPs, and employing new families of weapons, aircraft, and systems address the reality that the battlespace of the 21st century is measured in vast distances covered rapidly by highly capable forces that may range in size from small infantry units to large-scale MAGTFs. Range capabilities must evolve in concert with these changing mission requirements and associated training demands. The requirement to train scalable MAGTFs and their component units in an expanding number of essential missions means that needs for training land and airspace are increasing. The need to develop ranges that can support multiple training missions is acute. Finally, as Marine Corps forces are permanently re-deployed from contingency operations to home stations, the training load on its bases will increase.

Access to sufficient training land and airspace for ranges is an immediate concern. No training installation in the Marine Corps inventory currently includes or is projected to include surplus land. As noted in the *Report to the Committee on Armed Services of the U.S. Senate and the Armed Services Committee of the U.S. House of Representatives Pursuant to Section 2829 of the National Defense Authorization Act for Fiscal Year 2008*, deficits in available training land currently exist at every Marine Corps training installation. These deficits are described in the detailed analysis contained in Chapter 3. The Marine Corps continues to assess its land requirements, and will continue to invest aggressively in range modernization and transformation to address as many shortfalls as possible using its available resources. However, geographical and fiscal constraints will prevent the Marine Corps from addressing all shortfalls.

As noted above, a cornerstone objective of Marine Corps range planning is to facilitate cross-Military Service utilization. The Marine Corps has obtained access to other Military Services' ranges to support some types of training, and other Military Services regularly use Marine Corps ranges. The Navy's routine use of the Chocolate Mountains Aerial Gunnery Range, and ranges at Camp Pendleton and Camp Lejeune provide examples of the reciprocal nature of cross-Military Service range use. A key consideration in cross-Service utilization is the relative priority of range users. In practice, training requirements of the Military Service that owns and manages the range have priority over other Military Service users. The Marine Corps expects that, as each Military Service addresses increasing throughput demands and land and airspace requirements similar to those facing Marine Corps ranges, the ability of a given installation to accommodate training by other Military Services will be constrained. The Marine Corps will continue to rely primarily on its existing range resources and, to the extent available, use other Military Services' ranges to meet most of its training needs.

The Mission Capable Ranges program is structured to identify and address future range requirements that arise in this dynamic framework. The program's objective is to develop and sustain a comprehensive portfolio of modern ranges, including airspace that supports the entire training continuum today and well into the future, from training of the individual Marine to large-scale exercises of the MAGTF. It is both forward-looking and responsive, in that it anticipates possible emerging and future range requirements, while maintaining the flexibility to address immediate range needs to support current training of the operating forces. The Mission Capable Ranges program implements a detailed planning process for determining range requirements and investment priorities. One foundation of this program is Marine Corps Reference Publication (MCRP) 3-0C, Marine Corps Operational Training Ranges Required Capabilities. This MCRP describes training land, airspace, and required range facilities necessary to execute the training continuum. Based on the MCRP, installation-specific RCMPs are developed to guide execution of range transformation. The

Marine Corps has completed RCMPs for all of its major training bases. In addition, regional RCMPs have been initiated or are planned for Marine Corps Installations (MCI) West (in progress) and MCI East (planned FY2012).

The Marine Corps is aggressively investing in range modernization and transformation. Since 2004, the Marine Corps has invested (or is in the process of investing) over \$700 million in ranges. Lines of operation for range modernization under the Mission Capable Ranges program currently consist of:

- ▶ Range sustainment to maintain capabilities and protect range investments
- ▶ Re-capitalization to upgrade or replace existing ranges and range resources
- ▶ Investment in new ranges that leverage advanced range instrumentation, targets, and training systems
- ▶ Provision of comprehensive range support and training support services

To date, specific Mission Capable Ranges program initiatives to enhance Marine Corps range capabilities have included ongoing efforts to establish or expand training ranges at MCAGCC Twentynine Palms, Guam, and MCAS Beaufort/Townsend. A more detailed discussion of the seriousness of these present and future range requirements is included in the Chapter 3 Marine Corps Special Interest section and the Goals and Milestones section of Chapter 4.

In summary, in the near term, Marine Corps installations will be required to support training of larger numbers of Marines and Marine Corps units in an expanding array of mission-essential tasks that require ever-increasing amounts of training space and increasingly sophisticated range resources.

Mission Areas

Marine Corps forces are organized, trained, and equipped to deploy as MAGTFs. MAGTFs are scalable, task-organized force consisting of these elements: Ground Combat Element, Aviation Combat Element, Logistics Combat Element, and Command Element. The size and composition of a MAGTF depends on its mission. The Marine Expeditionary Force (MEF) is the largest MAGTF. While the Marine Expeditionary Brigade (MEB) is a large-scale MAGTF, it is smaller than an MEF. The smallest standing MAGTF is a Marine Expeditionary unit (MEU). Special purpose MAGTFs can be built as missions and requirements dictate. Additionally, the Marine Corps is exploring use of small task-organized forces, composed of enhanced infantry companies capable of operating independently for short periods of time.

Each MAGTF trains to execute six warfighting functions: Maneuver, Fires, Intelligence, C2, Logistics, and Force

Table 2-4 Marine Corps Mission Areas

Level of Training	Training Environment and Range Requirements
Individual Warfighting Skills	<ul style="list-style-type: none"> ▶ programmed instruction ▶ fixed ranges / individual movement areas / Special Use Airspace (SUA) ▶ specialized ranges such as small Military Operations in Urban Terrain (MOUT) facilities
Unit Training (smaller units)	<ul style="list-style-type: none"> ▶ scenario-based training ▶ fixed ranges / fire and movement ranges / small maneuver areas / SUA ▶ specialized ranges such as small MOUT Facilities
Unit Training (larger units/MAGTF elements)	<ul style="list-style-type: none"> ▶ dynamic decision-making in event driven training exercises ▶ fire and maneuver ranges / large maneuver areas / SUA ▶ specialized ranges such as large MOUT Facilities
MEU Training Exercises	<ul style="list-style-type: none"> ▶ fully integrated, multi-dimensional training ▶ extended fire and maneuver areas for multi-day training events ▶ extensive SUA ▶ specialized ranges such as large MOUT Facilities
Large-scale MAGTF / MEB Training	<ul style="list-style-type: none"> ▶ fully integrated, multi-dimensional training ▶ extended fire and maneuver areas for multi-day training events ▶ extensive SUA ▶ specialized ranges such as very large MOUT Facilities

Protection. MAGTF training proceeds on a continuum of individual skills training, unit training for MAGTF elements, MEU-level training, and MEB/large-scale MAGTF training. The Marine Corps organizes its range classes or range mission areas to align with the stages of the training continuum. These mission areas are identified in Table 2-4 and defined in Appendix B.

2.3.3 Navy Requirements

Overview

Today’s high performance aircraft and ships employ weapons of significant capability and complexity with unique training and delivery characteristics that require a robust training range/OPAREA infrastructure. The Navy accomplishes most of its training on ranges and OPAREAs located near concentrations of forces in the United States and its territories. These areas enable high fidelity training facilitated by exercise coordinators. For safety purposes, these areas also provide a training space with reduced or restricted civilian traffic. Additionally, Naval forces train on ranges controlled by the Army, Air Force, and Marine Corps. Shared and joint use of ranges, both in the United States and abroad, helps economize time and resources spent on travel, while simultaneously exposing Naval forces to the joint environment.

The Navy’s range complexes allow for training in support of the Composite Warfare Commander (CWC) concept. Each Carrier Strike Group and Amphibious Ready Group must master multiple mission areas, enabling the aviation, surface,

Table 2-5 Navy Fleet Response Training Plan Phases

Training Plan Phase	Description
Maintenance	Maintenance is the preferred period during the entire FRP in which major shipyard or depot level repairs, upgrades, and modernization will occur. In addition to completion of maintenance requirements, units continue to focus on individual/team training and achieving unit level readiness. To better accommodate TYCOM unit maintenance and training schedules, the basic phase may precede maintenance in part or in whole.
Basic (Unit Level Training)	The basic phase focuses on completion of TYCOM ⁵ unit level training (ULT) requirements—team training both onboard and ashore, unit level exercises both in port and at sea, unit qualifications, assessments, qualifications, and certifications. During the basic phase, a unit will maximize the use of both distance learning options for individual skills development, and in port synthetic training. Successful completion of the basic phase ensures units are proficient in all required Navy Mission Essential Task capabilities, meet TYCOM certification criteria, and are ready for more complex integrated training events. ULT follows a cyclical “assess, train, and certify” process which has been instituted by the TYCOMs.
Integrated	The goal of integrated phase training is to synthesize unit/staff actions into coordinated strike group operations in a challenging, multi-warfare operational environment. This phase provides an opportunity for strike group decision makers and watch-standers to complete staff planning and warfare commanders courses; conduct multi-unit in-port and at sea training; and to build on individual skill proficiencies attained in their respective basic phase. The integrated phase is adaptable in order to provide training for Major Combat Operations, Surge certification, Ready certification, and/or tailored training to support emergent Combatant Commander requirements.
Sustainment	The sustainment phase begins upon completion of the integrated phase, continues throughout the post deployment period, and ends with the commencement of the maintenance phase. Sustainment consists of a variety of training evolutions designed to sustain operation readiness as a group, multi-unit, or unit, until and following deployment. Sustainment phase training exercises units and staffs in multi-mission planning and execution, and to interoperate in a joint/coalition environment. In-port and at sea sustainment training allows forces to demonstrate proficiency in operating as part of a joint and coalition combined force and ensures that proficiency is maintained in all Navy METs in order to maintain Major Combat Operations Ready status. The extent of training will vary depending on the unit’s anticipated task and length of time in an MCO Ready status. During sustainment, units/groups maintain an Major Combat Operations Ready status until the commencement of the maintenance phase unless otherwise directed by Navy Fleet Commanders. Unit/group integrity during this period is vital to ensure integrated proficiency is maintained, particularly for strike groups. Deployments in support of Combatant Commander Global Force Management requirements may occur within the Sustainment Phase after numbered Fleet Commanders re-certify groups and units.

and submarine forces to work in an integrated manner. This CWC construct presents unique challenges for the Navy range complexes, which must offer realistic training across diverse and complex mission areas to meet Navy readiness and deployment requirements.

Generation and validation of requirements for Navy training ranges in the United States and its territories falls under the purview of U.S. Fleet Forces (USFF). Type Commanders (TYCOMs) and various lower echelon commands control the ranges that are tenant commands on Navy installations. For example, the ranges in the San Diego area are grouped into the Southern California (SOCAL) Range Complex. SOCAL contains several land, water, and air ranges managed by the Commander Pacific Fleet (CPF).

While CPF and subordinate elements, such as the Southern California Off Shore Range (SCORE), control the day-to-day training operations on the ranges, the Regional Environmental Coordinator on the staff of Navy Region Southwest manages environmental issues for all ranges within its region. Due to the common administrative requirements influenced by the geographic proximity of range components, the Navy manages its ranges as range complexes. For inventory and budgeting purposes, the Navy groups ranges, and sometimes sets of small complexes, to provide efficiencies.

Current and Future Requirements

Training requirements, as opposed to training range requirements, are defined by the Numbered Fleet Commanders (NFCs) and TYCOMs. Each is responsible for establishing the training requirements in Navy Warfare Areas for the various air, surface, and sub-surface forces. To prepare for the Planning, Programming, Budgeting, and Execution (PPBE) process, the TYCOMs obtain inputs from their subordinate commands to determine what training range capabilities and spaces are needed. Those requirements are forwarded to the fleet level, USFF, and Pacific Fleet (PACFLT), for validation. USFF forwards the requirements to the Chief of Naval Operations (CNO) for assessment as input to the Navy’s Program Objective Memorandum (POM) submission process.

The Navy’s highest level range requirement is to provide forces with the land, air, seaspace, and frequency spectrum necessary to support the Fleet Response Plan (FRP). To meet the requirements of the FRP, the Navy has developed a Fleet Response Training Plan (FRTTP). To meet the milestones in the FRTTP, the Navy has a geographically dispersed set of training complexes on each coast of the United States, Hawaii, and in the Western Pacific that provide the areas necessary to conduct controlled and safe training scenarios that are representative of the conditions Navy personnel will face in meeting their assigned tasks, either in peacetime operations or armed conflict. Table 2-5⁸ summarizes the four FRTTP training phases.

Table 2-6 Navy Mission Areas

Mission Areas	
Strike Warfare	Mine Warfare
Electronic Combat	Amphibious Warfare
Anti-Air Warfare	Anti-Submarine Warfare
Anti-Surface	Naval Special Warfare (NSW)

All Navy range complexes have developed individual RCMPs to ensure codification of requirements and capabilities of the various range complexes.

Navy training ranges will play a critical role in supporting training for the operational forces well into the 21st century. The Navy anticipates that, through 2025, the continuing requirement will be to support all phases of the FRP. Strategic planning for Navy range complexes will include support for future training operations, as well as improvements to infrastructure to support the JNTC. Range capabilities will be addressed in individual RCMPs. The Navy will use these plans to implement Navy and DoD sustainable ranges policies, and to assist in evaluating new requirements through the PPBE process.

Mission Areas

The Navy defines range functions as the ability to support training in mission-essential naval warfare areas. These mission areas are provided in Table 2-6 and defined in Appendix B.

2.3.4 Air Force Requirements

Overview

DoD readiness is impacted by limitations on the use of military lands, marine areas, and airspace. To address and further understand these impacts, the Air Force Air Combat Command (ACC) partnered with the RAND Corporation in 2001 to investigate a requirements-based approach for determining its range and airspace infrastructure needs. The goal of the study was to develop an analytical structure for translating ACC operational requirements into training requirements, and then into infrastructure requirements. The study sought to establish a comprehensive, objective statement of ACC range and airspace requirements linked to national interests, and a corresponding approach to compare the adequacy of existing infrastructure with those requirements. The study team created a relational database to serve as an information repository and allow for analysis of the

relationships among the different elements. This process is described in the following paragraphs.

Prior to 2001, alternative range and airspace resource determinations were based primarily on statements of apparent gaps between requirements and existing capabilities. The Air Force determined more effective decisions could be made if both the requirements and current asset capabilities were stated more explicitly, with resource decisions based on rigorously derived gap assessments. To be defensible, range infrastructure and resource requirements must be linked firmly to training requirements, which in turn must be linked directly to Air Force operational requirements in the conduct of its individual and joint national security missions. Additionally, for a requirements-based approach to succeed, an efficient means of comparing existing infrastructure capabilities with these vetted requirements would be needed. Figure 2-5 illustrates the framework at the core of the Air Force requirements translation process and Figure 2-6 illustrates how training activities are linked to Air Force range infrastructure requirements.

Current and Future Requirements

The first step in this requirements identification and translation process starts with the development of a Joint Mission Framework. This framework focuses on effects to be achieved for a joint commander, without regard to how those needs might be met. This framework was developed because existing statements of operational requirements did not readily lend themselves to a strategies-to-task linkage to training requirements. These existing statements of operational requirements were too detailed, too context-specific, and classified at a level impractical for open communication with the public. The UJTL and its derivatives, the JMETL, and Air Force Task List support the strategy-to-task approach.

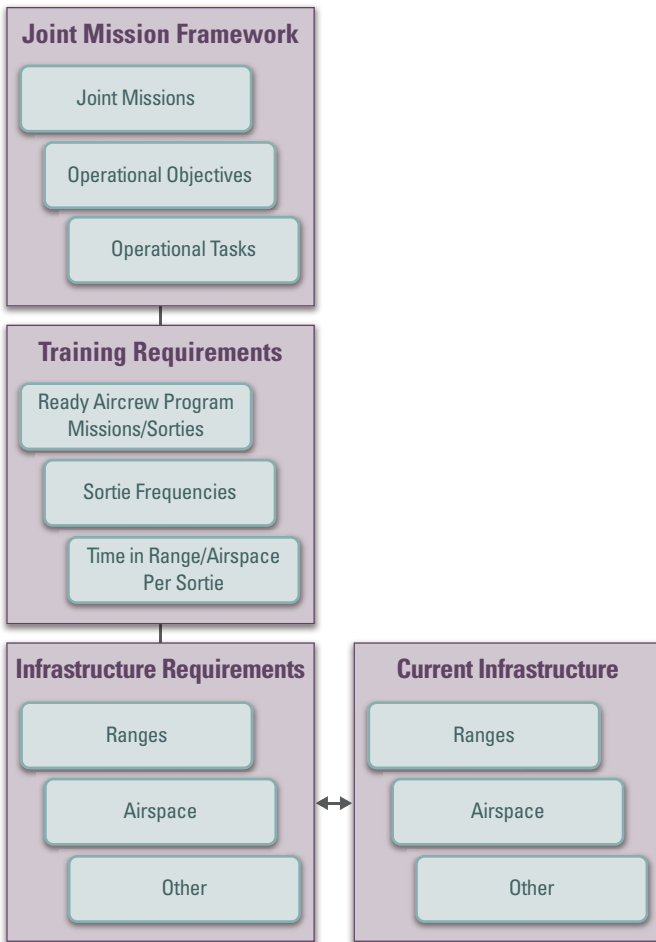
The second step in this process is to relate training activities to operational requirements as detailed in the Joint Mission Framework, and also to training resource needs, specifically range and airspace infrastructure requirements. In doing this, the Air Force focused on applied and combined sorties, as derived from the Ready Aircrew Program.

The third and final step in the Air Force range requirements development process is to evaluate operational and training requirements, and translate them into required range and airspace infrastructure. This is accomplished by grouping and dividing range and airspace infrastructure based on geographic, quantitative, and qualitative characteristics.

- ▶ From a geographic perspective, the required range infrastructure must be reasonably close to base operating

8 TYCOMs are responsible for the aircraft, ships, and submarines that make up the Navy’s operational numbered fleets. Numbered fleets (e.g., 2nd Fleet, 5th Fleet, and 6th Fleet) are immediately subordinate to major fleet commands (e.g. Atlantic and Pacific Fleets). They are composed of various task forces, elements, groups, and units organized for the purpose of prosecuting specific naval operations.

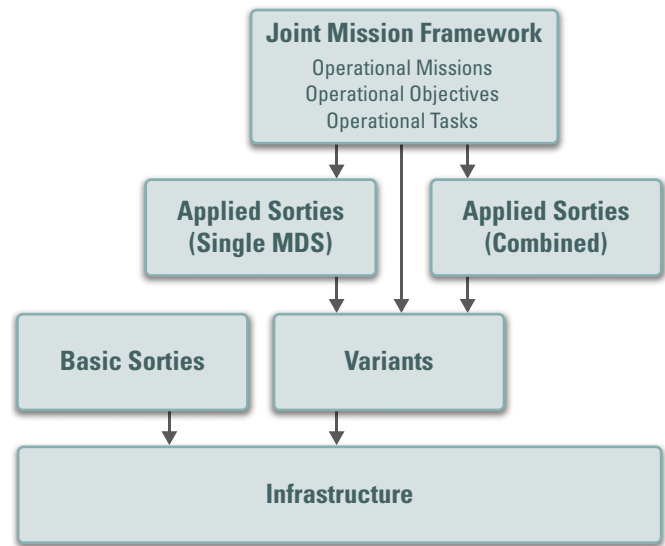
Figure 2-5 Framework for Developing Air Force Infrastructure Requirements



locations. The available training time on nearby ranges and airspace must be sufficient to support the training requirements of an operating base. For a given Mission Design Series (MDS)/sortie-type combination, the requirements are translated into capacity, or the amount of operating time required on ranges and in airspace, by multiplying the required number of sorties by the time required for an individual sortie on a range and/or in an airspace.

- ▶ Qualitative characteristics (and corresponding information on existing assets) must satisfy certain requirements, such as minimum dimensional requirements, availability of required range equipment, and authorized operation of aircraft and systems in specific ways.
- ▶ Qualitative characteristics were captured for six infrastructure types: ranges, low-level routes, maneuver areas, threats, orbits, and other.

Figure 2-6 Linking Training Activities to Air Force Range Infrastructure Requirements



Based upon the success of the RAND study, the Air Force has decided to undertake a follow-on project to provide a better foundation for ongoing and future analyses, and expand the preliminary relational database to include training other than continuation training, training for newer combat air force (CAF) MDS and weapons, and training for non-CAF MDS. The relational database will be expanded to capture and document emerging requirements and changes to the range and airspace infrastructure. The existing Air Force process for translating operational requirements into training and infrastructure requirements shall remain the Air Force standard until the follow-on study is completed.

Air Force Airspace Advisory Committee

As the Air Force activates new missions and begins to utilize new airframes, its requirements for SUA will change. To promote a common understanding of the Air Force’s future airspace needs, the Air Force is planning to establish an Airspace Advisory Committee (AAC) to serve as a venue for stakeholders within the aviation community to provide input and advice on airspace issues and actions. Through the AAC, the Air Force can solicit inputs and recommendations from industry, private pilots, the Military Services, and relevant land management agencies regarding future airspace initiatives. The committee will initially establish three subcommittees:

- ▶ Special Use Airspace Concept Subcommittee
- ▶ Flexible Use Airspace Subcommittee
- ▶ Subcommittee on the Strategic Reassessment of SUAs.

The AAC may create new subcommittees with the advice and consent of a designated federal official.

The plan is for the AAC to meet semiannually to receive updates, reports, and recommendations from each subcommittee, and to comment on various airspace actions the Air Force is conducting or considering. The ACC will also propose actions it believes the Air Force should take. Although the AAC’s recommendations are not binding, the Air Force will consider committee recommendations and provide written justification when its recommendations are not implemented. The AAC is an Air Force-specific initiative and will only consider activities sponsored by the Air Force.

Operating Space Considerations in Basing Decisions

The Air Force is continually involved in making basing decisions for the beddown of new aircraft and/or redistribution of current force structure. Air Force senior leadership recognizes the need to define and establish a framework for making decisions on where, and in what order, to locate these aircraft to best meet Air Force fleet-wide requirements. This framework requires all basing actions to be conducted at an Air Force strategic level rather than at the individual MAJCOM operational level used in the past. This repeatable, transparent, standardized process was established by the Secretary of the Air Force to ensure mission and Combatant Commander requirements are linked to installation attributes that identify those locations that are best suited to support any given mission worldwide.

Corporate Operating Space Management Construct

This initiative seeks to increase the effectiveness and efficiency of USAF Operating Space (physical or virtual space used for operations, test, or training) management and utilization by leveraging and integrating the efforts of existing bodies and processes. This effort will apply across the live, virtual, and constructive domains of air, space, cyber, IO, distributed mission operations (DMO), operational, test, and training communities to provide timely information to decision makers within the Air Force Corporate Structure (AFCS).

The objective of this construct is to increase effectiveness and efficiency by:

- ▶ Leveraging resources
- ▶ Specifying range configurations for common investment areas
- ▶ Reinvigorating the previously chartered Air Force Range Investment Council (AFRIC) and Combat Training Range (CTR), outlining organizational participation, sharing the relevant proceedings of the OSD Test Investment Coordinating Committee (OTICC), and modifying and utilizing the Airspace and Range Council (ARC) to communicate actions across the communities

Table 2-7 Air Force Mission Areas

Mission Areas	
Strategic Attack	Command and Control (C2)
Counterair	Air Drop
Counterspace	Air Refueling
Counterland	Spacelift
Countersea	Special Operations
Information Operations	Intelligence, Surveillance, and Reconnaissance
Electronic Combat Support	

- ▶ Aligning actions to the AFCS timelines to gain timely shared advocacy throughout the AFCS
- ▶ Reiterating the use of only existing PPBE practices, constructs, and procedures as they apply to the 10 common investment areas as defined by Air Force Instruction (AFI) 13-212, Range Planning and Operations.

Note: This construct does not involve transfer of funds, responsibility, manpower (leveling), or workload between or among Major Commands (MAJCOMs), beyond what is currently established by AFI, charter, or other existing guidance. Missions or mission requirements unique to a MAJCOM (e.g., space launch, special operations [SPECOPS]) are, likewise, beyond the scope of this construct.

Mission Areas

The Air Force classifies ranges based upon their ability to support 13 specific types of air warfare training. These training events, or mission areas, are listed in Table 2-7, and defined in Appendix B.

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Adequacy of Existing Range Resources to Meet Training Requirements

NDA Section 366(a)(2)(B) requires DoD to evaluate the adequacy of current range resources. Additionally, NDA Sections 366(c)(1)(B) and (C) require DoD to identify training capabilities and existing constraints. In response, DoD has further developed its annual assessment process to evaluate the adequacy of ranges to provide the required training support and the current impacts of encroachment in terms of risk to the assigned training missions conducted at each range.

In 2007, DoD began assessing the adequacy of ranges to support required training as well as the actual impacts of encroachment. In 2008, DoD and the Military Services worked together to build a common set of capability attributes, encroachment factors, and standard evaluation criteria for the purposes of this report. Use of common attributes, factors, and standard evaluation criteria led to a consistent assessment and analysis across the Military Services. A discussion of the assessments and the results of the standardization efforts is presented in the following sections.

3.1 Assessment Methodology and Examples

DoD has continued to improve its methodology for assessing range capabilities and encroachment. DoD uses 13 common capability attributes and 12 common encroachment factors to create a unified reporting and analytical framework that integrates data from each of the Military Services. The Military Services have been responsible for providing data on capability and encroachment on an annual basis.

3.1.1 Capability Assessment

Beginning in 2008, the Military Services developed and identified the following 13 common capability attributes for the range assessment and reporting processes:

- ▶ **Landspace**—Physical land area that has the necessary features, such as topography, vegetative cover, configuration, proximity, capacity, usability, and acreage
- ▶ **Airspace**—Physical volume of airspace that has the necessary features, such as types of use, configuration, proximity, capacity, and amount
- ▶ **Seaspace**—Physical sea-surface area that has the necessary features, such as types of use, configuration, proximity, capacity, and amount
- ▶ **Underseaspace**—Physical volume of underseaspace that has the necessary features, such as ocean bottom type, depth, types of use, configuration, proximity, capacity, and amount
- ▶ **Targets**—Various land, air, sea, and undersea presentations designed for live or simulated weapons engagement
- ▶ **Threats**—Various physical and simulated threat presentations, such as emitters, opposing adversary forces, and battlefield effect simulators
- ▶ **Scoring & Feedback Systems**—Equipment that provides information for training event reconstruction, debriefing, and replay, whether virtual or live, through the collection

and storage of time and space position information (TSPI), weapons accuracy, systems and operator accuracy, assessment and monitoring of operator performance, and command, control, communications, computers and intelligence (C4I) network information flow

- ▶ **Infrastructure**—Buildings, structures, or linear structures (e.g., roads, rail lines, pipelines, fences, pavement)
- ▶ **Range Support**—Personnel, software, and hardware that support such functions as daily range operations, maintenance (including range clearance), and communication networks for C2, scheduling, and range safety. Communications networks include: inter- and intra-range systems; point-to-point; range support networks; fiber optic and microwave backbones; information protection systems (e.g., encryption, radio, data link); and instrumentation frequency management systems
- ▶ **Small Arms Ranges**—Ranges that accommodate weapons systems firing rounds up through 40mm and produce duds
- ▶ **Collective Ranges**—Ranges that provide proficiency at the team or unit level for battlefield operations
- ▶ **Military Operations in Urban Terrain (MOUT) Facilities**—Terrain complexes that replicate urban environments
- ▶ **Suite of Ranges**—A nominal make-up of range attributes, intended to provide the baseline requirement for each level of training. The elements include various types of ranges such as maneuver/training area, impact areas, live fire ranges, aviation ranges, and MOUT complexes that must be coordinated to conduct required training events

The Military Services assessed and evaluated their specific mission areas (as listed in Chapter 2 and defined in Appendix B) against these 13 capability attributes for accessibility and usability during normal operations using the following color rating scheme:

- ▶ **Red**—The range is not mission capable. It is unable to support required training tasks for a given mission area to prescribed doctrinal standards and conditions.
- ▶ **Yellow**—The range is partially mission capable. It can partially support required training tasks for a given mission area to prescribed doctrinal standards and conditions, resulting in marginalized training for the range users.
- ▶ **Green**—The range is fully mission capable. It can support required training tasks for a given mission area to prescribed doctrinal standards and conditions.
- ▶ **White (Blank)**—White (blank) represents a situation where an assessment for a given mission area is not

performed against a particular attribute. If a complete mission area is “white,” there is no requirement for the range to provide training in this area. When conducting the encroachment assessment for this same range, no encroachment factors will be assessed for this mission area.

3.1.2 Encroachment Assessment

Measuring the impact of encroachment on mission readiness can be difficult. Encroachment causes range users to find workarounds to complete required training. While some adaptation by the Military Services’ operational forces can be expected, excessive workarounds resulting from encroachment can increase mission risk due to unrealistic, segmented, or irrelevant training, and may result in a deterioration of training content and/or quality. Therefore, as part of DoD’s efforts to standardize the assessment of encroachment on training ranges, the Military Services were tasked to assess the current impacts of the following 12 encroachment factors against their Military Service mission areas.

- ▶ **Threatened & Endangered Species**—Constraints placed on training due to regulatory requirements and/or Military Service guidance to manage at-risk, threatened, or endangered species or associated habitat
- ▶ **Munitions Restrictions**—Constraints placed on training due to regulatory requirements and/or Military Service guidance on munitions use, munitions constituents, or residue, to include range clearance (Restrictions placed on munitions use due to weapon safety footprint requirements are assessed as capability attributes under Landspace, Airspace, Seaspaces, and Underseaspaces. Other constraints from munitions use that have an encroachment factor available, such as Noise, Air Quality, Water Quality, and Transients, are assessed under those factors.)
- ▶ **Spectrum**—Constraints placed on training due to unavailability of or interference with required electromagnetic spectrum
- ▶ **Maritime Sustainability**—Constraints placed on training due to regulatory requirements and/or Military Service guidance to protect and sustain the maritime environment, including marine mammals and sonar issues
- ▶ **Airspace**—Constraints placed on training due to the availability of airspace (These constraints may be spatial or temporal.)
- ▶ **Air Quality**—Constraints placed on training due to regulatory requirements and/or Military Service guidance to maintain air quality (This includes any restrictions placed on prescribed burning.)

- ▶ **Noise Restrictions**—Constraints placed on training as a result of mitigation measures for unwanted sound generated from the operations of military weapons or weapon systems that affect people, animals (domestic or wild), or structures on or in proximity to military training areas (Noise restrictions do not include occupational noise exposure or underwater sound.)
- ▶ **Adjacent Land Use**—Constraints placed on training due to incompatible development in proximity to military training areas
- ▶ **Cultural Resources**—Constraints placed on training due to legal and/or regulatory requirements and/or Military Service guidance to manage and maintain cultural resources
- ▶ **Water Quality/Supply**—Constraints placed on training due to legal and/or regulatory requirements and/or Military Service guidance to manage water quality and supply
- ▶ **Wetlands**—Constraints placed on training due to legal and/or regulatory requirements and/or Military Service guidance to manage wetlands
- ▶ **Range Transients**—Constraints placed on training due to the unannounced or unauthorized presence of individuals, livestock, aircraft, or watercraft transiting range

The Military Services assessed the impact from each of these factors on their range and range complexes' capabilities to support assigned training missions. The assessments were based on range availability and use using the following color rating scale:

- ▶ **Red**—The encroachment factor has a severe effect or high risk to the range's ability to support its assigned mission training, and would likely cause the training mission to fail. Mitigating the encroachment would involve prohibitive costs or actions for the range.
- ▶ **Yellow**—The encroachment factor has a moderate impact or medium risk on the range's ability to support its assigned mission training. Workarounds have a moderate impact on training content, procedure, or outcome. Addressing the encroachment results in additional burdens or requires additional actions by the range to mitigate the impact of the encroachment.
- ▶ **Green**—The encroachment factor has minimal impact or low risk on the range's ability to support its assigned mission training. Workarounds detract minimally or not at all from training content, procedure, or outcome. Costs are not incurred by the range or range users to address the encroachment factor.

- ▶ **White (Blank)**—An encroachment factor does not exist for a given mission area.

3.1.3 Explanation of Individual Range Assessment Details and Observations

Each Military Service's individual ranges/range complexes were assessed for its ability to support assigned training missions using the 13 common capability attributes and 12 common encroachment factors using the red, yellow, and green rating scales discussed above. An explanation for how to read and interpret these charts is discussed further below. Major elements of each presentation, in the order in which they appear, are as follows:

- ▶ Pie charts depicting the overall distribution of red, yellow, and green ratings are presented with calculated rating scores on a scale of 0 to 10. The overall rating scores for both capability and encroachment assessments are weighted average scores with 0 assigned for each red rating, 5 for each yellow rating, and 10 for each green rating.
- ▶ Summary Observations, located below the charts and scores, provide information on what encroachment factors and capability attributes are most impacting each range's ability to perform its assigned mission, along with those mission areas most severely impacted.
- ▶ Historical Information, Results, and Future Projections provides a more qualitative assessment with several pieces of information. Overall rating scores from prior years are presented along with comments as to whether the range complex's capabilities or encroachment pressures have been improving or degrading over the years and the outlook for the future.
- ▶ Detailed Comments for each range grouped by capability observations and encroachment observations. These observations describe the red and yellow assessment ratings, explaining the problem or shortfall, the impacts to training activities, and any planned remedial actions.

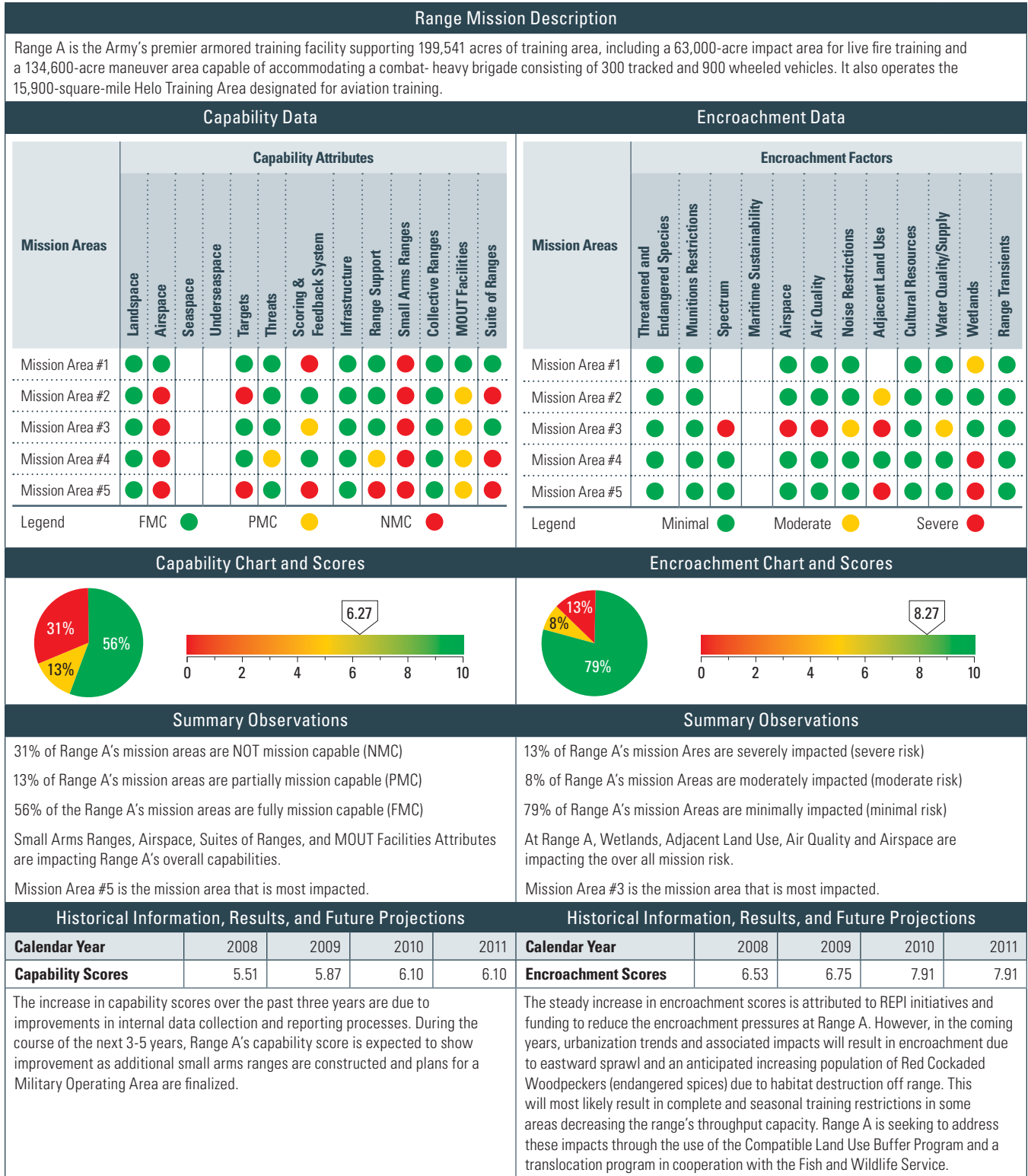
3.1.3.1 Example Capability Assessment and Analysis

The following discussion provides an example Capability Assessment and Analysis. Figure 3-1 illustrates the format DoD used to collect, evaluate, and analyze range capability data.

This example shows that Range A is being assessed against its ability to support training for five mission areas. The red ratings for Airspace in Mission Areas 2 through 5 indicate the airspace is insufficient to support prescribed doctrinal standards or conditions for one or more of the training tasks associated with Mission Areas 2 through 5. Other red ratings indicate capability attribute shortfalls that are severely impacting Targets for Mission Areas 2 and 5, Scoring &

Figure 3-1 Example Assessment and Analysis

Range Name: Range A



Feedback Systems for Mission Areas 1 and 5, Small Arms Ranges for all five mission areas, and Suite of Ranges for Mission Areas 2, 4, and 5.

Less severe impacts can be seen in the yellow ratings, such as those for Threats and Range Support in Mission Area 4, Scoring & Feedback Systems for Mission Area 3, and MOUT Facilities in Mission Areas 2 through 5. For yellow ratings, the shortfalls in prescribed doctrinal standards or conditions indicate training for a task(s) in a mission area will be degraded. The green ratings describing the majority of attributes for Range A indicate limited or no impact, meaning there are sufficient resources to provide training in the five mission areas according to the doctrinal conditions and standards for the assigned training tasks.

A red, yellow, or green rating is assigned wherever a capability is assessed against a mission area. Where capabilities are not required at a given range, or not assessed, the blocks are rated white. Where training for a mission area does not apply to a given range, all capabilities and encroachment factors are assessed white for that mission area.

The completed table is used to generate the pie chart and overall capabilities rating on the 0 to 10 scale for Range A's five different mission areas.

This data represents a snapshot in time for a given reporting cycle, and does not provide trend information. To assess changing conditions over time at a given range, individual range assessments must be viewed across the years with larger understanding of all the factors that can impact and change an assessment from one year to the next.

To represent the overall distribution of red, yellow, and green ratings, the pie chart shows that, of the total 55 ratings applied, 56 percent (31) are green, 13 percent (7) are yellow, and 31 percent (17) are red. In this case, this means that, of all the capability factors necessary to provide assigned training for Range A, 31 percent are so severely degraded, some facet of training cannot be accomplished to even a marginal level.

In this example, the Capability Score of 6.27 was calculated by dividing the total weighted score (345) by the number of responses (55). The weighted score was calculated using the color weightings described above (red = 0, yellow = 5, green = 10) using the 31 green, 7 yellow, and 17 red responses. Note that two attributes were not assessed (white ratings) across all five mission areas (10 blank boxes).

3.1.3.2 Example Encroachment Assessment and Analysis

The following discussion details an example of the Encroachment Assessment and Analysis process. Figure 3-1 illustrates the format DoD used to collect, evaluate, and analyze range encroachment information.

This example shows that Range A is being assessed against its ability to support training for its five mission areas. As seen in Figure 3-1, the red ratings for Adjacent Land Use in Mission Areas 3 and 5 indicate there are incompatible developments near the range that are severely affecting or putting at risk the range's ability to support training for those two mission areas. This rating signifies that mitigating the encroachment situation would involve prohibitive costs or actions. Other red ratings indicating severe encroachment situations are: Spectrum, Airspace, and Air Quality for Mission Area 3, and Wetlands for Mission Areas 4 and 5. Moderate encroachment impacts can be seen in the yellow ratings, such as those for Adjacent Land Use in Mission Area 2, Noise Restrictions and Water Quality/Supply with Mission Area 3, and Wetlands for Mission Area 1. The number of green assessments indicates most of the encroachment factors are having minimal to no impact, or present a low risk to the range's capability, and any workarounds being used detract minimally or not at all from training content, procedure, or outcome.

Where an encroachment factor is assessed against a mission area, a red, yellow, or green rating is assigned. Where an encroachment factor does not exist for a mission area at a given range, the blocks are rated white as previously defined.

The completed table provides the basic information used to generate the pie chart and overall rating, on the 0 to 10 scale, of the impact encroachment is currently having on Range A's ability to provide training for five different mission areas. This data represents a snapshot in time for a given reporting cycle, and does not provide trend information. To assess changing conditions over time at an individual range, individual range assessments must be viewed across the years with an understanding that all factors can change an assessment from one year to the next.

To represent the overall distribution of red, yellow, and green ratings, the pie chart shows that of the 52 ratings, 79 percent (41) are green, 8 percent (4) are yellow, and 13 percent (7) are red. This means, for example, that although Range A may be fairly unencumbered by encroachment, there are some factors (13 percent, 7 red ratings) that so severely encroach on the performance of its training mission that the range is at risk of failing to support that training.

In this example, the weighted average score provides the overall rating on a 0 to 10 scale, as previously described. The Encroachment Score 8.27 was calculated by dividing the weighted score (430) by the total number of responses (52). The weighted score was calculated using the color weightings described above (red = 0, yellow = 5, green = 10) using the 41 green, 4 yellow, and 7 red responses. Three factors were not assessed (white) for specific mission areas (eight blank boxes).

3.2 Assessment Results and Discussions

This section is divided into four parallel sections, one for each of the Military Services. Each section provides a different view of the assessment data to help eliminate any shortcomings that might result from a singular approach to describing the assessment and technique for viewing the information. After a brief statement on the assessments being presented, a footnote is provided that reconciles any differences between the ranges/range complexes located in the Military Service's inventory in Appendix C and those assessed in this chapter. Summary information is presented at the start of each Military Service section drawing on the results of the individual range/range complex assessments.

The information provided includes:

- ▶ **Assessment Data Summaries**—A composite of the capability and encroachment responses (red/yellow/green) are presented for each range in table format and scores calculated using the previously described methodology
- ▶ **Pie Charts and Scores**—The Assessment Data Summary results from above are aggregated and presented as pie charts with corresponding composite rating scores presented on a sliding scale, using the weighted average methodology previously described
- ▶ **Summary Observations**—Observations on how the scores and ratings changed from the previous year
- ▶ **Historical Information, Results, and Future Projections**—The composite scores from prior years are presented, along with the top three capability attributes/encroachment factors and associated mission areas rated yellow and red for the current year (General observations are provided by the Military Service, which can be applicable to future capabilities and encroachment issues related to the Military Service's ability to support training.)
- ▶ **Assessments by Range**—Horizontal bar charts show the overall distribution of responses by color ratings for each range
- ▶ **Assessments by Attributes/Factors**—Horizontal bar charts show the aggregated responses by color ratings for each capability attribute/encroachment factor across all ranges and mission areas
- ▶ **Assessments by Mission Areas**—Horizontal bar charts show the aggregated responses by color ratings for each mission area across all capability attributes/encroachment factors and ranges

Following the summary data, each Military Service provides additional information and perspectives on any areas of special interest that impact or may impact its training capabilities and encroachment situation.

While considering these assessments, it is important to remember that, although the information reflects a long-term enterprise view of a broad DoD training range program, each year's assessments are a snapshot in time. The magnitude of specific changes to any individual capability or encroachment factor, due to discrete actions at a specific range complex from year-to-year, needs to be considered by comparing reported assessments for that specific range and capability or factor across the years. Additionally, the impact of a capability attribute or encroachment factor differs throughout all of the Military Services and their ranges. While two ranges (even within a Military Service) may have severe encroachment concerns from the same encroachment factor, synergistic effects with other factors may be experienced at one range, but not at the other. Accordingly, the data must be carefully considered to fully understand the encroachment effects and capabilities degradations for each range. The total encroachment and capability scores for a Military Service's ranges should be considered against the backdrop of each range's individual capability and encroachment scores.

The capability and encroachment ratings merely evaluate effects on current operations; they do not predict how future operations may be affected by encroachment. Changes in assessment ratings due to changes in doctrine and equipment are not captured by the assessments. Such insights may, however, be seen in the historical information and future projection write-ups provided for each range.

3.2.1 Army Assessment Results⁹

Army Training Range Capability Assessment

Analysis Results

The Army Range Capability Assessment data from 15 Army range complexes are summarized and presented in Table 3-1.

The Army Range Capability Chart and Scores are presented in Figure 3-2 and assessments by Range, Attributes, and Mission Areas are shown in Figures 3-4, 3-6, and 3-8.

The Army's 15 individual range capability assessments along with comments for red and yellow ratings are included at the end of this section (Figure 3-10).

Army Training Range Encroachment Assessment

Analysis Results

Army Range Encroachment Assessment data from the 15 Army ranges complexes are summarized in Table 3-2.

The Army Range Encroachment Chart and Scores are presented in Figure 3-3 and assessments by Range, Factors, and Mission Areas are shown in Figures 3-5, 3-7, and 3-9.

The Army's 15 individual range encroachment assessments along with comments for red and yellow ratings are included at the end of this section (Figure 3-10).

The Army Range Capability and Encroachment assessment comparisons are presented in Table 3-3.

⁹ Of the 556 ranges identified in the Army's range inventory in Appendix C, there are a total of 102 that are resourced and fall under the Army's Sustainable Range Program. These 102 ranges comprise three tiers that were established using mission value, to include: unit stationing, institutional schools/other mission support, land asset size, and level of training (individual, crew, collective). Training sites that are not part of the 102 supported sites are typically small individual training ranges that are managed through local Army National Guard (ARNG)/state agreements and policies; the Army only maintains inventory level data for these sites. Although the Army continually evaluates all ranges, only the 21 ranges that represent Tier I sites are included in the assessments due to the impracticality of compiling the information for every range. There are seven ranges inventoried separately in Hawaii that are grouped together for the assessment because they represent a single training complex for management purposes. The Tier I installations represent 88 percent of the training load on Army active duty ranges.

Table 3-1 Army Capability Assessment Data Summary

Range	NMC	PMC	FMC	Capability Scores
Fort Benning	1	3	37	9.39
Fort Bliss	0	5	37	9.40
Fort Bragg	0	8	35	9.07
Fort Campbell	0	8	34	9.05
Fort Carson	0	4	38	9.52
Fort Drum	0	7	36	9.19
USAG Hawaii	0	7	34	9.15
Fort Hood	0	7	38	9.22
Fort Irwin	0	14	40	8.70
Fort Lewis	0	14	28	8.33
Fort Polk	0	6	39	9.33
Fort Riley	0	7	35	9.17
Fort Stewart	0	5	37	9.40
Fort Wainwright	0	7	35	9.17
Yakima TC	0	4	38	9.52
HQ Army	1	106	541	9.17

Table 3-2 Army Encroachment Assessment Data Summary

Range	Severe	Moderate	Minimal	Encroachment Scores
Fort Benning	1	8	33	8.81
Fort Bliss	0	3	38	9.63
Fort Bragg	0	5	36	9.39
Fort Campbell	0	1	40	9.88
Fort Carson	1	1	50	9.71
Fort Drum	0	0	39	10.00
USAG Hawaii	0	11	34	8.78
Fort Hood	0	4	38	9.52
Fort Irwin	0	15	39	8.61
Fort Lewis	0	12	30	8.57
Fort Polk	0	4	37	9.51
Fort Riley	0	3	30	9.55
Fort Stewart	0	21	25	7.72
Fort Wainwright	0	6	40	9.35
Yakima TC	0	7	34	9.15
HQ Army	2	101	543	9.19

Figure 3-2 Army Capability Chart and Scores

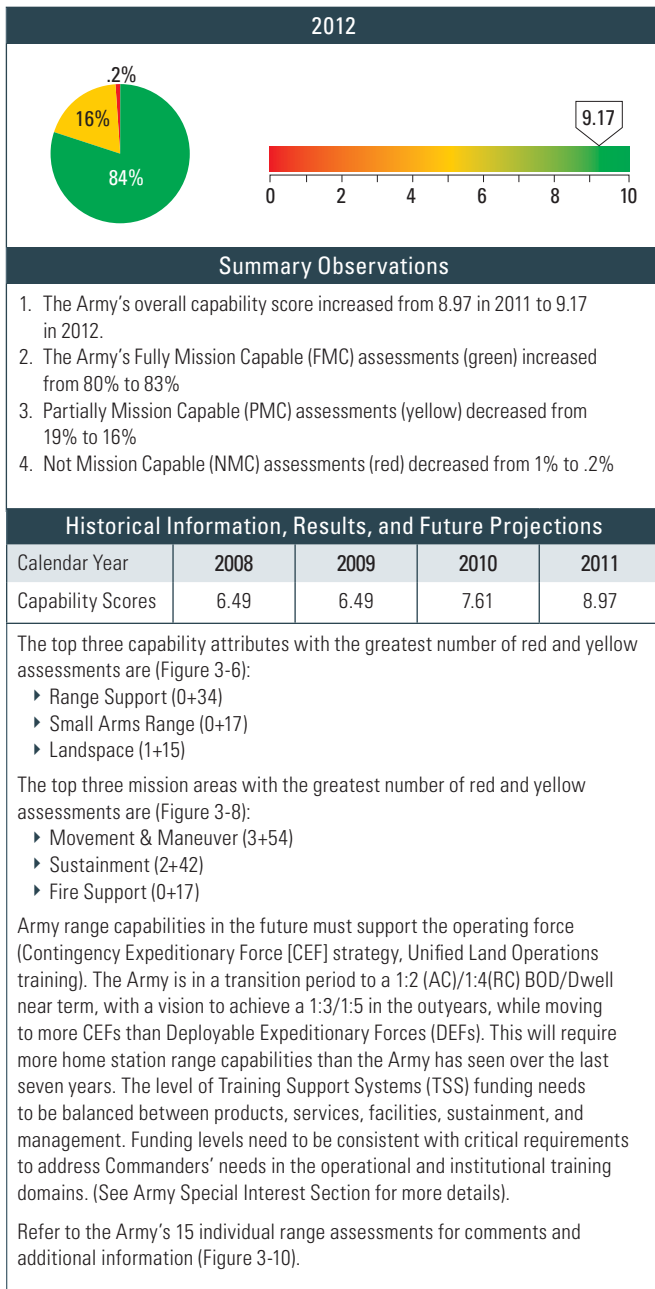


Figure 3-3 Army Encroachment Chart and Scores

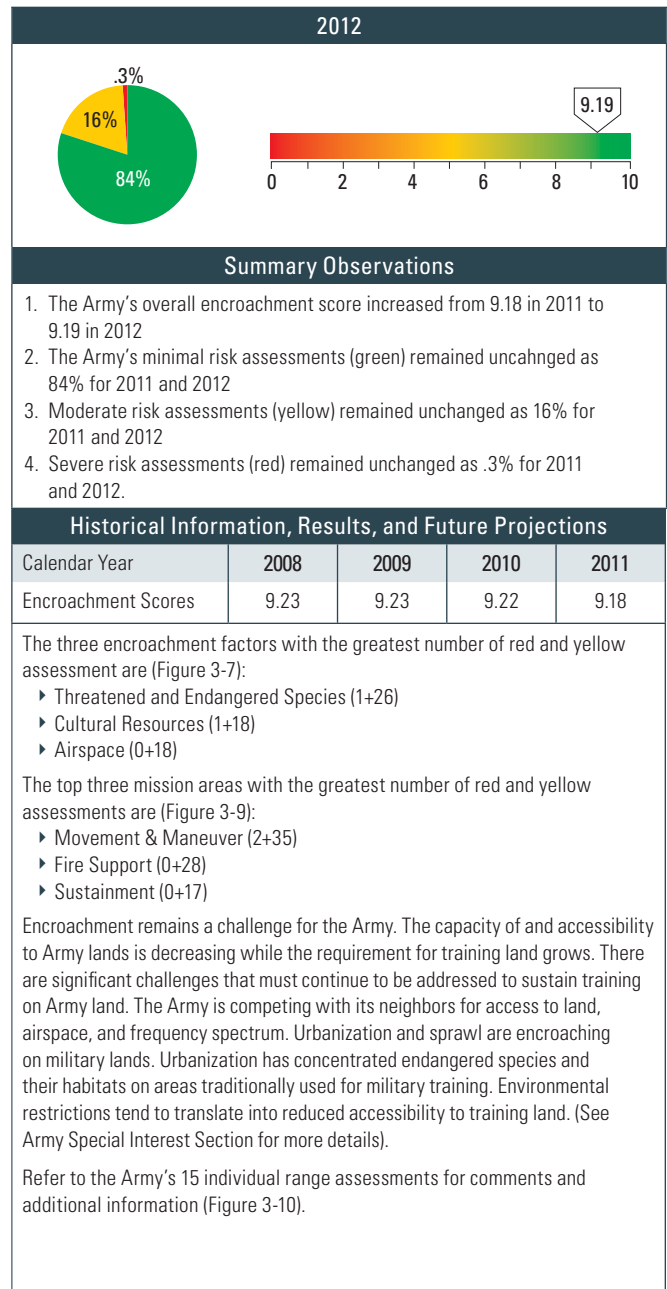


Figure 3-4 Army Capability Assessments by Range

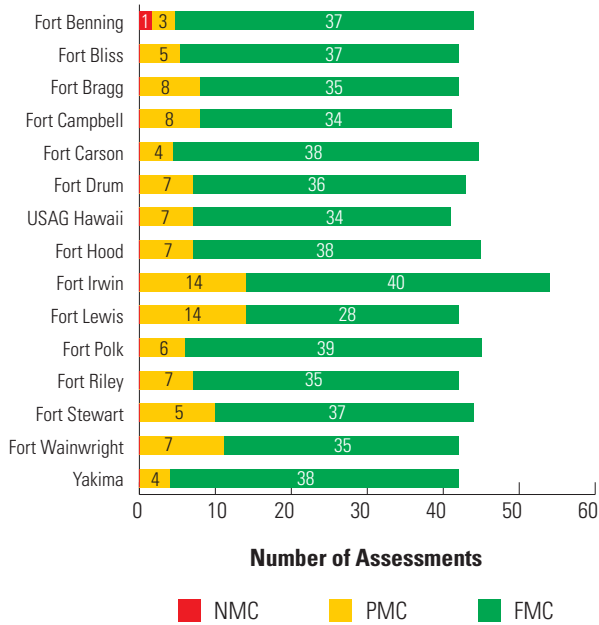


Figure 3-5 Army Encroachment Assessments by Range

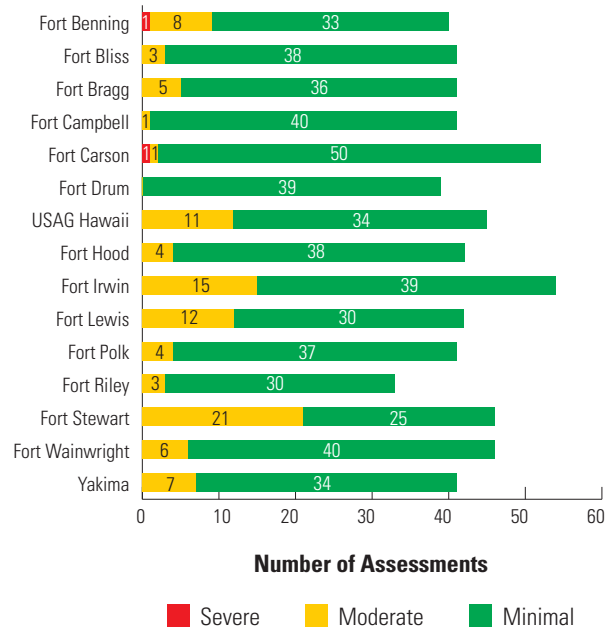


Figure 3-6 Army Capability Assessment by Attributes

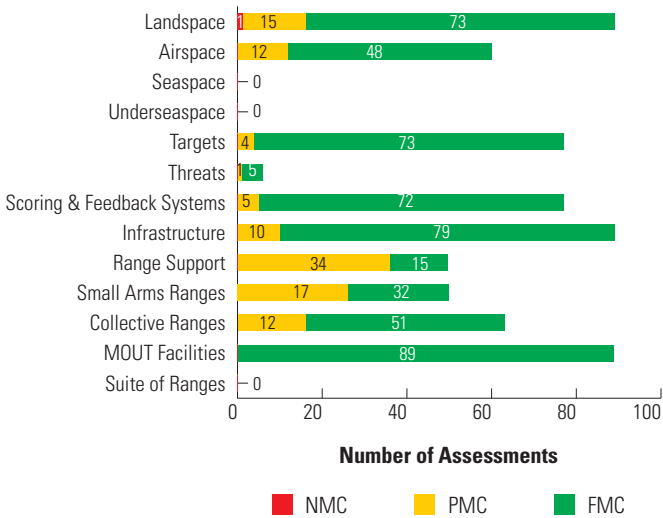


Figure 3-7 Army Encroachment Assessment by Factors

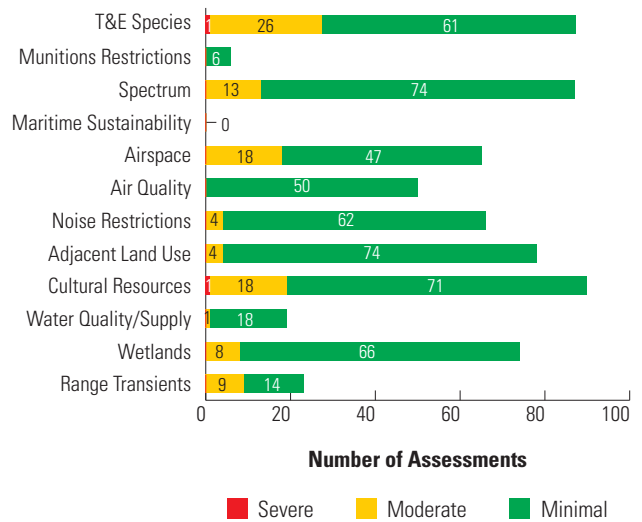


Figure 3-8 Army Capability Assessment by Mission Areas

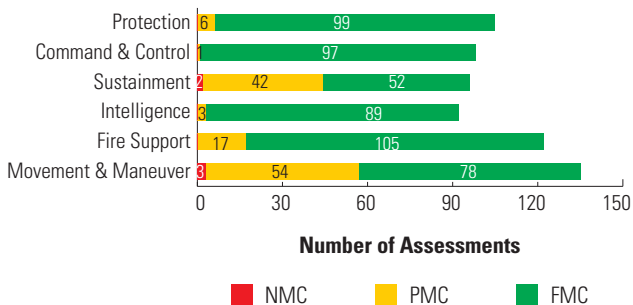
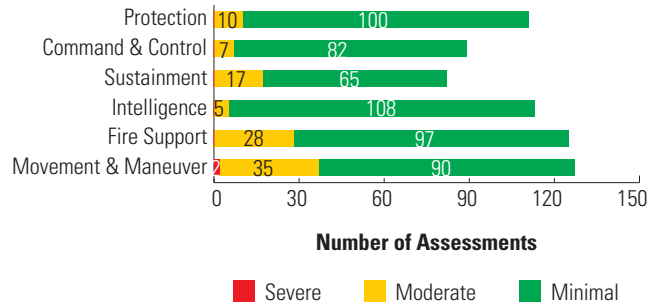


Figure 3-9 Army Encroachment Assessment by Mission Areas



Army Special Interest Section

Critical Issues: Range Capabilities

Force Realignment

In the past, Brigade Combat Teams (BCTs) from different installations deployed together, spreading the impact of ARFORGEN across a number of installations. As part of the nine month BOG policy described in Chapter 2, each BCT will be aligned to a “parent” division. This will result in most units on a given installation being on the same ARFORGEN cycle, placing ranges under a period of high demand, followed by periods of no demand when units are deployed. Additionally, Army end strength, force structure, and stationing changes will impact range demand and use dynamics. There will be fewer units; however, with OEF demand decreasing, there will be more units at home-station competing for finite range assets.

Manpower

FY2011 manpower reductions across the Army will adversely affect Army range operations and training land management functions across all installations. In range operations, 361 civilian authorizations were cut, representing a 17 percent reduction to the range operations civilian workforce; in training land management, 38 civilian authorizations were cut, representing a 56 percent reduction to the training land management civilian workforce. Over the past several years, significant efforts were made to bring civilian staff levels at installations into balance with the mission and training loads (Standard Garrison Organization) by FY2012. Efforts to further reduce costs and find efficiencies across DoD have resulted in reducing civilian staff to FY2010 levels, negating the good effects of the balanced SGO and creating a significant challenge in the Army’s ability to provide balanced support for range operations and training land management at key installations. This issue is further complicated by restrictions on outsourcing. The Army will have to rely on other means, such as soldier Skill Set Utilization (S3U), to support key functions at some installations; however, S3U is only an option when there is a direct correlation between Military Occupation Specialty (MOS) and garrison skills. At this time, no training support system functions have qualified for S3U.

U.S. Special Operations Command Training

USSOCOM owns no ranges or training areas; therefore, it is totally dependent on the Military Services for access to limited resources in high demand. The Army recognizes the importance of SPECOPS Forces access to Army ranges, and to date, Army installations have been able to accommodate the training requirements for USSOCOM units. USSOCOM units may have to compete for access to Army range assets as training throughput on all installations increases, due to

increased unit dwell time and home-station training requirements.

The Army’s primary focus has been to support U.S. Army Special Operations Command (USASOC) units. The Army range program has funded five USASOC-designed Military Construction Shoot Houses, a range complex in Okinawa, indoor ranges for each Special Forces Group, and incorporated USASOC capabilities in multi-use ranges when possible over the past five years. Four additional USASOC ranges are programmed. These include ranges at Eglin Air Force Base to exclusively support the 7th Special Forces Group, and plans for regional SPECOPS Forces training capabilities at Fort Bliss, Texas, Yakima Training Center, Washington, and Fort AP Hill, Virginia.

The Army will consider all USSOCOM requests to build dedicated ranges on a case-by-case basis. Army G-3/5/7 will continue to work with USASOC and USSOCOM to ensure adequate range access to the maximum extent possible.

Unmanned Aerial Systems

Currently, there are over 1,200 Army UAS platforms deployed in theater, which have flown in excess of one million hours in support of combat operations. The Army will train more than 2,100 UAS operators, maintainers, and leaders in FY2012 to keep pace with the prolific UAS growth. This is an 800 percent increase compared to the FY2003 training quota. Designating controlled airspace, and developing support facilities, ranges and training areas to support UAS training requirements in the near- and long-term remain major challenges facing the Army. The emerging UAS support requirements will impact home-station range and infrastructure requirements, increase the need for frequency deconfliction, and necessitate integration of UAS training into LVC training domains. The Army has published the U.S. Army UAS Roadmap (2010-2035) as well as the Unmanned Aircraft Systems Leader Development, Education, and Training Strategy. The purpose of these documents is to provide a broad vision for how the Army will develop, organize, employ, and train UAS systems and tactics across the full spectrum of operations.

Critical Issues: Encroachment

Competition for Range Space

Encroachment remains a challenge for the Army. Army’s land capacity and accessibility are decreasing at a time when training land requirements are growing. This is a significant challenge that must continually be addressed to sustain training capabilities, particularly as units redeploy from theater and home-station training requirements increase. The Army is competing with its neighbors for access to land, airspace, and frequency spectrum. Urbanization and sprawl have reduced the amount of available habitat for many species.

Accordingly, much of the remaining habitat for listed and at-risk species now remains on installation lands. Installation lands are thus becoming “islands of biodiversity.” Environmental restrictions tend to translate into reduced accessibility to training land.

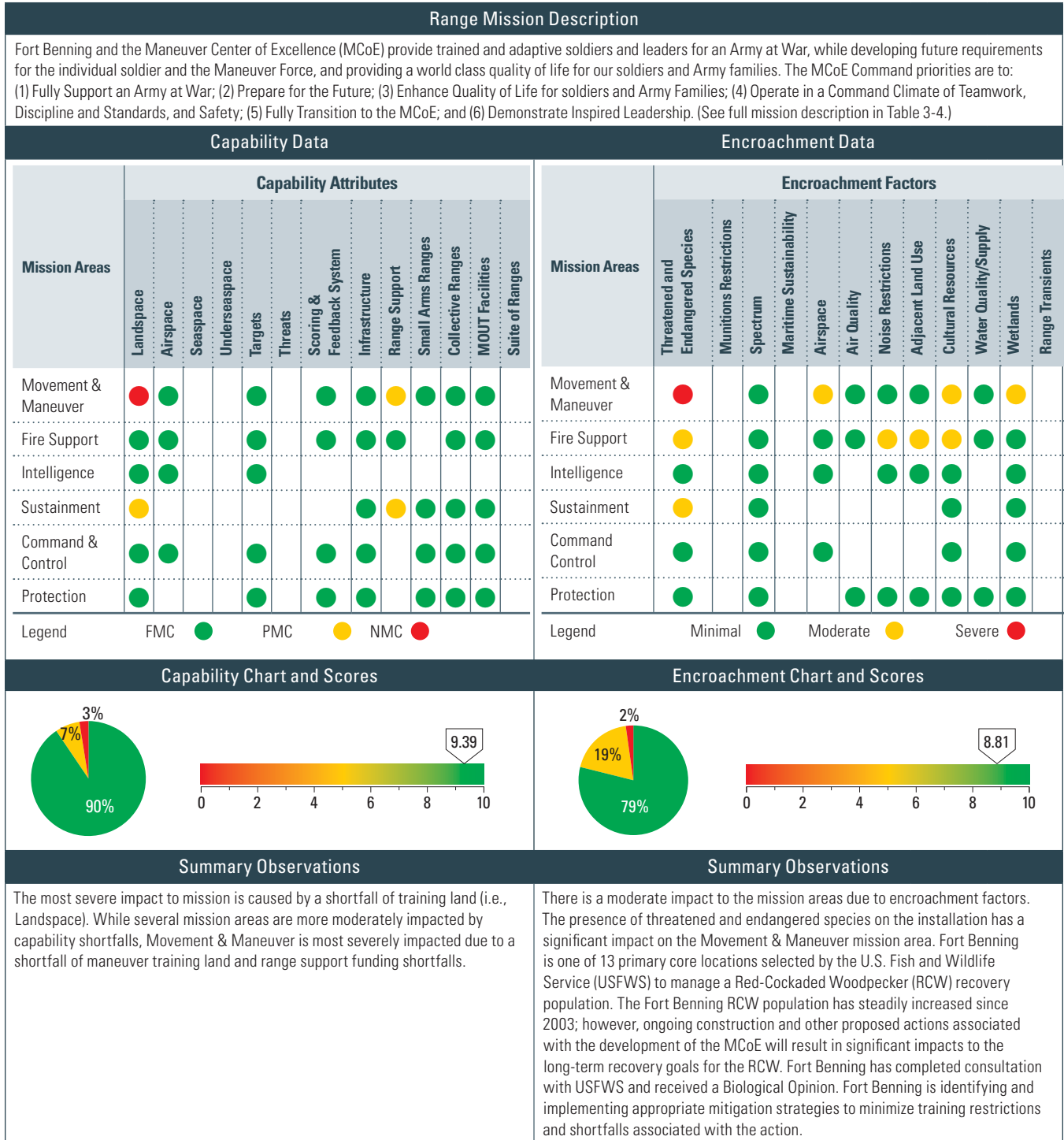
Alternative Energy Projects

The nation’s increasing emphasis on energy security and renewable energy sources has increased the number of energy infrastructure projects that have the potential to impact Army training and testing. These energy initiatives include wind turbines, new energy corridors for gas/oil pipelines and high capacity transmission lines, solar arrays, and geothermal projects. The projects are being driven internally by the Army as sponsored projects on its installations, and externally by other federal agencies, such as BLM and private developers. To date, relatively few alternative energy projects have had a negative effect on Army range capabilities; however, a small number of projects have had the potential for significant impact. Continued support and diligence is necessary to ensure that renewable energy projects receive a thorough review for their potential to have serious negative impacts on Army missions and training capability.

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Figure 3-10 Army Capability and Encroachment Assessment Detail

Fort Benning Assessment Details



Fort Benning Assessment Details

Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	6.33	6.33	7.56	8.41	Encroachment Scores	8.25	8.25	8.72	8.72
<p>Capabilities have generally improved at Fort Benning over the past several years, primarily due to increases in range support funding levels. Recent manpower reductions will cause a 20% cut in range operations starting in FY2012. A shortfall of maneuver training land continues to impact mission capability; however, Fort Benning has been granted permission to study the purchase of 82,800 acres of additional training land to help alleviate the maneuver training land shortfall. Recent improvements in capability are the result of range project completions.</p>					<p>Encroachment factors have historically had a moderate impact on the mission at Fort Benning. While the installation has been able to manage and mitigate many encroachment impacts, it is anticipated that increased population growth around the installation is going to continue and will result in more significant encroachment impacts in the future. Increased urban development and population growth impacts water quality, increases wildlife habitat fragmentation, and increases the likelihood of noise/dust complaints. As Fort Benning tries to cope with this encroachment by limiting the type and amount of training in the vicinity of the installation boundary, the land available for training is reduced. Additionally, water quality issues will be a major challenge for the Maneuver Center of Excellence (MCoE) as heavy training begins in the Spring of FY12. The dedicated maneuver training area for the MCoE is highly susceptible to erosion. The combination of severe rain events, combined with existing, impaired state waterways, places maneuver training at risk in the future. The Army has identified erosion control measures that will help reduce the risk of Clean Water Act violations, but may not be able to totally eliminate them without impacts to training. A reduction of available training area reduces the opportunities to rotate training areas to minimize the effects of training activities and increases the amount of training in areas with fragile habitat. This encroachment is minimizing Fort Benning's options and ability to balance mission and stewardship requirements. Fort Benning has permission to study the purchase of 82,800 acres of additional training land as a possible option to help mitigate this problem.</p>				

Fort Benning Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landscape	Movement & Maneuver	●	Fort Benning has a doctrinal training land shortfall that has been documented in accordance with AR 350-19. There is not enough training land to accommodate the Armored Reconnaissance Course (ARC), Ranger Training Brigade (RTB), or the additional training space needed to support a heavy maneuver battalion and the other TRADOC, FORSCOM, and USASOC tenant units. Funding is being programmed in support of a training land purchase at Fort Benning starting in FY2011. Fort Benning is also pursuing other strategies, including partnerships with the Tri-County governments in the Army Compatible Use Buffer/Joint Land Use Study (ACUB/JLUS) programs and has begun funding opportunities for these programs.
	Sustainment	●	Same as above.
Range Support	Movement & Maneuver	●	Recent manpower reductions will cause a 20% cut in range operations starting in FY2012. This will limit installation support for short-term training requests, such as range reconfiguration projects to support emerging tactics, techniques, and procedures; and preventative maintenance. Fort Benning is not able to accommodate unscheduled training events, which limits its training flexibility. Fort Benning will continue to work with units to support both institutional and tactical unit training to the greatest extent possible.
	Sustainment	●	Same as above.

Figure 3-10 Army Capability and Encroachment Assessment Detail (continued)

Fort Benning Detailed Comments

Encroachment Observations

Attributes	Assigned Training Mission	Score	Comments
Threatened & Endangered Species	Movement & Maneuver	●	There are five threatened and endangered species and 96 species of “conservation concern” on Fort Benning. Persistent restrictions deny access to 450+ acres and the buffer areas on Fort Benning. Numerous definitions of restrictions have placed unusually difficult conditions on five ranges, and resulted in a loss of capability to conduct live fire platoon movements to contact tasks since 2010. MCoE construction efforts have resulted in a Jeopardy Biological Opinion for the installation. The Army is implementing appropriate mitigation strategies to avoid training shortfalls; however, the Army anticipates an increase in restrictions when the MCoE move to Fort Benning is complete.
	Fire Support	●	Same as above.
	Sustainment	●	Same as above.
Airspace	Movement & Maneuver	●	Current airspace limitations restrict participation of high performance, fixed wing aircraft in joint training exercises. Current spatial capability attributes make it difficult to contain high performance aircraft during joint training exercises involving Close Air Support. The proposed training land expansion will enable the follow-on expansion of airspace to ease restrictions by FY2015.
Noise Restrictions	Fire Support	●	Firing of weapons .50 caliber or greater is restricted. Units must notify the installation Public Affairs Office of any firing during restricted hours; information is then distributed through the local news media and local governments. This reduces unit training flexibility and impacts range scheduling. The Army Compatible Use Buffer (ACUB) program proactively addresses encroachment, while achieving conservation objectives through the purchase of conservation easements or land from willing owners. These efforts have lessened the problem. Public outreach has also mollified the affected general public. The encroachment problem will continue to lessen due to the collaborative efforts of the installation.
Adjacent Land Use	Fire Support	●	Residential and commercial development is increasing along the western and northwestern boundaries of the installation. Live fire activities increase perceived noise pollution, and tracked vehicle movement increases the perceived air pollution and erosion potential to surrounding property. These perceptions minimize the installation’s efforts and options and affects its ability to balance mission requirements and stewardship success. The ACUB program proactively addresses encroachment while achieving conservation objectives through the purchase of conservation easements or land from willing owners. These easements prohibit incompatible development in perpetuity, yet still accommodate low impact uses, such as farming and forestry. The Nature Conservancy, Fort Benning’s partner in coordinating habitat conservation planning, has initially acquired 7,500 acres of buffer, primarily along the installation’s eastern and northeastern perimeter. The buffer was created through a combination of conservation easements and conservation focused land acquisitions. These actions will lessen the impact of developmental encroachment. It is expected that the encroachment issue will remain, however, for the western and northwestern boundaries for the foreseeable future.
Cultural Resources	Movement & Maneuver	●	There are 3,974 cultural resource sites encompassing 7,420 acres on post. 3,995 acres are currently restricted from use for any ground disturbing activity and an additional 2,747 acres are expected to be restricted from use for ground disturbing activity. Additionally, 726 acres are expected to be included in the National Register of Historic Places. Training activities are limited or completely restricted on this acreage due to the potential for generation of conditions that may affect sensitive cultural resource sites. This is an ongoing issue; however, integrated planning and management at the installation helps to balance mission training requirements with Federal, State, and local environmental compliance laws, restrictions, and regulations.
	Fire Support	●	Same as above.
Wetlands	Movement & Maneuver	●	There are 16,926 acres of wetlands within the installation boundary that impose training restrictions. Wetland areas are off limits to heavy maneuver training and result in a loss of maneuver training land. Floodplains are distributed fairly evenly throughout the installation and present development constraints, resulting in the loss of available maneuver land. Additionally, wetlands require the construction of crossing sites, which artificially channel training and hinder realistic maneuver. This is an ongoing issue; however, the Fort Benning Integrated Training Area Management (ITAM) program is continually working to provide the policy and program guidance to balance mission training requirements with Federal, State, and local environmental compliance laws, restrictions, and regulations.

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Figure 3-10 Army Capability and Encroachment Assessment Detail (continued)

Fort Bliss Assessment Details

Range Mission Description																											
Fort Bliss provides major training facilities for the 1st Armored Division, Mobilization Platform, and mobilization and deployment training in support of First Army. Ranges and training areas also support daily air-to-ground sorties from Holloman AFB and other regional Air Force installations. Ranges and training areas further support Foreign Military Sales (FMS) cases for the Japanese, Germans, Dutch, Canadians, and others requesting exercises at the installation.																											
Capability Data							Encroachment Data																				
Mission Areas	Capability Attributes										Mission Areas	Encroachment Factors															
	Landpace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges		Collective Ranges	MOUT Facilities	Suite of Ranges	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients	
Movement & Maneuver	●	●			●		●	●	●	●	●	●	●	Movement & Maneuver	●		●		●	●	●	●	●	●	●	●	
Fire Support	●	●			●		●	●	●			●	●	Fire Support	●		●		●	●	●	●	●	●	●	●	●
Intelligence	●	●			●		●	●				●	●	Intelligence	●		●		●	●	●	●	●	●	●	●	●
Sustainment	●						●	●	●	●	●	●	●	Sustainment	●		●							●	●	●	●
Command & Control	●	●			●		●	●				●	●	Command Control	●		●		●					●	●	●	●
Protection	●				●		●	●	●	●	●	●	●	Protection	●		●		●	●	●	●	●	●	●	●	●
Legend	FMC ● PMC ● NMC ●													Legend	Minimal ● Moderate ● Severe ●												
Capability Chart and Scores							Encroachment Chart and Scores																				
Summary Observations							Summary Observations																				
The most adverse impact to mission is due to the current lack of Collective Ranges capability. While several mission areas are impacted by capability shortfalls, Movement & Maneuver is most severely impacted due to infrastructure shortfalls at Oro Grande Base Camp, Range Support funding shortfalls, and lack of Collective Ranges capability during construction.							There is minimal impact to the mission areas due to encroachment factors. Spectrum interference has a moderate impact on the Movement & Maneuver, Sustainment, and Command and Control missions areas, due to a reduction in the number of voice channels available for emergency services, range control, and other users.																				
Historical Information, Results, and Future Projections							Historical Information, Results, and Future Projections																				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011													
Capability Scores	4.78	4.78	7.33	9.17	Encroachment Scores	10.00	10.00	9.02	9.63	Calendar Year	2008	2009	2010	2011													
Capabilities have generally improved at Fort Bliss over the past several years. Range Support funding levels increased in FY2011, however, recent manpower reductions will cause a 20% cut in range operations starting in FY2012. Fort Bliss has some current capability and throughput shortfalls due to construction activities that close down Collective Ranges; however, these impacts are being addressed and mitigated. Small Arms Range construction has been completed and Collective Range capability will improve when current construction is complete.							Encroachment Factors have not historically impacted the mission at Fort Bliss. Moderate impacts resulting from Spectrum interference have developed over the past year. These impacts are being managed and mitigated at the installation level, and are expected to improve in the future.																				

Fort Bliss Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Infrastructure	Movement & Maneuver	●	Oro Grande Base Camp lacks sufficient facilities to accommodate unit training densities (e.g., billets, DFAC). Due to lack of facilities, units incur additional travel days to transport from home station. The installation has recommended purchasing prefabricated buildings.
Range Support	Movement & Maneuver	●	Recent manpower reductions will cause a 20% cut in range operations starting in FY2012. This will limit installation support for short-term training requests; range reconfiguration projects to support emerging tactics, techniques, and procedures; and preventative maintenance.
	Sustainment	●	Same as above.
Collective Ranges	Movement & Maneuver	●	Collective gunnery ranges will be under construction during FY2010–FY2015. Limited ranges reduce throughput capability to support annual gunnery requirements. Two temporary Multi-Purpose Training Ranges (MPTRs) were built to support current unit requirements until future projected ranges are completed.
	Fire Support	●	Collective gunnery ranges will be under construction during FY2010–FY2015. Limited ranges reduce throughput capability to support annual gunnery requirements. The installation altered the prescribed construct of 6 firing groups into 23 separate firing boxes to increase maneuverability and flexibility in facilitating fire support missions for fire support events.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Spectrum	Movement & Maneuver	●	The currently allocated spectrum is approximately 70% of the future operationally required spectrum. Additionally, the frequency spectrum must be shared with Mexico. Interference from Mexico on the UHF band sometimes interferes with the trunked Land Mobile Radio System (LMRS) at Fort Bliss, which reduces the number of voice channels available for emergency services, range control, and other users. The installation's mitigation strategy is to share frequencies and deconflict available spectrum. The DoD Area Frequency Coordinator (AFC) is working to issue single Radio Frequency Authorizations (RFAs) that include frequency assignments for operations at Fort Bliss, WSMR, and/or Holloman AFB. All frequencies will be scheduled and deconflicted in the Integrated Frequency Deconfliction System (IFDS) database. Spectrum managers at each installation will submit requests for new permanent frequency assignments, as required.
	Sustainment	●	Same as above.
	Command & Control	●	Same as above.

Figure 3-10 Army Capability and Encroachment Assessment Detail (continued)

Fort Bragg Assessment Details

Range Mission Description																										
Fort Bragg provides major training facilities, to include ranges and training areas, non-firing activities, airborne/air operations and training land/airspace use on Camp MacKall in support of DoD organizations; the mission of the USASOC/XVIII ABN Corps and 82nd Airborne Division, and their operational forces; and mobilization and force modernization.																										
Capability Data							Encroachment Data																			
Mission Areas	Capability Attributes										Mission Areas	Encroachment Factors														
	Landscape	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges		Collective Ranges	MOUT Facilities	Suite of Ranges	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
Movement & Maneuver	●	●			●		●	●	●	●	●	●		●		●		●	●	●	●	●	●	●	●	
Fire Support	●	●			●		●	●	●			●		●		●		●	●	●	●	●	●	●	●	
Intelligence	●	●			●		●	●				●		●		●		●	●	●	●	●	●	●	●	
Sustainment	●						●	●	●	●	●	●		●		●					●	●	●	●	●	
Command & Control	●	●			●		●	●				●		●		●		●			●	●	●	●	●	
Protection	●				●		●	●	●	●	●	●		●		●		●	●	●	●	●	●	●	●	
Legend	FMC ●		PMC ●		NMC ●		●		●		●		Legend		Minimal ●		Moderate ●		Severe ●		●		●		●	
Capability Chart and Scores							Encroachment Chart and Scores																			
Summary Observations							Summary Observations																			
<p>The most adverse impact to mission is caused by a shortfall of training land (i.e., Landscape), Airspace, and Collective Ranges. While several mission areas are impacted by capability shortfalls, Movement & Maneuver and Sustainment are most severely impacted, due to a training land shortfall, lack of restricted airspace to support UAS training, and the shortfall of a Multi-Purpose Machine Gun (MPMG) Range and an Aerial Gunnery Range.</p>							<p>There is very little impact to the mission areas due to encroachment factors. Spectrum and Airspace limitations have a moderate impact on the Command and Control Mission, due to scheduling conflicts and radio bleedover issues.</p>																			
Historical Information, Results, and Future Projections							Historical Information, Results, and Future Projections																			
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011																	
Capability Scores	6.33	6.33	7.56	8.84	Encroachment Scores	10.00	10.00	9.02	9.39																	
<p>Capability has improved at Fort Bragg over the past several years. Impacts resulting from the shortfall of training land (i.e., Landscape) have become more significant and can no longer be fully mitigated by the installation. Additionally, as more Unmanned Aerial Systems (UASs) are fielded and restricted airspace remains the same, the installation's ability to fully support all aviation training is reduced. It is anticipated that additional UAS fielding will continue to be a challenge for the installation into the future.</p>							<p>Encroachment impacts have generally improved at Fort Bragg over the last several years. Previous encroachment impacts caused by noise restrictions and adjacent land use have been adequately managed through installation mitigation measures and no longer cause significant impacts to the training mission. The need for additional fielding of UASs in the outyears will likely increase impacts felt by the installation due to the lack of Spectrum and restricted airspace. The Army Compatible Use Buffer (ACUB) Program is a key component of working to protect vital Army aviation and small unit training areas/training activities, as well as preserving intact Longleaf Pine forest habitat for foraging and nesting of the endangered Red-Cockaded Woodpecker (RCW). Development of adjacent property would sever connections between existing training areas, destroy RCW corridor habitat, and threaten fire management of the surrounding lands that provide critical soldier training for Fort Bragg.</p>																			

Fort Bragg Detailed Comments

Capability Observations

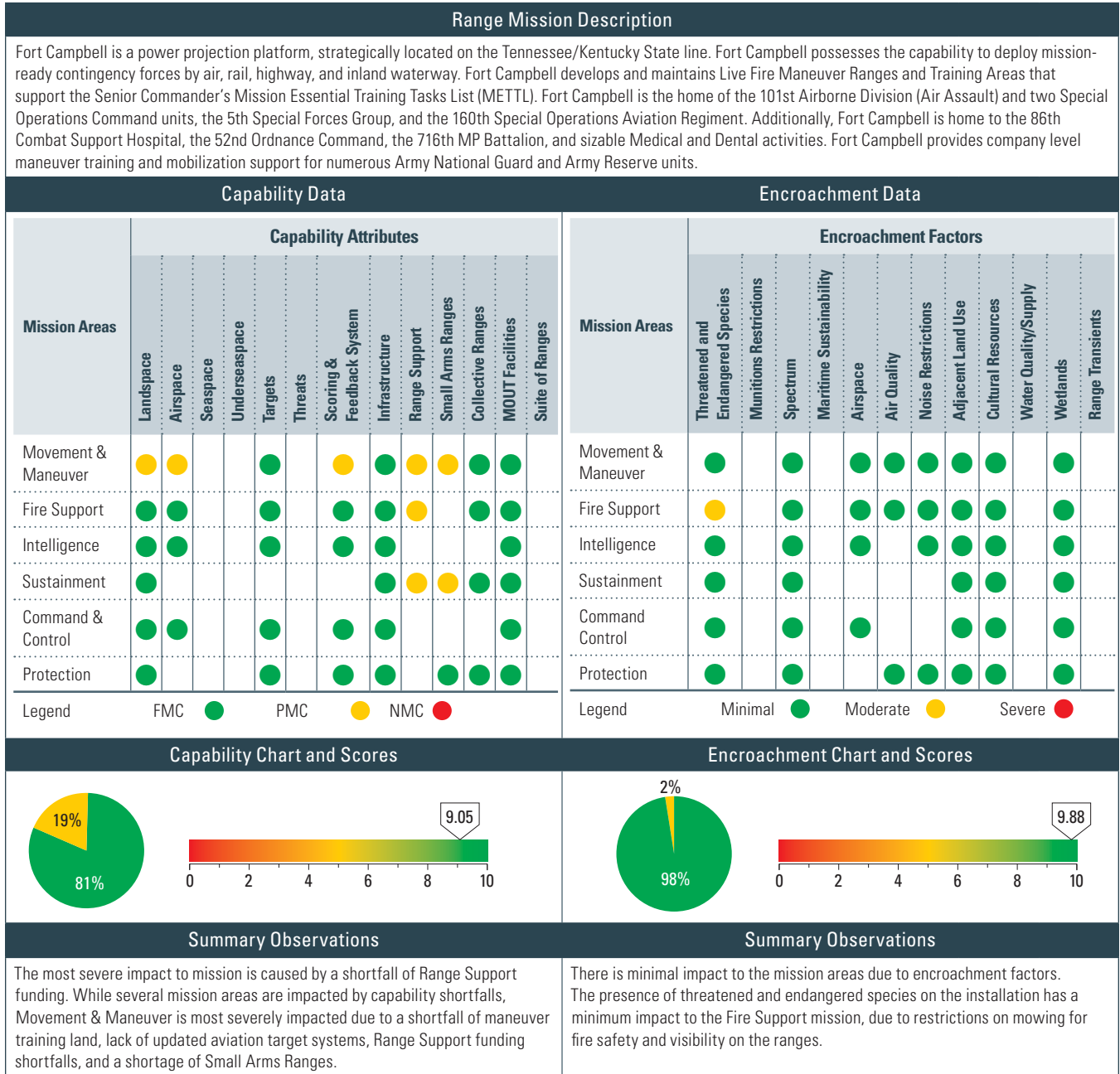
Attributes	Assigned Training Mission	Score	Comments
Landscape	Movement & Maneuver	●	Fort Bragg has a 100,000+ acre shortfall of training land, based on Army doctrine. Lack of training land results in units having to conduct maneuver training events off of the installation. This results in reduced training time and increased op-tempo costs. No planned mitigation will allow units to continue to train off post at this time.
	Sustainment	●	Fort Bragg has a 100,000+ acre shortfall of training land, based on Army doctrine. The shortfall of training land means units lack the ability to stretch lines of support, and train individual drivers and crews. Additionally, the shortfall causes units to look off the installation for additional training lands. The installation is mitigating this deficiency by allowing units to continue to train off post and incorporate live/virtual training.
Airspace	Movement & Maneuver	●	Fixed wing operations conflict with live fire maneuver operations. Congested airspace bleedover creates check fires for maneuver elements conducting live fire operations until the aircraft is clear from the airspace. The installation is mitigating this deficiency by deconflicting maneuvers and aviation training with time/space separation.
	Intelligence	●	There is a shortfall of restricted airspace to support increased UAV/UAS training, while also supporting manned aircraft. Scheduling conflicts exist between UAV/UAS and other aircraft in the vicinity. The installation is mitigating this deficiency by using more vertical/lateral separation, and installing additional delays in other aircraft entering the restricted area.
Range Support	Movement & Maneuver	●	Recent manpower reductions will cause a 20% cut in range operations starting in FY2012. This will limit installation support for short-term training requests; range reconfiguration projects to support emerging tactics, techniques, and procedures; and preventative maintenance. Additional funding allocated in FY2011 is a start. The installation expects to need more funding in FY2012 as training days on ranges significantly increase.
	Sustainment	●	Same as above.
Collective Ranges	Fire Support	●	Fort Bragg has a shortfall of one Aerial Gunnery Range (AGR). Units are not able to conduct aerial gunnery to the Army standard. Construction on an AGR will commence in 2015.
	Sustainment	●	Same as above.

Encroachment Observations

Attributes	Assigned Training Mission	Score	Comments
Threatened & Endangered Species	Movement & Maneuver	●	Endangered species restrictions limit maneuver areas. Units have a smaller area to conduct maneuvers and operational training. Certain maneuver restrictions around RCW clusters are scheduled to be removed in 2012. Currently, units must consider endangered species when planning training and operational movements.
Spectrum	Command & Control	●	There is inadequate frequency spectrum to support increased UAV/UAS in the airspace. Any increase in UAS employment increases demand for frequency ranges (i.e., no bleedover). The installation is mitigating this deficiency by using lateral separation to prohibit radio bleedover.
Airspace	Intelligence	●	Intelligence, Surveillance and Reconnaissance (ISR) assets cannot enter or maneuver in congested airspace as desired. Airspace is already congested with multiple customers, causing lack of maneuverable airspace for ISR platforms. The installation is mitigating this deficiency by deconflicting remaining airspace using time/space.
	Command & Control	●	Command and Control assets cannot enter or maneuver in congested airspace as desired. Airspace is already congested with multiple customers. The installation is mitigating this deficiency by deconflicting remaining airspace using time/space.
Cultural Resources	Movement & Maneuver	●	Cultural resources and historic sites restrict maneuver areas. Each selected site requires a survey before any earth disturbing activity occurs. Units have reduced operating space to conduct maneuver and operational training in a restricted maneuver area, thus reducing training scenarios and training realism. There is no current plan to lift these restrictions. Units must consider cultural resources and historic sites when planning training and operational movements.

Figure 3-10 Army Capability and Encroachment Assessment Detail (continued)

Fort Campbell Assessment Details



Fort Campbell Assessment Details

Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	5.22	5.22	7.00	9.05	Encroachment Scores	10.00	10.00	10.00	9.88
<p>Capabilities have generally improved at Fort Campbell over the past several years. Range support funding levels have increased and Fort Campbell has mitigated MOUT facility throughput, shortfalls internally. Shoot-house construction currently meets training needs, but if lead-free slug (LFS) fielding takes place to support Home Station Training, there will likely be an impact to the installation's capability to meet requirements for MOUT Facility throughput, due to concerns about use of the LFS in sandfilled shoot-houses. Lack of restricted airspace continues to be a concern and will limit the installation's ability to replicate the operational environment for Warrior UAS training in FY2012 when the system is fielded.</p>					<p>Encroachment factors have not historically impacted the mission at Fort Campbell. Minimal impacts resulting from rare species habitat on the installation have developed over the past year, but are being managed successfully through coordination with USFWS. Current impacts are expected to be resolved and future impacts are not anticipated. Fort Campbell has also worked to actively implement the Army Compatible Use Buffer (ACUB) Program to ensure encroachment does not impact the future mission of the installation. Current ACUB efforts are focused on protecting the flight approach of the installation's primary operational airfield, Campbell Army Airfield, and buffering the small arms impact area to ensure long-term capability to support the training mission.</p>				

Fort Campbell Detailed Comments

Capability Observations

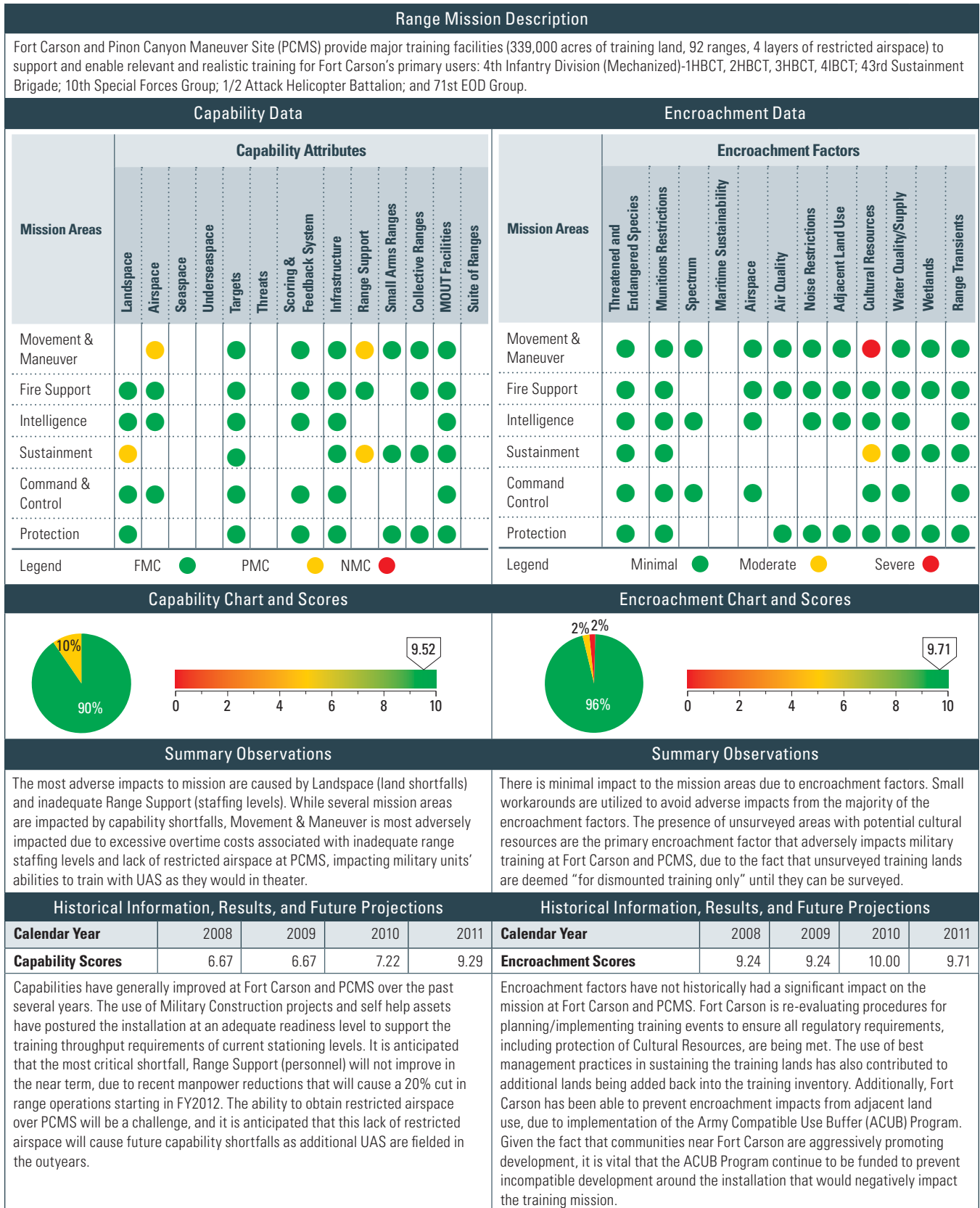
Attributes	Assigned Training Mission	Score	Comments
Landspace	Movement & Maneuver	●	There is a shortfall of available maneuver training land to meet doctrinal maneuver training requirements. Unit maneuver training is limited and movement is constrained to short 1-3 kilometer movements, depending on which training area the unit is assigned to. Simultaneous maneuvering for multiple, company sized units at doctrinal distances is constrained. Op-tempo costs are increased for units that travel to other locations to accomplish training events. Fort Campbell is partnering with Fort Knox for training allocation of maneuver land and ranges.
Airspace	Movement & Maneuver	●	There is limited controlled airspace over the installation. Limited airspace restricts the ability of units to conduct air training exercises to doctrinal standards in terms of dispersion, flight techniques, and integration with other assets, such as UAS. Fort Campbell is partnering with Fort Knox and other training sites to meeting training needs.
Scoring & Feedback System	Movement & Maneuver	●	The installation does not have an assigned Aviation Weapon Scoring System (AWSS) to support the two Combined Aviation Brigades and Task Force 160, Special Operations Aviation Regiment. Weapons qualification is dependent on subjective scoring (e.g., line of sight) that does not meet Army standards for qualification. Aviation units do not get consistently accurate feedback when qualifying. The Army has scheduled a rotating AWSS for temporary use at the installation.
Range Support	Movement & Maneuver	●	Recent manpower reductions will cause a 20% cut in range operations starting in FY2012. This will limit installation support for short-term training requests; range reconfiguration projects to support emerging tactics, techniques, and procedures; and preventative maintenance.
	Fire Support	●	Same as above.
	Sustainment	●	Same as above.
Small Arms Ranges	Movement & Maneuver	●	The installation has a deficit of two machine gun ranges and three small arms ranges in FY2011. Unit training time is reduced and op-tempo costs are increased for units that have to travel to other locations to accomplish training events. Military Construction, Army (MCA) funding is programmed in FY2016 and FY2017 to construct additional ranges.
	Sustainment	●	Same as above.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Threatened & Endangered Species	Fire Support	●	The Henslow's and Bachman's Sparrow nesting habitat is present in the training area. During May-August, training land management actions (e.g., mowing, vegetation removal) are restricted and training use is reduced due to safety concerns (e.g., fire hazards, visibility). The installation is coordinating with regional U.S. Fish and Wildlife Service elements to minimize restrictions and address training impacts.

Figure 3-10 Army Capability and Encroachment Assessment Detail (continued)

Fort Carson Assessment Details



Fort Carson Detailed Comments

Capability Observations

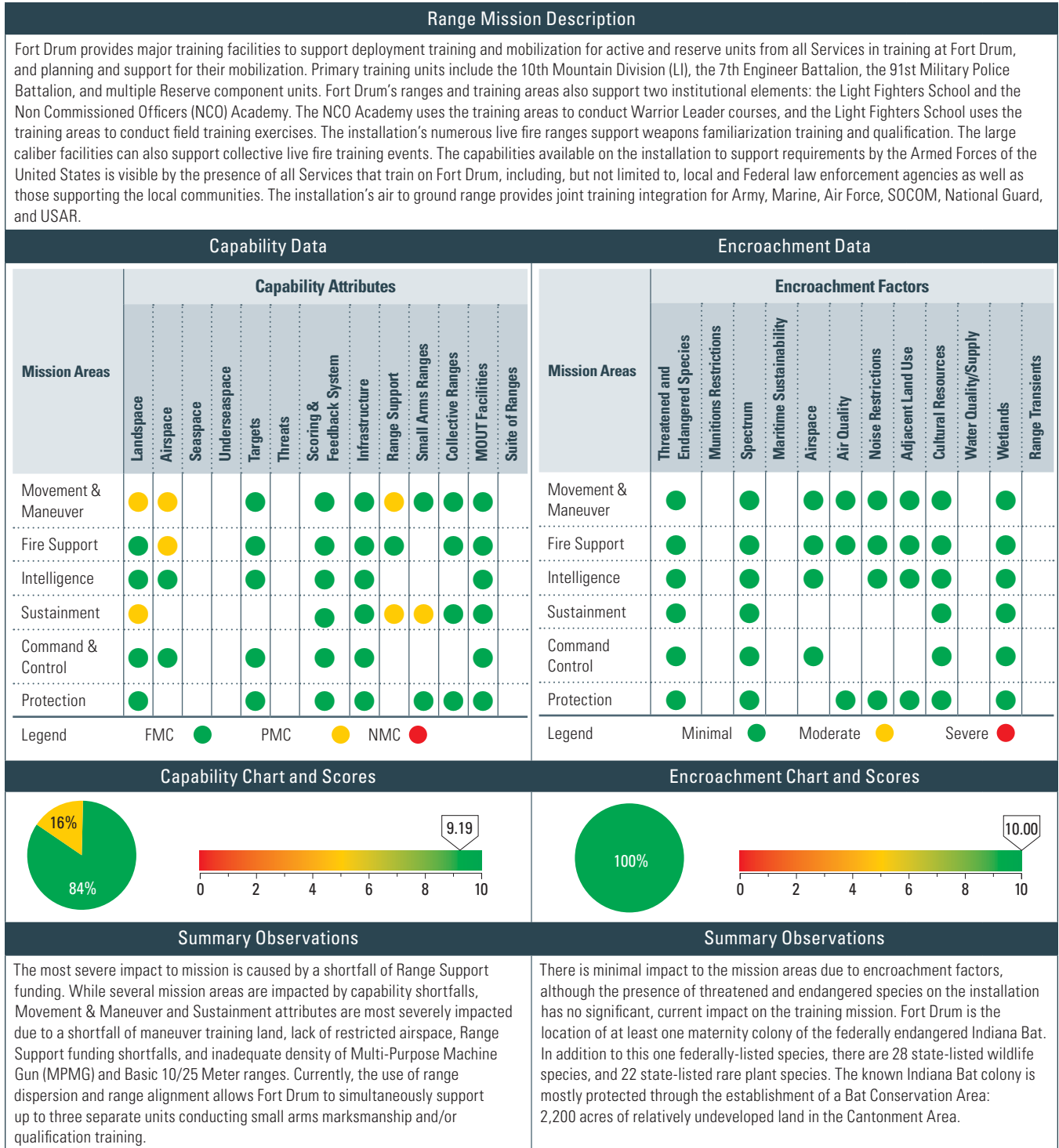
Attributes	Assigned Training Mission	Score	Comments
Landscape	Sustainment	●	Fort Carson and PCMS have a doctrinal training land shortfall documented in accordance with AR 350-19. As units re-deploy for theater, Brigade and Battalion sized elements will not have adequate training land to maneuver to doctrinal standards simultaneously. Given current deployment rotations, the training land shortfall is not causing an adverse impact to training. The 4ID Commanding General's guidance is to perform Brigade level maneuver and Battalion level live fire at the Combat Training Centers. This guidance will relieve the shortfall of required doctrinal training land.
Airspace	Movement & Maneuver	●	PCMS currently has no restricted airspace and cannot support UAS training above Raven at 1500ft AGL. Units cannot use other UAS assets and, therefore, cannot train as they fight. The installation is executing the necessary steps and procedures to seek to obtain restricted airspace. Meanwhile, units execute UAS training at Fort Carson and simulate UAS operations at PCMS.
Range Support	Movement & Maneuver	●	Recent manpower reductions will cause a 20% cut in range operations starting in FY2012. This will create excessive overtime requirements to sustain prolonged training and enable support of mission requirements.
	Sustainment	●	Same as above.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Cultural Resources	Movement & Maneuver	●	Fort Carson and PCMS possess training lands that have not been surveyed for cultural resources, and training on this land is limited to dismounted training only. Restrictions cause limitations to large scale maneuver exercises. Additionally, all efforts to utilize restricted areas for training require time and resources to work through the Section 106 consultation process. Fort Carson is slowly working towards 100% survey completion. The installation is also working towards a Programmatic Agreement with the State Historic Property Office to ease the burden and overhead of all efforts going through the Section 106 consultation process.
	Sustainment	●	Same as above.

Figure 3-10 Army Capability and Encroachment Assessment Detail (continued)

Fort Drum Assessment Details



Fort Drum Assessment Details

Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	5.11	5.11	8.15	9.19	Encroachment Scores	9.10	9.10	10.00	10.00
<p>Capabilities have generally improved at Fort Drum over the past several years. Range support funding levels increased in FY2011; however, recent manpower reductions will cause a 20% cut in range operations starting in FY2012. Fort Drum training areas and ranges currently have capacity, when funded to requirements, to support ARFORGEN individual and collective live, virtual, constructive, and gaming training requirements for the 10th Mountain Division and assigned Brigade Combat Teams/Brigade Headquarters, along with tenant units and aligned units.</p>					<p>Encroachment factors have not historically had a significant impact on the mission at Fort Drum. Over the past several years, impacts resulting from noise restrictions and adjacent land use have been mitigated through public outreach efforts and use of the Army Compatible Use Buffer (ACUB) Program. However, encroachment impacts to the mission are expected over the next several years, if proactive actions through the ACUB Program are not taken. Population growth is anticipated at Fort Drum's southwest border. Also, Section 801 housing lease agreements have ended, resulting in immediate demand for alternative housing. Three parcels targeted for ACUB easements in FY2011 will buffer Fort Drum in an area where housing stock has increased significantly. The pressure to build additional homes near Fort Drum is impacted by 48% population growth. Over 400 new homes were built near ACUB priority areas in 2008, with an additional 700 proposed. Two potential ACUB sites will reduce this development pressure on the western border. Significant development in the vicinity of Wheeler-Sack Army Airfield will pose human health and safety issues that could limit, if not eliminate, the use of approaches and departure procedures, and severely impact the external load training of assigned rotary-wing aircraft. In addition to residential development pressure, wind energy development also poses a potential and significant threat to Army aviation training and radar (electro magnetic) operations at Fort Drum and Wheeler-Sack Army Airfield.</p> <p>Fort Drum has undertaken several coordinated planning efforts to address encroachment threats. Fort Drum has established an excellent relationship with the community and is fortunate to have the Fort Drum Regional Liaison Organization (FDRLO). Established in 1990 as a community-based membership organization, FDRLO has the mission of preserving positive inter-relationships and communication between the civilian and military communities and leaders in the tri-county region of Northern New York State. Encroachment was identified as a strategic issue and emerging threat to readiness and training in the 2009 Fort Drum Growth Management Strategy, as prepared for FDRLO, and continues to be addressed by several of the installation's strategic action goals. The objectives include public outreach to neighboring communities; seeking innovative partnerships; opening lines of communication; participating in key forums, such as the Fort Drum Town Hall Meetings; and various state and county forums. Fort Drum's Community Planner has a strong relationship with surrounding communities, which ensures the installation remains informed of any planned development in the vicinity of Fort Drum's boundaries. This relationship affords Fort Drum the opportunity to address concerns with local planning boards prior to the development taking place. FDRLO has backed the Fort Drum Regional Growth Management Strategy Plan project, which links the community with Fort Drum in making decisions that allow Fort Drum to operate unencroached, while the community enjoys economic growth.</p>				

Fort Drum Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landscape	Movement & Maneuver	●	Fort Drum has a doctrinal training land shortfall, per AR 350-19. Of the 75,934 acres of maneuver training area at Fort Drum, 73,887 acres are considered suitable for training. Of the acreage that is suitable for training, 45,055 (59%) acres are classified as unrestricted mobility, 19,399 (26%) acres are classified as restricted mobility, and 9,443 (12%) acres are classified as highly restricted mobility. 2,037 (3%) acres are classified as unrated mobility and represent acreage that is constrained due to land use, environmental sensitivity, and topographic elements (soil, slope). This deficit requires that maneuver training be conducted within constrained maneuver boxes that provide the ability for training to FSO METL standards, but lack doctrinal area of responsibility maneuver space. Training scenarios are modified and timed events are planned to replicate distance and area requirements. To reduce the land deficit and expand maneuver areas, the installation has been working to develop a land acquisition plan.
	Sustainment	●	Same as above.

Figure 3-10 Army Capability and Encroachment Assessment Detail (continued)

Fort Drum Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Airspace	Movement & Maneuver	●	The restricted airspace available does not meet the ceiling requirements for high-angle weapon systems, such as 155mm and Stinger. Lack of required airspace results in the training event becoming an isolated event, rather than a combined arms exercise thereby reducing training realism. The Fort Drum Range Support Branch has not pursued requirements for extended airspace, but will require coordination with Army Headquarters, IMCOM, and FAA to determine feasibility and benefits to training in FY2012–FY2013.
	Fire Support	●	Same as above.
Range Support	Movement & Maneuver	●	Recent manpower reductions will cause a 20% cut in range operations starting in FY2012. This will limit installation support for short-term training requests; range reconfiguration projects to support emerging tactics, techniques, and procedures; and preventative maintenance. In anticipation of fiscal year funding shortfalls, the Range Support Branch will prioritize resources and assets to the training community, based on the priority established by the Senior Commander in support of ARFORGEN. Priorities will be determined and the essential training requirements will be supported; all other requirements will only be supported if the resources and assets are available. Currently, with the contribution of Contingency Operation funds to support ARFORGEN training requirements, no identified training requirements have been refused.
	Sustainment	●	Same as above.
Small Arms Ranges	Sustainment	●	Use of the 40mm MK19 Grenade Training Round reduces the availability of maneuver space until the rounds have been cleared and recovered. It is manpower intensive to clear and recover the land after use, thus reducing training time. As the MK19 has been identified as a minimal hazard training round, the Army will continue to recover and clear ranges where it is used to ensure a safe training environment is maintained and maneuver land is available for training.

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USAG Hawaii Assessment Details

Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	N/A	N/A	7.67	8.66	Encroachment Scores	N/A	N/A	8.78	8.67
<p>Capabilities have improved in Hawaii over the last two years. Range support funding improved slightly in FY2011 and additional manpower will be provided in FY2012, likely resulting in increased range capability in the outyears. A shortfall of an MPMG Range and Collective Range to support aviation gunnery has also continued to impact capability in Hawaii. A request to construct a standard design range has been submitted; collective range capability should improve in the outyears.</p>					<p>Encroachment factor impact on the mission in Hawaii has remained relatively stable over the past couple years. In the near future, the Biological Opinion (BO) will be amended so that live fire training with ball ammunition may be conducted while the burn index is in the red, thus increasing unit training capability. Two types of encroachment continue to impact Hawaii training areas and ranges. External encroachment factors, such as land development and increased housing construction, will continue to increase pressure on training areas and ranges in the future. With increased development near the installation boundaries, maneuver areas and impact areas are affected by restrictions on noise. Internal encroachment factors also impact the mission. Natural and cultural resource issues cause range closures and stop training. For example, when a threatened or endangered species is seen within a training area or range, all training is to stop, thus decreasing the capability associated with that range or training area.</p>				

USAG Hawaii Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landscape	Movement & Maneuver	●	Increased maneuver throughput is required due to one Stryker Brigade Combat Team (SBCT) being based in Hawaii. As there is limited maneuver area on Oahu, logistically, SBCTs have to move by boat to Pohakuloa Training Area (PTA) to conduct a portion of their Mission Essential Task List (METL) training. Even with PTA, Hawaii is still short on required maneuver land, because much of the area is not able to support the Stryker vehicle due to environmental no-go areas. Restrictions do not allow units to train to the Army standard. The installation will work through the constraints of the BO to allow for additional trainings areas to become available (i.e., expansion of PTA and the Keamuku maneuver area).
Small Arms Ranges	Movement & Maneuver	●	There is a deficiency of one Machine Gun range. The installation is currently unable to conduct training to Army standards. This deficiency is mitigated by using alternative qualification standards (10 meter table).
	Sustainment	●	Same as above.
	Protection	●	Same as above.
Collective Ranges	Movement & Maneuver	●	There is a deficiency of Aviation Gunnery capability. The installation is currently unable to train to standard Gunnery table. Range managers have submitted a request to construct a standard design range.
	Fire Support	●	Same as above.
	Sustainment	●	Same as above.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Threatened & Endangered Species	Movement & Maneuver	●	Endangered species habitat limits maneuver training areas to existing roads and trails, thus limiting training scenarios and training realism. The installation will continue to train within the restrictions set forth by the BO.
	Fire Support	●	The burn index limits training capabilities. The burn index, in conjunction with a limited impact area, causes throughput restrictions; live fire is limited to PTA and training round usage is restricted by caliber. The installation will continue to operate within the constraints of the BO for each of the training ranges; expand training options as they become available in accordance with the BO.
	Protection	●	Same as above.
Cultural Resources	Movement & Maneuver	●	Resuming live fire training at Makua continues to be delayed, pending additional litigation over access to cultural sites. Live fire training activities are being conducted at alternate locations in Hawaii. Other training strategies are being pursued at Makua.
	Fire Support	●	Same as above.
	Intelligence	●	Same as above.
	Sustainment	●	Same as above.
	Command & Control	●	Same as above.
Protection	●	Same as above.	

Figure 3-10 Army Capability and Encroachment Assessment Detail (continued)

USAG Hawaii Detailed Comments

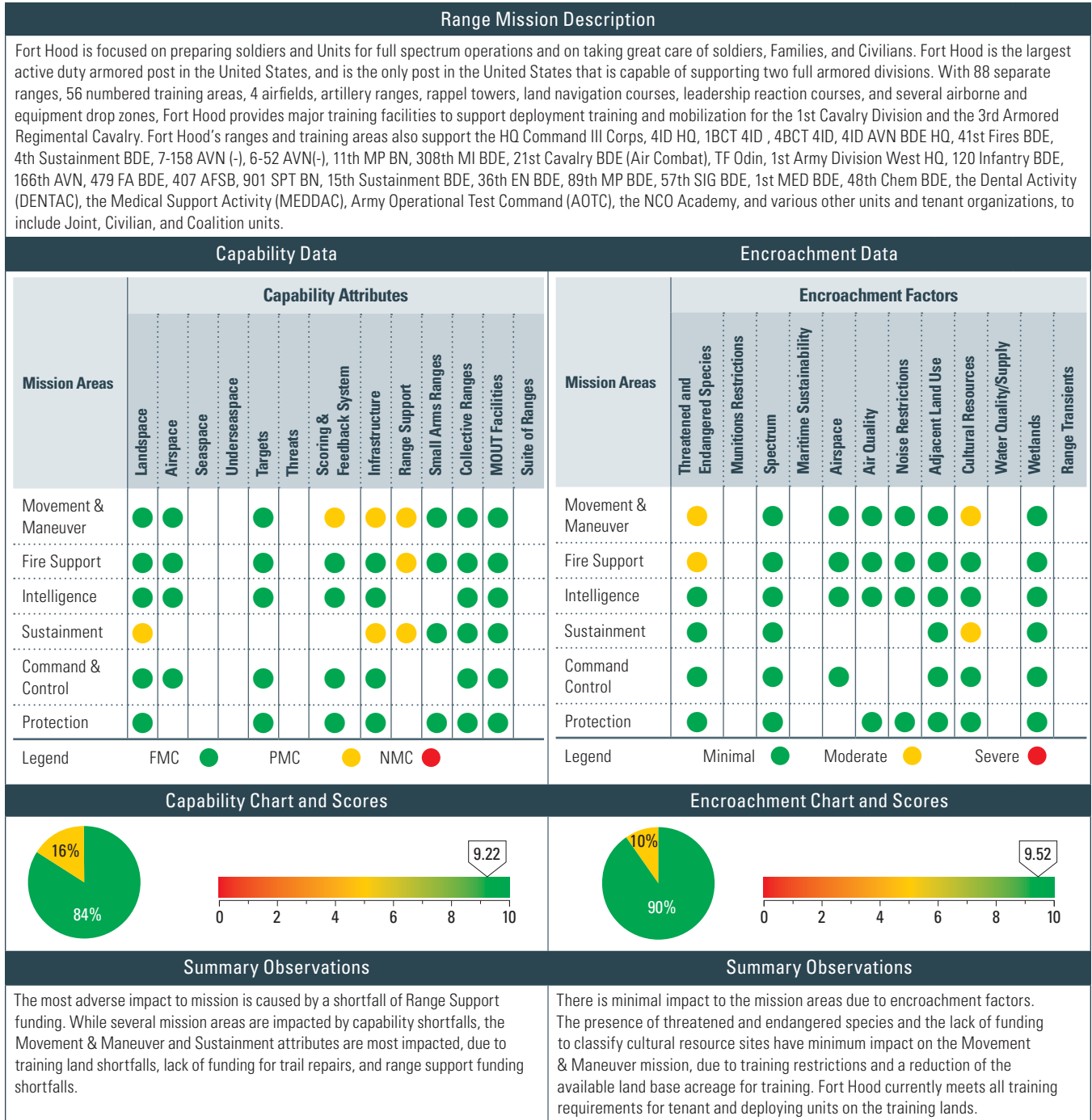
Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Range Transients	Movement & Maneuver	●	Recreational motorcross riders enter restricted areas of the Kahuku training area. Motorcross riders are a training distraction, and cause damage to the land that increases erosion and results in land repair costs. The installation will install fencing along with no trespassing signs to protect the training area.
	Sustainment	●	Same as above.

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Figure 3-10 Army Capability and Encroachment Assessment Detail (continued)

Fort Hood Assessment Details



Fort Hood Assessment Details

Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	5.33	5.33	7.44	9.22	Encroachment Scores	7.93	7.93	9.52	9.52
<p>Capabilities have improved at Fort Hood over the past several years. Range support funding levels have increased slightly, and range modernization requirements are currently programmed. Range operations currently meet training requirements for tenant and deploying units, although maneuver requirements must be executed to modified standards and augmented with simulations and virtual training devices. Mobilizing unit requirements can only be met with the continued availability of Overseas Contingency Operations (OCO) funding. While the range modernization program currently addresses all deficiencies in range support facilities, there will remain the need to conduct training to modified standards with obsolete targets and operating systems, due to reductions in range modernization funding through FY2016. The current transformation of the Army has not decreased the assigned strength of the installation nor the training requirements for the ranges. The current 15 Brigade equivalent fighting force assigned to Fort Hood requires modernized range support facilities and technological advances, which increase the maneuver requirement. Additionally, when Fort Hood receives Strykers in FY2012, tank and maneuver trails will not be adequate to support their movement. Maneuver lanes and corridors require repairs and maintenance. At least 121 miles of tank trails will be need to be repaired to support the Strykers in FY2012. Unit training requirements will only continue to be met if there is funding available to manage and maintain training areas and ranges. Maintenance and repair of training land (e.g., woody species management, gully plugs/cross country mobility) and tank and maneuver trail repairs are not keeping pace with op-tempo and training requirements. Army training requirements continue to evolve quickly and preparation of land is required prior to training use. Although Integrated Training Area Management (ITAM) requirements are programmed, there will remain the need to acquire additional funds to meet land repairs to enable training through FY2016. If funding shortfalls continue, there will be significant capability impacts in the outyears.</p>					<p>Encroachment factor impact to the mission at Fort Hood has been reduced over the past several years, due to installation efforts to mitigate impacts from adjacent land use. Additional reductions in encroachment impacts are the result of a revised business rule. In previous years, restrictions on the use of smoke/obscurants in training events were being captured as an Air Quality encroachment factor and as a Threatened and Endangered Species encroachment factor, when the restrictions were only resulting from the presence of endangered species. Historically, training usage has worked as a parity for limiting endangered species habitat expansion. The lack of full spectrum training, due to unit deployment schedules, is likely to result in increased endangered species habitat and, thus, increased training restrictions in the future.</p>				

Fort Hood Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Sustainment	●	There is a doctrinal shortfall of training land required for units to conduct maneuver training to Army standards. There are approximately 196,356 acres of unrestricted training land at Fort Hood. The training land shortfall requires units to modify doctrinal distances for training and use training land beyond normal timeframes, to conduct all required training events. Many training events must be conducted to modified standards, reducing training realism. Units are mitigating this shortfall by modifying their training with reduced distances and by the use of virtual and constructive simulations. There are currently no plans to acquire additional training land to reduce the shortfall.
Scoring & Feedback System	Movement & Maneuver	●	After Action Review (AAR) capabilities need to be upgraded on non-instrumented ranges. As an automated AAR capability is not available to support the Instrumented Force, units do not have the adequate capability to review/ assess training events, and training effectiveness is reduced. Fort Hood is pursuing a recently acquired Army Standard Automated AAR system for legacy Multi Use Ranges.
Infrastructure	Movement & Maneuver	●	Approximately 179 of 412 (43%) miles of tank trails are currently unserviceable, and 113 of 120 (98%) miles of maneuver trails are unserviceable. The lack of serviceable trails degrades unit training capabilities, and reduces and restricts logistic and wheeled vehicle operations. Unmaintained trails provide succession to woody species growth. Fort Hood is repairing up to 20 miles of tank trails annually. Additionally, the installation is increasing partnerships with Active Duty, Reserve, and National Guard Engineer units to provide trail repair services in FY2011 and FY2012. An increase in sustainment funding for tank trails is required to support training requirements.
	Sustainment	●	Same as above.

Figure 3-10 Army Capability and Encroachment Assessment Detail (continued)

Fort Hood Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Range Support	Movement & Maneuver	●	Recent manpower reductions will cause a 20% cut in range operations starting in FY2012. This will limit installation support for short-term training requests; range reconfiguration projects to support emerging tactics, techniques, and procedures; and preventative maintenance. Continue to assess range support contracts to identify costs reductions (including reducing the number of ranges available for training) for the Senior Commander to consider. The Range Control Branch has to use OCO funding to meet additional requirements for mobilization and deployment.
	Fire Support	●	Same as above.
	Sustainment	●	Same as above.

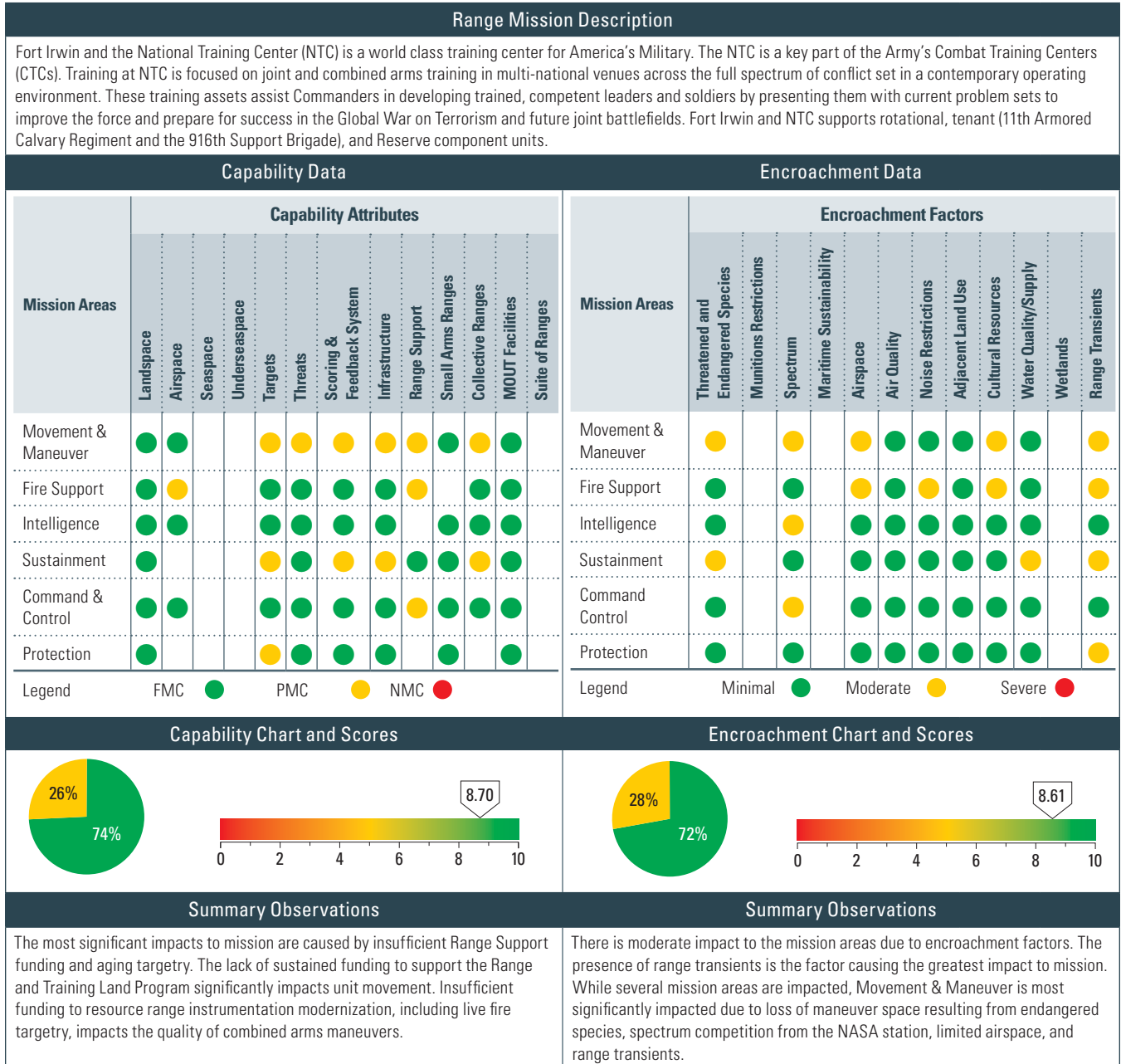
Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Threatened & Endangered Species	Movement & Maneuver	●	Core endangered species nesting seasons restrict training for 5 months of the year on 6.2% of the training areas. Core habitat (8,243 acres) is located on the east side of the installation in light training areas and results in significant restrictions during nesting season. Non Core habitat (43,952 acres) impacts both heavy and light training areas, but only restricts digging. Units are restricted in Core habitat during nesting season: no vehicles off road; no mounted training in trees; units cannot stay longer than 2 hours in habitat areas per day; no smoke/pyro within 100 meters of Core habitat, and no camouflage net use. Units are restricted from digging in Core and Non Core habitat areas year round. The installation has no plans to change Core habitat areas or restrictions. The Non Core habitat digging restriction is minimized through use of a one stop, digital dig request system, which provides no dig overlays for all training areas and allows trainers to plan and establish tactical defensive training.
	Fire Support	●	Same as above.
Cultural Resources	Movement & Maneuver	●	Insufficient funding limits the ability to review and classify potential cultural resource sites. Sites cannot be classified as eligible or ineligible to support training and/or range upgrades; thus, these potential sites are not currently available for training. The Army will continue to work to make appropriate classifications so that training can be maximized on the installation. Appropriate mitigation strategies to avoid training shortfalls are ongoing.
	Sustainment	●	Same as above.

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Figure 3-10 Army Capability and Encroachment Assessment Detail (continued)

Fort Irwin Assessment Details



Fort Irwin Assessment Details

Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	7.45	7.45	7.84	8.70	Encroachment Scores	9.75	9.75	8.50	8.61
<p>Historically, NTC training capability has improved over the past several years. Since 2004, NTC has made remarkable strides to populate the training area with MOUT training sites, emplaced to support current Overseas Contingency Operations in Iraq and Afghanistan. Other areas, such as range control and unexploded ordnance (UXO) clearing, have remained relatively constant in capability.</p> <p>Two significant areas have shown degradation: installation ranges and Combat Training Center (CTC) required equipment. The installation ranges have had no significant resources applied to them for the last five years. They are inadequate for the installation mission, and in need of modernization and sustainment funding. Three of the six new range requirements that NTC submitted were supported in POM 12–16, but were subsequently postponed out of the current POM cycle. NTC has not previously received separate funding for range sustainment, resulting in further range degradation. Headquarters, Department of the Army, G-3 Training assessed and addressed critical shortfalls in POM 13-17, resulting in range sustainment funding being provided starting in FY2013.</p> <p>The other major capability degradation is in the area of CTC infrastructure and equipment to support the NTC rotation training mission. In the past, CTC modernization has been underfunded and has impacted the upkeep of instrumentation, Tactical Engagement Simulation Systems, opposing force equipment, and live fire ranges at required capability to sustain training for rotating brigades. NTC is a member of the CTC Modernization Program and participates in the development and prioritization of CTC requirements. The Headquarters, Department of the Army, G-3 Training was successful in protecting FY2012–FY2017 CTC Modernization Program funding. As long as no future funding decrements occur, the program will be able to address aging targetry and instrumentation.</p>					<p>Fort Irwin and NTC remain capable of accomplishing the training mission, despite instances of increasing encroachment. Fort Irwin’s major encroachment issues center around three areas: spectrum, endangered species, and boundary issues.</p> <p>NTC shares the electromagnetic spectrum with the NASA Goldstone Deep Space Communications Complex (GDSCC). NTC must tailor its use of the spectrum to accommodate NASA’s needs. This means limiting jamming training, requiring the testing of all systems before use at NTC, and limiting the areas where electronic emitters can be used. This encroachment will be most serious when the western expansion area is opened for training.</p> <p>Endangered species provide the second major area of concern. NTC is affected by the federally-threatened Desert Tortoise and the endangered Lane Mountain Milk Vetch. These species have combined to require NTC to set aside over 40,000 acres of training land for habitat and significantly curtailed activities in several parts of the training area. Mitigation costs in the NTC land expansion have exceeded \$75M and mitigation activities have added 10 years to the land expansion process, which has been ongoing since 1993. NTC actively works with the Department of the Interior, Bureau of Land Management, the California Department of Fish and Game, and other agencies to manage endangered species activities.</p> <p>The third area of concern is the adjacent wilderness areas and occasional civilian incursion. Ongoing legislation will surround NTC with wilderness areas on three sides, and could result in training limitations. NTC is working with Army Headquarters to minimize these effects on the training mission.</p>				

Fort Irwin Detailed Comment

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Airspace	Fire Support	●	NTC must share airspace in the eastern and western expansion areas, limiting the amount and types of training that can be done in those areas. NTC shares the eastern expansion with FAA, limiting use above 16,000 feet AGL. This limitation restricts the ability to employ high Close Air Support and strategic level UAS. The western expansion is shared with China Lake NAWC and Edwards AFB, with NTC as the third priority user. This limits the ability of NTC to employ aviation assets when required to support maneuver training. NTC must work with te FAA and sister services to gain control of its airspace to enable training
Targets	Movement & Maneuver	●	The armor and infantry targets that support live fire training for rotational units are circa 1970. The ability of the targetry and range control operating system to meet Heavy Brigade Combat Team (HBCT) gunnery standards is not possible without major workarounds. The CTC Modernization Program is providing some additional targetry in the current POM cycle; however, 100% life cycle replacement is not provided for at this time.
	Sustainment	●	Same as above.
	Protection	●	The armor and infantry targets that support live fire training for rotational units are circa 1970. The ability of the targetry and range control operating system to meet HBCT gunnery standards is not possible without major workarounds. The CTC Modernization Program is providing resources to sustain current targetry in POM 13-17 until life cycle replacement can be addressed.
Threats	Movement & Maneuver	●	The Battle Effects Simulators (BES) that support live fire training for rotational units are circa 1970. The ability of the targetry and range control operating system to interface with BES is not possible without major workarounds. The CTC Modernization Program is providing resources to sustain current BES in POM 13-17 cycle until life cycle replacement can be addressed.

Figure 3-10 Army Capability and Encroachment Assessment Detail (continued)

Fort Irwin Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Scoring & Feedback System	Movement & Maneuver	●	The NTC instrumentation system requires modernization to account for new systems and increased demand for training feedback. Changes to the way the Army fights, modular units, and increased digital battle command have generated a requirement for modernization of the instrumentation system used to assist in the training of units at NTC. Area coverage needs to be increased, data throughput needs revisions, and Multi-Purpose Wireless Interactive Target System (MILES) instrumentation needs to be more capable. CTC Instrumentation System (IS) funding was protected in POM 13-17 and will address NTC IS as long as funding remains. NTC will continue to participate in the CTC Modernization Program to address and present critical and other unfunded ITESS requirements for POM consideration.
	Sustainment	●	Same as above.
Infrastructure	Movement & Maneuver	●	The main supply routes (MSRs) and tank trails within the range complex are failing. Accessibility to the range complex is compromised by the failing road network. Normal maintenance cannot bring the road network up to standards. PNs 75979, 75980, 75982, and 75983, totaling \$21.8M, would provide for paving of 20 miles of training area roads. These PNs have not been funded through the POM process to date. The training shortfall will continue unless funding is provided. Standard annual SRM funding for the maintenance of MSRs is inadequate, based on the amount of vehicle traffic that supports each rotation.
	Sustainment	●	Same as above.
Range Support	Movement & Maneuver	●	NTC comprises over 770,000 acres, of which more than 500,000 acres are used for maneuver training. The resources required to sustain the training area are not available. To effectively make these area available for training, NTC needs additional personnel for range control operations, additional communications equipment, and infrastructure for command and control. Headquarters, Department of the Army, G-3 Training assessed and addressed critical range support shortfalls in POM 13-17, resulting in range sustainment funding being provided starting in FY2013.
	Fire Support	●	NTC has the largest live fire training complex in the Army. Its past history as an air defense training base has littered the training area with UXO. NTC has few off limits duded areas; most are used concurrently as maneuver training lanes. NTC requires additional resources to more adequately police the training areas for UXO to allow safe training to be accomplished. Funds are being pursued through the CTC Modernization Program.
	Command & Control	●	The Range Communication System was at the end of its life cycle in 2010, but is repairable until 2015. The ability to communicate within the range complex is a requirement IAW AR 385-63. The requirement was presented to CTC Modernization Program as a critical unfunded requirement. If funding is not available in FY2012, then POM 13-17 funding will be adjusted to address critical unfunded requirements and then realigned in POM 14-18.
Collective Ranges	Movement & Maneuver	●	The Multi-Purpose Training Range is outdated (circa 1987). The range does not support HBCT gunnery standards. An updated range has not been validated or funded at this time. Training shortfalls will continue until the range is funded.
	Sustainment	●	Same as above.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Threatened & Endangered Species	Movement & Maneuver	●	The Army continues to experience delays in opening the western expansion area, due to secondary impacts from litigation related to translocation of the Desert Tortoise. The 70,555 acres of heavy maneuver land in the western expansion area are off limits to training. The Army continues to implement required mitigation measures, based on available funding, to use expansion lands for training purposes. The Army will address litigation encountered during implementation of mitigation measures as such litigation occurs.
	Sustainment	●	Same as above.
Spectrum	Movement & Maneuver	●	NASA GDSCC (33,000 acres) is located on the western side of Fort Irwin, and limits the Army's ability to employ all necessary electronics equipment. The Army must limit jamming and the use of many types of communications equipment and emitters. Additionally, units must coordinate with NASA GDSCC to limit emissions on the western side of the reservation. NTC and NASA need to cooperate to minimize NASA electronic noise limiting requirements.
	Intelligence	●	Same as above.
	Command & Control	●	Same as above.

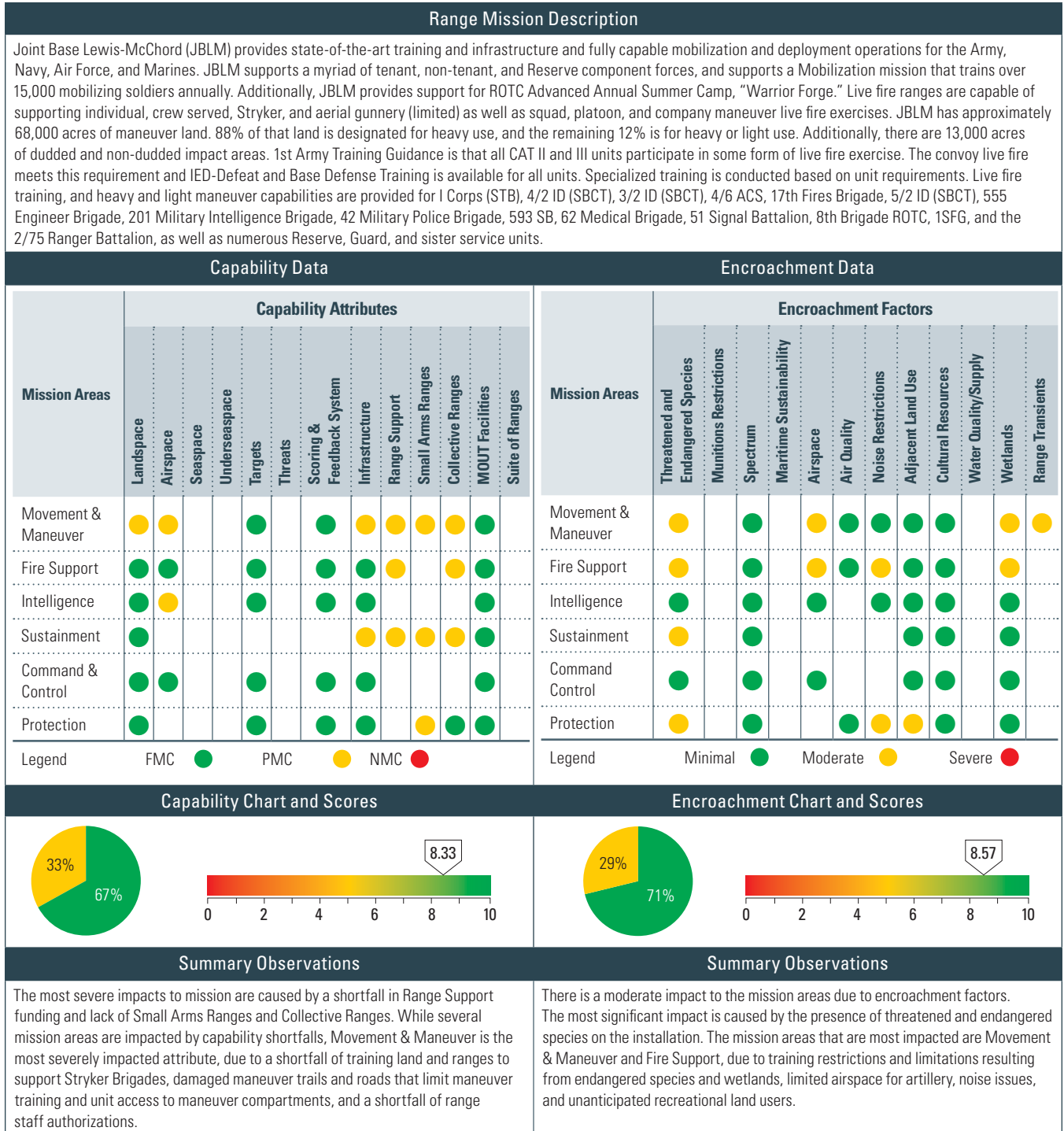
Fort Irwin Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Airspace	Movement & Maneuver	●	NTC does not control the airspace over the eastern and western expansion areas. The eastern expansion area has a 16,000 foot ceiling. This limits the types of aircraft and missions that can be flown, in contrast to the installation proper, which is ceiling unlimited. The western expansion area airspace is chaired with China Lake NAWC and Edwards AFB, with NTC as the 3rd priority user of its own airspace. This limits the ability of NTC to fly Army UAS and joint aircraft in support of brigade training. NTC is working with FAA and the R2502 JPPB to minimize training restrictions.
	Fire Support	●	Same as above.
Noise Restriction	Fire Support	●	NTC live fire operations generate noise that can be heard across the eastern boundary. NTC receives complaints about live fire noise from residents who live in the vicinity of the eastern boundary. To mitigate this condition, NTC does not conduct live fire training in the eastern expansion area. NTC will continue to work with local communities on noise issues.
Cultural Resources	Movement & Maneuver	●	Fort Irwin has over 1,000 identified cultural sites in the maneuver area. The large number of sites and the rules for using these areas causes training to be impacted and selected critical areas to be identified as off limits to training because of cultural implications. NTC requires a significant cultural resources budget to manage these sites. NTC will continue to manage the impacts.
	Fire Support	●	Same as above.
Water Quality Supply	Sustainment	●	Fort Irwin has an estimated 40-year, non-replenishable water supply. NTC uses water wells to provide all water needs. As the training area has no reliable water supply to support training needs, all water must be transported to field locations. The amount and location of training are affected by the ability to transport and supply water for training units. Fort Irwin needs to be resourced to probe for additional water sources. Additionally, a tertiary water treatment facility (costs estimated at \$100M) needs to be constructed so Fort Irwin can reclaim up to 60% of the one million gallons of water used daily. These measures will extend Fort Irwin's viable service life indefinitely.
Range Transients	Movement & Maneuver	●	Approximately 225 miles of Fort Irwin's boundary is contiguous to Death Valley National Park or publicly accessible areas. The ability of persons to enter Fort Irwin in an uncontrolled area causes problems for training. During maneuver and live fire training, the Army is required to pre-clear the training area of unauthorized personnel, using either ground or aerial patrols. Additionally, NTC has had many instances of "scrappers" (unauthorized metal scavengers and thieves) entering the training area and collecting (stealing) both metal scrap and training equipment (targets, solar panels, copper wire). NTC patrols have stopped trucks loaded with unexploded ordnance that was collected from the impact areas, clearly presenting a safety concern. NTC requires adequate resources to fence the installation, and provide regular patrols to cover the training area to prevent unauthorized and dangerous access.
	Fire Support	●	Same as above.
	Sustainment	●	Same as above.
	Protection	●	Same as above.

Figure 3-10 Army Capability and Encroachment Assessment Detail (continued)

Fort Lewis Assessment Details



Fort Lewis Assessment Details

Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	7.67	7.67	6.56	8.33	Encroachment Scores	8.54	8.54	9.15	8.57
<p>Capabilities have improved at Fort Lewis over the past several years. While range support funding improved slightly in FY2011, recent manpower reductions will cause a 20% cut in range operations starting in FY2012. A shortage of Small Arms Ranges and Collective Ranges has also continued to impact capability at Fort Lewis; however, new ranges are programmed for construction in FY2016 and FY2017, and should result in improved capability for both Small Arms and Collective Ranges in the outyears. Landspace and Airspace capability attributes will continue to be a challenge into the outyears, but the installation is working with FAA to mitigate airspace issues.</p>					<p>Encroachment factors have historically had a minor to moderate impact on the mission at Fort Lewis; however, it is very likely that four candidate species under the Endangered Species Act will be listed: the Taylor's Checkerspot Butterfly, Mardon Skipper Butterfly, Streaked Horned Lark, and Roy Prairie Pocket Gopher. These species are found on the maneuver areas and on Ranges 74-76 of JBLM. The listing of the Taylor's Checkerspot Butterfly will have a significant impact on maneuver training and restrictions on maneuver training will increase. The Army is currently pursuing an Army Compatible Use Buffer (ACUB) with the Nature Conservancy to offset potential impacts to training.</p> <p>Impacts resulting from critical habitat and internal management restrictions on the installation have been fairly consistent for the past several years. Noise restrictions and adjacent land use impacts have caused minor to moderate impacts on the mission, and will continue to have an impact into the future, due to development adjacent to the installation boundary. Range transients have not historically been an issue, but recently unpermitted recreational use of Fort Lewis land has resulted in minor training impacts. The installation is continuing to communicate and coordinate with the public to ensure proper recreational use permitting procedures are understood to mitigate this encroachment impact.</p>				

Fort Lewis Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Movement & Maneuver	●	There is limited land to support the requirements for the Stryker Brigades and other units stationed on JBLM. Units can only train to the Platoon level on JBLM-Main; thus, larger exercises are required to go to Yakima Training Center (YTC). The drop zones are restricted during night ops, which is a tactical requirement for Special Forces and Rangers. The installation will continue to implement workarounds to accomplish training for units on JBLM-Main.
Airspace	Movement & Maneuver	●	There is limited restricted airspace. UAS and Special Forces jump capability is limited by the lack of designated restricted airspace. The installation is coordinating updates with FAA to expand available restricted airspace.
	Intelligence	●	Same as above.
Infrastructure	Movement & Maneuver	●	The maneuver trails and roads in the training areas are in need of repair. Damaged maneuver trails and roads limit maneuver training and unit access to maneuver components. The installation is working to define trails and roads to determine responsibility. In FY2011, the Integrated Training Area Management Program began maintaining maneuver trails.
	Sustainment	●	Same as above.
Range Support	Movement & Maneuver	●	Recent manpower reductions will cause a 20% cut in range operations starting in FY2012. This will limit installation support for short-term training requests; range reconfiguration projects to support emerging tactics, techniques, and procedures; and preventative maintenance.
	Fire Support	●	Same as above.
	Sustainment	●	Same as above.
Small Arms Range	Movement & Maneuver	●	There is a shortage of .50 cal qualification ranges and anti-armor ranges required to fully support tenant units. Units are not able to qualify on required weapons and gunnery. Updates and new ranges for compliance with Army requirements have been identified through the POM cycle. Military Construction funding has been programmed for a .50 cal range in FY2016 and an anti-armor range in FY2017.
	Sustainment	●	Same as above.
	Protection	●	Same as above.
Collective Ranges	Movement & Maneuver	●	There is no modernized collective gunnery range. Stryker Brigade combat teams stationed at the installation can not fully meet training requirements. The Range Control Office will continue to identify workarounds to assist in meeting training requirements for collective gunnery events.
	Fire Support	●	There is no modernized collective gunnery range. Stryker Brigade combat teams stationed at the installation can not fully meet training requirements. The Range Control Office will continue to identify workarounds to assist in meeting training requirements for collective gunnery events. YTC is currently upgrading its Multi-Purpose Range Complex. There is not enough room at JBLM-Main to support a range of this type.
	Sustainment	●	Same as above.

Figure 3-10 Army Capability and Encroachment Assessment Detail (continued)

Fort Lewis Detailed Comments

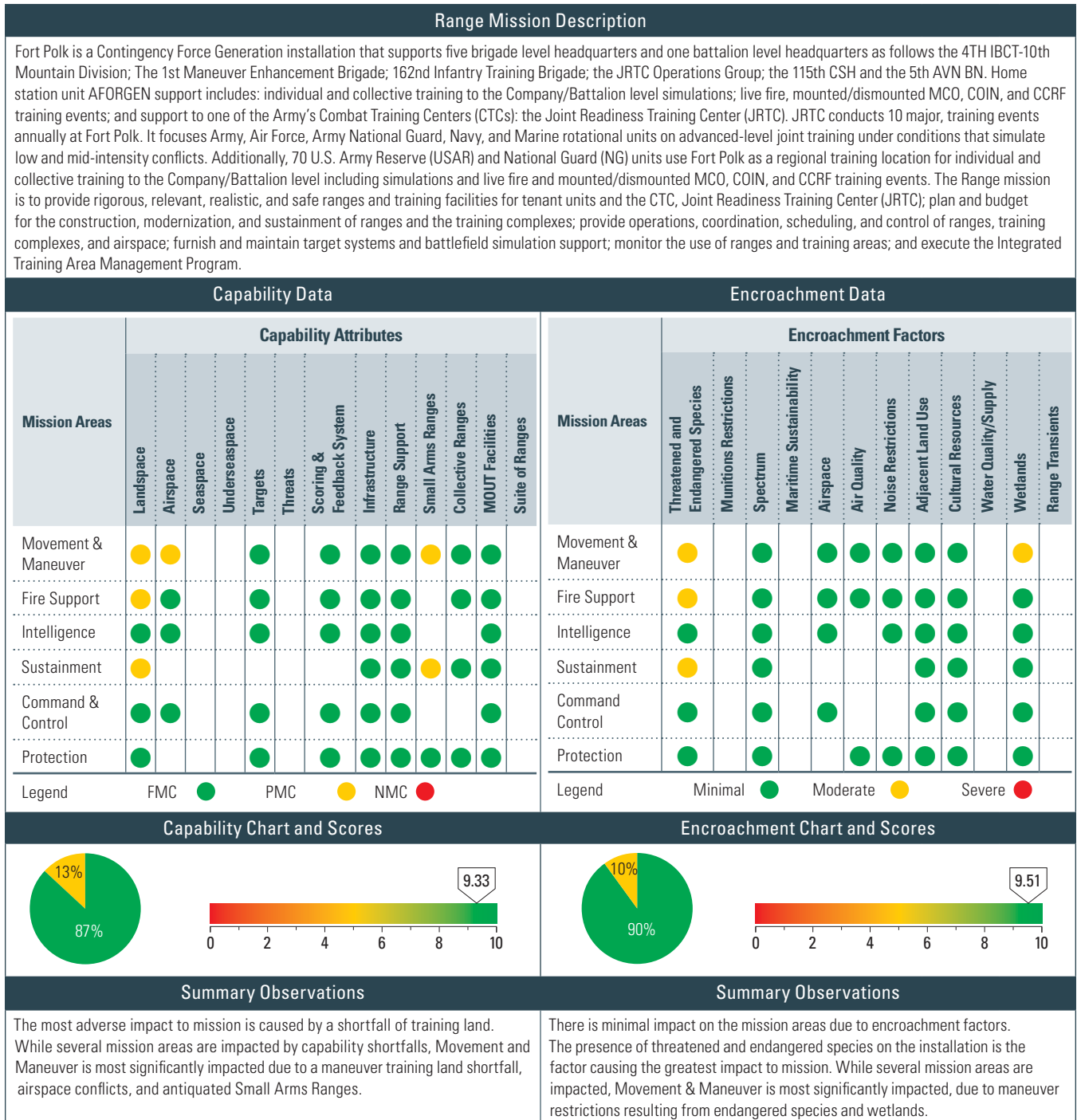
Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Threatened & Endangered Species	Movement & Maneuver	●	Bald Eagles restrict the use of a portion of Range 87 from 1 December through 31 March annually. Portions of Range 76 are within the habitat for the Taylor’s Checkerspot Butterfly. Use of Range 87 is restricted 4 months of the year; thus, during this period, use of smoke and target emplacements is restricted, curtailing the full capability of the range. Habitat mitigation on Range 76 restricts off road vehicular movement; thus, Stryker movement formation and utilization of the terrain to move to the target is not part of training. The Army is continuing to implement mitigation strategies and training workarounds to avoid training shortfalls.
	Fire Support	●	Same as above.
	Sustainment	●	Same as above.
	Protection	●	Same as above.
Airspace	Movement & Maneuver	●	Current airspace does not account for all of the ranges that fire munitions. Two of the four compartments of R6703 have a ceiling cap of 5,000 AGL. Within SUA R6703 D, B contains the majority of JBLM’s mortar points. With the addition of 120 mm mortars, it is a challenge to ensure that the 120 mm munitions do not break the ceiling cap of 5,000 AGL, and do not skip out of the designated impact area. The Army is working on evaluating proposals to adequately cover the range complex vertically and horizontally.
	Fire Support	●	Same as above.
Noise Restrictions	Fire Support	●	The Installation Compatible Use Noise Zoning Study (54-34-3468-83) limits demolition poundage at the installation. Additionally, mortars and field artillery must receive prior approval to conduct late night firing (from 2200-0700 hours). The .50 cal machine gun range is located on a high bluff that overlooks the Nisqually Reservation. Units are limited to 20 pounds in any one detonation or group of simultaneous detonations. Representatives of the Nisqually Tribe and local communities call in frequently with noise complaints, which could have future impacts. The installation will continue noise studies and work with local communities to notify them of military activities.
	Protection	●	Same as above.
Adjacent Land Use	Protection	●	With the number of local roadways and highways that dissect JBLM, units are not allowed to use smoke near the installation boundary. All smoke operations must be well within the boundary that limits the locations for this type of training. The Army is continuing to implement mitigation strategies and workarounds to avoid training shortfalls.
Wetlands	Movement & Maneuver	●	There are 8,338 acres of wetlands on the installation. Training is restricted on this acreage, with the exception of dismounted maneuver training. This restriction limits the use of heavy maneuver training on the available land. The Army is continuing to implement mitigation strategies and workarounds to avoid training shortfalls.
	Fire Support	●	Same as above.
Range Transients	Movement & Maneuver	●	Stryker training lanes and field training activities are regularly impacted by local citizens using the training areas to ride horses, train hunting dogs, hunt birds, collect vegetation, hunt wild game, and exercise. The Area Access process of obtaining a permit and Morale, Welfare, and Recreation (MWR) activities help with the people that have requested permission to recreate on JBLM. It is the people we do not know about that affect military operations. JBLM is working on providing information to the local community on the proper procedures.

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Figure 3-10 Army Capability and Encroachment Assessment Detail (continued)

Fort Polk Assessment Details



Fort Polk Assessment Details

Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	8.73	8.73	7.94	9.33	Encroachment Scores	10.00	10.00	9.51	9.51
<p>Capabilities have improved at Fort Polk since 2010. Range Support funding increased in FY2011; however, recent manpower reductions will cause a 20% cut in range operations starting in FY2012. A shortage of modernized Small Arms Ranges has continued to impact capability at Fort Polk; however, new range requirements have been documented and, if funding is available, capability should improve in the outyears. Landspace continues to impact maneuver capability, but the purchase of additional training land will significantly improve this capability in the outyears. Airspace capability will likely become a greater challenge into the outyears, as requirements to field new UAS systems increase.</p>					<p>Encroachment factors have not historically had a significant impact on the mission at Fort Polk. Minor to moderate impacts resulting from threatened and endangered species, the presence of feral horses, and wetlands have developed over the last two years, and are anticipated to result in continued impacts to maneuver training and live fire exercises in the outyears. The installation is actively pursuing buffer initiatives through the Army Compatible Use Buffer (ACUB) Program to reduce existing impacts and prevent future impacts. Additionally, training land acquisition efforts should help to alleviate maneuver training impacts by providing additional maneuver land to meet training requirements.</p>				

Fort Polk Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Movement & Maneuver	●	The installation has a maneuver training land shortfall per AR 350-19. The training land shortfall of 100,000 acres limits the ability of the installation to simultaneously train a Brigade Combat Team and a rotation at the JRTC. Additionally, the installation cannot fully accommodate range live fire and maneuver training at the same time. Final approval for training land acquisition was granted by OSD in April 2010. Funding for land acquisition was appropriated in FY2010–FY2011, and additional funding is programmed in FY2012. Funds programmed in FY2013 were cut due to funding shortfalls. Negotiations for the purchase of the first parcel of land are ongoing.
	Fire Support	●	Same as above.
	Sustainment	●	Same as above.
Airspace	Movement & Maneuver	●	Launching and recovering UAS interrupts active ranges due to proximity of airfield and a small arms range complex. UAS make it difficult to schedule other aircraft within the training area and operate small arms ranges and UAS training simultaneously. The installation is mitigating this issue through the use of more vertical/lateral separation, scheduling additional delays in other aircraft entering the restricted area, and mitigating small arms range impacts through scheduling.
Small Arms Range	Movement & Maneuver	●	Many small arms ranges are WWII and/or Vietnam era, and are not in compliance with current Army regulations (TC 25-8). Fort Polk cannot conduct small arms training to the Army standard and must use non-standard ranges to meet requirements (TC 25-8). Fort Polk has identified outyear requirements for a Multi-Purpose Machine Gun (MPMG) Range, Infantry Platoon Battle Course, and Infantry Squad Battle Course.
	Sustainment	●	Same as above.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Threatened & Endangered Species	Movement & Maneuver	●	The Red-Cockaded Woodpecker and Louisiana Pine Snake are protected species that are present on the installation. Endangered species habitat restricts, prohibits, and limits maneuver training on the installation. The Army implements ongoing mitigation to avoid training impacts. The ACUB Program is an integral component of the Army's sustainability triple bottom-line: mission, environment, and community. In recent years, Army installations have experienced increasing encroachment because of population growth, change in, or expansion of existing land use, and environmental requirements. The ACUB Program proactively addresses encroachment, while achieving conservation objectives through the purchase of conservation easements. Fort Polk's ACUB Program is attempting to secure easements in Bienville Parish.
	Fire Support	●	Same as above.
	Sustainment	●	Same as above.
Wetlands	Movement & Maneuver	●	There are 16,538 acres of wetlands on the installation, which includes U.S. Forest Service (USFS) permitted land. Training is restricted in wetland areas, thus reducing the availability of maneuver training land necessary to fully meet requirements. Fort Polk continues to construct low water crossings as funding becomes available.

Figure 3-10 Army Capability and Encroachment Assessment Detail (continued)

Fort Riley Assessment Details

Range Mission Description																										
Fort Riley is a division-level installation and power projection platform. Fort Riley live fire is supported by several main ranges, and has maneuver space capable of supporting a Brigade Combat Team (BCT). The primary range complex is the Douthitt Range Complex, which supports both Heavy BCT and Infantry BCT live fire training. The 1st Infantry Division at Fort Riley provides combat-ready forces to theater commanders through the Army Force Generation (ARFORGEN) cycle, and prepares the modular division headquarters for deployment. Fort Riley develops and supports realistic live fire events to meet ARFORGEN requirements by combining ranges and opening training areas for large weapons systems, when required. As a Contingency Force Generation Installation (CFG), Fort Riley provides major training facilities to support deployment training and mobilization for the 1st Infantry Division, multiple support units, and multiple Reserve component units.																										
Capability Data							Encroachment Data																			
Mission Areas	Capability Attributes										Mission Areas	Encroachment Factors														
	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges		Collective Ranges	MOUT Facilities	Suite of Ranges	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
Movement & Maneuver	●	●			●		●	●	●	●	●	●		●		●		●	●	●	●	●				
Fire Support	●	●			●		●	●	●	●	●	●		●		●		●	●	●	●	●				
Intelligence	●	●			●		●	●	●	●	●	●		●		●		●	●	●	●	●				
Sustainment	●							●	●	●	●	●		●		●						●				
Command & Control	●	●			●		●	●						●								●				
Protection	●				●		●	●					●	●		●		●	●	●	●	●				
Legend	FMC	●			PMC		●			NMC	●										Severe	●				
Legend														Minimal	●			Moderate	●			Severe	●			
Capability Chart and Scores							Encroachment Chart and Scores																			
Summary Observations							Summary Observations																			
<p>The most adverse impact to mission is caused by a shortfall in Range Support funding and a lack of Small Arms Ranges. While several mission areas are impacted by capability shortfalls, Movement & Maneuver is the most severely impacted, due to a lack of restricted airspace to support large force on force exercises, a shortfall of range support funding, and a shortage of upgraded Multi-Purpose Machine Gun (MPMG) Ranges.</p>							<p>There is a minimal impact to the mission areas due to encroachment factors. The most significant impact is caused by the Adjacent Land Use factor. The mission area that is most impacted is Movement & Maneuver, due to the fact that nine square miles of training area is civil Class D airspace controlled by the Manhattan Municipal Airport.</p>																			
Historical Information, Results, and Future Projections							Historical Information, Results, and Future Projections																			
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011																	
Capability Scores	6.33	6.33	8.22	9.17	Encroachment Scores	10.00	10.00	9.55	9.55																	
<p>Capabilities have improved at Fort Riley over the past several years. Range Support funding has improved slightly in the last year; however, recent manpower reductions will cause a 20% cut in range operations starting in FY2012. A shortage of upgraded MPMG Ranges has also continued to impact capability at Fort Riley; however, one range was upgraded in FY2011 and an additional upgrade is programmed in FY2015, and should improve Small Arms Range capability in the outyears. Airspace capability will continue to be a challenge, but the installation is working with FAA to mitigate Airspace issues.</p>							<p>Encroachment factors have historically had almost no impact on the mission at Fort Riley. Minimal impacts resulting from the Adjacent Land Use factors have increased over the last two years, and have had some minor impacts on the mission. The installation is currently working with FAA to resolve issues involving UAS and rotary wing aircraft operating within the restricted area. This should help to mitigate potential impacts moving forward, and prevent this encroachment factor from having increased impacts in the future.</p>																			

Fort Riley Detailed Comments

Capability Observations

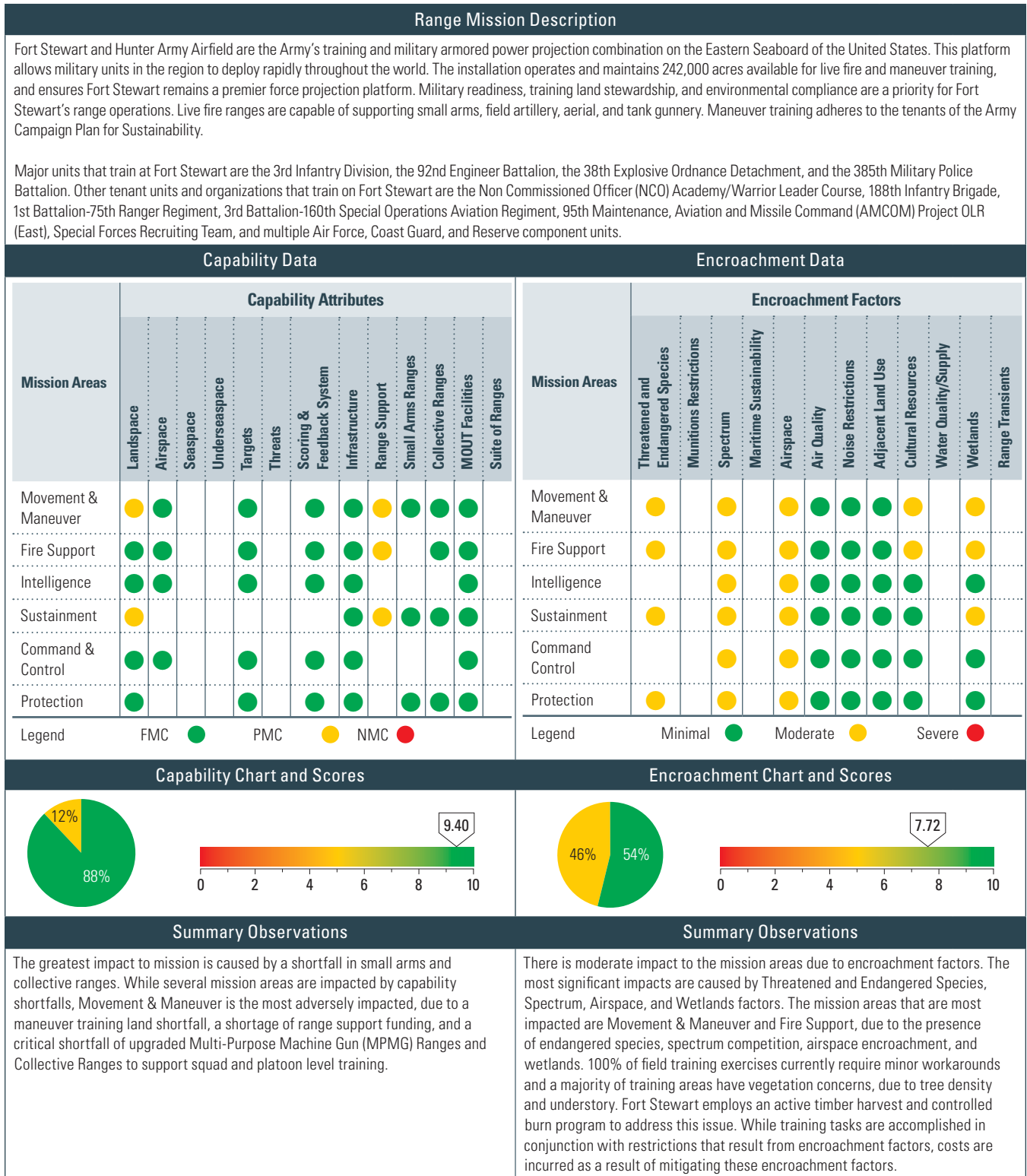
Attributes	Assigned Training Mission	Score	Comments
Airspace	Movement & Maneuver	●	Approximately nine square miles of training area is civil Class D airspace controlled by the Manhattan Municipal Airport. The installation lacks the horizontal airspace necessary to support the conduct of large force on force exercises. There are several actions currently under way to reduce the shortfall. The installation is reworking the SOP with FAA to operate more effectively with the two airfields located to the south of Fort Riley that affect a three-mile restricted area. Another step that has supported training is to conduct more air and ground training at Smoky Hill Army Airfield in Salina KS.
Range Support	Movement & Maneuver	●	Recent manpower reductions will cause a 20% cut in range operations starting in FY2012. This will limit installation support for short-term training requests; range reconfiguration projects to support emerging tactics, techniques, and procedures; and preventative maintenance. The installation is working to increase staff to meet ARFORGEN requirements and realigning for greater efficiency.
	Fire Support	●	Same as above.
	Sustainment	●	Same as above.
Small Arms Range	Movement & Maneuver	●	The installation's training capabilities are impacted by the shortfall of an upgraded MPMG Range. One MPMG was upgraded in 2011, and a second MPMG has been programmed for construction in 2015.
	Sustainment	●	Same as above.
	Protection	●	Same as above.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Airspace	Movement & Maneuver	●	Approximately nine square miles of training area is civil Class D airspace controlled by the Manhattan Municipal Airport. The installation lacks the horizontal airspace necessary to support the conduct of large force on force exercises. The installation is currently working with FAA to resolve issues involving UAS and rotary wing aircraft operating within the restricted area. COA 1: Create an acceptable waiver exclusion area within off-limits area. COA2: Shut down military and civilian airport during mandatory training periods. COA3: Continue operations using existing MOA agreement.
Adjacent Land Use	Movement & Maneuver	●	Approximately nine square miles of training area is civil Class D airspace controlled by the Manhattan Municipal Airport. Artillery and other live fire events are not allowed in Training Areas 25, 26, 27, 28, and 30 (4,106 acres), which comprise a Controlled Firing Area (CFA) and a Special Use Airspace zone. Firing in the CFA would shut down the airport. The installation is currently working with FAA to resolve issues involving UAS and rotary wing aircraft operating within the restricted area Courses of Action (COA) are as follows: COA1: Create a acceptable waiver exclusion area within off-limits area. COA2: Shut down the military and civilian airports during mandatory training periods. COA3: Continue operations using the existing MOA agreement.
	Fire Support	●	Same as above.

Figure 3-10 Army Capability and Encroachment Assessment Detail (continued)

Fort Stewart Assessment Details



Fort Stewart Assessment Details

Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	6.33	6.33	6.89	8.81	Encroachment Scores	9.17	9.17	8.61	7.72
<p>Capabilities have improved at Fort Stewart over the past several years. Range Support funding improved slightly in FY2011; however, recent manpower reductions will cause a 20% cut in range operations starting in FY2012. As an installation that supports heavy forces, Fort Stewart has traditionally focused its range upgrade program to Tank and Bradley ranges. The conversion of a Heavy Brigade Combat Team (HBCT) to an Infantry Brigade Combat Team (IBCT) has split the focus into one of supporting predeployment and mobilization preparation of all forces with a greater emphasis on basic Infantry skills individual and crew qualifications with small arms in support of small unit operations—squad/platoon—while maintaining and upgrading capability to support heavy tank and Bradley gunnery. Current construction efforts will improve the range complex capabilities.</p> <p>Civilian encroachment upon the installation boundary could jeopardize operation of existing critical facilities, and reduce options for siting additional ranges to support future mission requirements. Establishment of a conservation buffer will reduce the risk of incompatible development near the installation and provide for conservation of natural resources on a regional scale. A Joint Land Use Study (JLUS) encourages cooperative land use planning between the installation and surrounding communities, balancing both military and civilian interests. Fort Stewart’s buffering activities help to support current and future training requirements by addressing development sprawl, preserving habitat, improving community relations and providing benefits to the community, and generally promoting overall military readiness.</p>					<p>Encroachment factors impact on the mission at Fort Stewart have generally increased over the past several years. Moderate impacts resulting from Threatened and Endangered Species and Airspace encroachment have increased over the last two years, and have had some minor to moderate impacts on the mission. Training restrictions associated with the Red-Cockaded Woodpecker (RCW) have decreased since 2010, and all training restrictions will be lifted when Fort Stewart reaches tiered recovery goals for the RCW population. Additionally, the installation is currently working with FAA to mitigate airspace encroachment. These actions should help to mitigate potential impacts moving forward and prevent these encroachment factors from having increased impacts in the future.</p> <p>The potential listing of the Gopher Tortoise and the Striped Newt as endangered species would have a moderate to significant impact on training. This is unlikely to occur in the next five years, but the Army must remain actively engaged in regional conservation efforts to prevent such listing. Additionally, funds are needed for the Army Compatible Use Buffer (ACUB) Program to purchase easements before additional development around the installation occurs and results in Adjacent Land Use impacts to the training mission.</p>				

Fort Stewart Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Movement & Maneuver	●	Fort Stewart has a doctrinal training land shortfall per AR 350-19. Fort Stewart’s doctrinal shortage of light and heavy maneuver land limits the realism of training. Units are not able to train in the required “battle space” as real world missions dictate. Combat operations, command and control, and logistical requirements are not realistic, thus limiting the “Train as We Fight” concept of training. Currently, there are no actions or plans to increase maneuver space.
	Sustainment	●	Same as above.
Range Support	Movement & Maneuver	●	Recent manpower reductions will cause a 20% cut in range operations starting in FY2012. This will limit installation support for short-term training requests; range reconfiguration projects to support emerging tactics, techniques, and procedures; and preventative maintenance. Range support will be limited to repair critical range operations functions and equipment. Range reconfiguration projects will not be completed without outside funding. Non-Army users will reimburse identifiable and incremental costs associated with the use of range facilities.
	Fire Support	●	Same as above.
	Sustainment	●	Same as above.

Figure 3-10 Army Capability and Encroachment Assessment Detail (continued)

Fort Stewart Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Threatened & Endangered Species	Movement & Maneuver	●	There are six federally protected species on Fort Stewart. Primary training impacts include movement, maneuver, and live fire restrictions associated with RCW clusters. Additional impacts to training vary depending on species, including limited flyover of marked nests during nesting season (Bald Eagle). Maneuver forces are able to train, with minimal to moderate workarounds dependant on location, even with the restrictions associated with the RCW and other threatened and endangered species. The 2007 Army RCW guidelines have been implemented on Fort Stewart. Training restrictions were removed from 90 RCW clusters in 2010, and an additional 39 clusters will be deprotected by the end of 2011. At the recovery threshold of 350 potential breeding groups, all RCW training restrictions will be removed. An active soldier education program is in place to educate soldiers on restrictions, thus allowing training tasks in conjunction with restrictions associated with protected species. Other training restrictions are related to Frosted Flatwoods Salamanders. Tracked and wheeled vehicles are prohibited from driving through 25 confirmed Frosted Flatwoods Salamander breeding ponds (94 acres). There are no training restrictions associated with the Eastern Indigo Snake, Shortnose Sturgeon, or Wood Stork.
	Fire Support	●	Same as above.
	Sustainment	●	Same as above.
	Protection	●	Same as above.
Spectrum	Movement & Maneuver	●	Electromagnetic encroachment, due to Objective Force Modernization and increased demand for Government and commercial wireless communications, is of great concern. Spectrum availability also impacts power projection support, first responders, and crisis management activities. Current spectrum challenges include the encroachment of range targetry control systems by radios used by units training in the field, and crowding and overlapping of the RF bands used by Land Mobile Radio, some Unmanned Aerial Vehicle (UAV) control systems and CREW systems. The installation Network Enterprise Center/Director of Information Management is hiring and equipping a full time spectrum manager to mitigate these impacts.
	Fire Support	●	Same as above.
	Intelligence	●	Same as above.
	Sustainment	●	Same as above.
	Command & Control	●	Same as above.
	Protection	●	Same as above.
Airspace	Movement & Maneuver	●	New FAA requirements for the Savannah Approach have encroached six nautical miles (nm) inside the installation boundary across the northern boundary of the installation. The affected area is a box approximately 23 KM east/west by 12KM north/south over the northern portion of post. This affects the training of units equipped with UASs. Due to the new requirements, there is NO flight of UASs in the affected area. Fort Stewart is working with FAA to mitigate this loss.
	Fire Support	●	Same as above.
	Intelligence	●	Same as above.
	Sustainment	●	Same as above.
	Command & Control	●	Same as above.
	Protection	●	Same as above.
Cultural Resources	Movement & Maneuver	●	198 protected sites and cemeteries occupy 829 acres of land. This area is restricted to training, and no ground disturbance or vehicles are allowed within these sites. An active soldier education program is in place to educate soldiers on restrictions, thus allow for accomplishment of training task in conjunction with the restrictions.
	Fire Support	●	Same as above.
Wetlands	Movement & Maneuver	●	Approximately 1/3 of Fort Stewart is wetlands (~91,000 acres). This poses maneuver and trafficability issues, however, the construction of low water crossings help to mitigate these restrictions. This issue is separate from the issue of wetland and range construction, where wetland credits and mitigation are needed for any construction project. Wetland areas are being purchased to mitigate wetland impact from future range construction projects.
	Fire Support	●	Same as above.
	Sustainment	●	Same as above.

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Figure 3-10 Army Capability and Encroachment Assessment Detail (continued)

Fort Wainwright Assessment Details

Range Mission Description																											
Fort Wainwright (FWA) supports home station individual and collective training for the 1/25th Stryker Brigade Combat Team and the 16th Combat Aviation Brigade. The Donnelly Training Area (DTA), a sub-installation of FWA, supports collective training, not only for the two resident brigades, but also for the 4/25th Airborne Brigade Combat Team and the 3rd Maneuver Enhancement Brigade from Fort Richardson. FWA and DTA support a wide variety of Air Force, Allied, and multi-national training during major flying exercises and sustainment training. U.S. Federal agencies, National Guard units, and Reserve units also use the FWA ranges for qualification and sustainment training. Additionally, the Cold Regions Test Center uses these training areas for RDT&E test items.																											
Capability Data							Encroachment Data																				
Mission Areas	Capability Attributes													Mission Areas	Encroachment Factors												
	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges		Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients	
Movement & Maneuver	●	●			●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Fire Support	●	●			●		●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Intelligence	●	●			●		●	●					●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Sustainment	●							●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Command & Control	●	●			●		●	●						●	●	●	●	●	●	●	●	●	●	●	●	●	
Protection	●				●		●	●				●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Legend	FMC ● PMC ● NMC ●													Legend Minimal ● Moderate ● Severe ●													
Capability Chart and Scores							Encroachment Chart and Scores																				
Summary Observations							Summary Observations																				
<p>The most adverse impact to mission is caused by outdated Small Arms Ranges and Infrastructure shortfalls. While several mission areas are impacted by capability shortfalls, Movement & Maneuver and Sustainment are the most severely impacted, due to poor training area road infrastructure, and Small Arms Ranges at the end of their lifespans.</p>							<p>There is a moderate impact to the mission areas due to encroachment factors. The most significant impacts are caused by Airspace encroachment and Cultural Resources restrictions. The mission areas that are most impacted are Movement & Maneuver and Fire Support, due to uncontrolled aircraft operating over Army owned training land, and limited area surveyed for cultural resources. Each impact results in training delays or reduced training opportunities.</p>																				
Historical Information, Results, and Future Projections							Historical Information, Results, and Future Projections																				
Calendar Year	2008	2009	2010	2011				Calendar Year	2008	2009	2010	2011															
Capability Scores	8.22	8.22	8.00	8.93				Encroachment Scores	8.46	8.46	9.00	9.35															
<p>The road infrastructure does not provide suitable driving conditions for modern fighting vehicles. Road infrastructure projects were submitted to address this situation. Historically, road improvement projects have been underfunded. Historically over-hires have been maintained to support the training mission; however, in FY2012 the requirements (DACs) to fully support range operations will be provided, eliminating the need for over-hires. Last, Small Arms Ranges are currently programmed for modernization to prevent equipment failure during critical reset times. Small Arms Range modernization and re-vitalization projects are identified in the Range Complex Master Plan.</p>							<p>Encroachment factors have historically had a moderate impact on the mission at FWA and DTA, but they have decreased slightly over the past two years. The installation has been able to manage and mitigate many encroachment impacts. The installation is working to expand restricted airspace to reduce the encroachment factors on the training mission. The installation has been moving forward with the Joint Pacific Alaska Range Complex (JPARC) Environmental Impact Statement (EIS) to expand the restricted airspace. The Final EIS anticipated in late 2013. The Final JPARC EIS will accompany the installation's airspace expansion request to FAA.</p>																				

Fort Wainwright Detailed Comments

Capability Observations

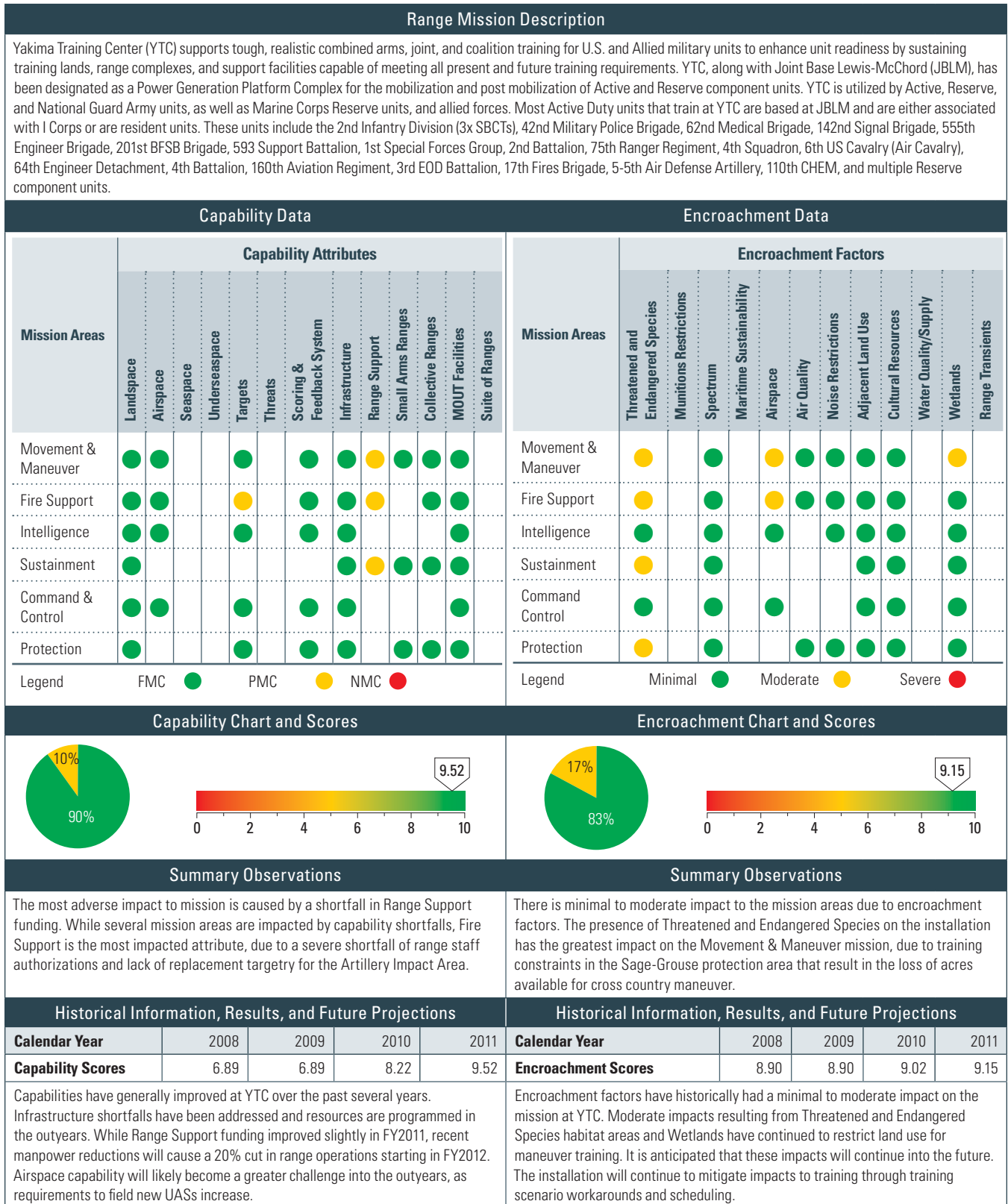
Attributes	Assigned Training Mission	Score	Comments
Airspace	Intelligence	●	There is a lack of restricted airspace to support UAS vehicle take-off and landing. This restricts UAS operations to daylight hours only if operating over Army lands, which are in the National Airspace, but not under restricted airspace. Therefore, the support UAS units can provide home station elements during consolidated training events is reduced. The installation is seeking to expand the area of restricted airspace. The JPARC EIS is anticipated to be complete in late 2013. The Final JPARC EIS will accompany an airspace expansion request to FAA.
Infrastructure	Movement & Maneuver	●	Poor training area road infrastructure is an issue based on seasonal fluctuations (freeze/thaw cycles), and creates challenging trail accessibility. Original trail construction (pre-calendar year [CY] 2000) methods did not produce suitable driving surfaces for modern fighting vehicles. Road infrastructure projects were submitted to address this situation. Historically, road improvement projects have been underfunded. This is an enduring effort.
	Fire Support	●	Same as above.
	Sustainment	●	Same as above.
Small Arms Ranges	Movement & Maneuver	●	Small Arms Ranges are reaching the end of their lifespans, and are currently programmed for modernization. The timetable for modernization must be maintained or there is a risk of equipment failure at critical reset times. Training requirements have to be met using workaround solutions on aging ranges. Modernization and re-vitalization projects are identified in the Range Complex Master Plan. These projects require support and funding to meet training throughput requirements. This is an enduring effort.
	Sustainment	●	Same as above.
	Protection	●	Same as above.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Airspace	Movement & Maneuver	●	There are uncontrolled aircraft operating over Army owned training lands outside of restricted airspace. This leads to regular cease fires for live fire training. The installation is seeking to expand restricted airspace. The JPARC EIS is anticipated to be complete by late 2013. The Final JPARC EIS will accompany the airspace expansion request to FAA.
	Fire Support	●	Same as above.
Cultural Resources	Movement & Maneuver	●	A majority of withdrawn lands have yet to be surveyed for cultural resources. This increases the coordination time required for units planning training events with ground disturbing activities. This also increases the coordination time required for new range construction, upgrade, and maintenance projects that support training. Fort Wainwright will emphasize Cultural Resource surveys within areas classified as Potential Training and Development Zones as funding and other resources allow.
	Fire Support	●	Same as above.
Range Transients	Movement & Maneuver	●	There are uncontrolled civilian aircraft operating over Army owned training lands outside of restricted airspace. This leads to regular cease fires for live fire training within the Small Arms Complex and throughout the training areas. The installation is seeking to expand restricted airspace. The JPARC EIS is anticipated to be complete in late 2013. The Final JPARC EIS will accompany our airspace expansion request to FAA.
	Fire Support	●	Same as above.

Figure 3-10 Army Capability and Encroachment Assessment Detail (continued)

Yakima Training Center Assessment Details



Yakima Training Center Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Targets	Fire Support	●	Existing armored targetry on the Anti-Armor Range has deteriorated, and there is a shortfall of replacement targetry for the Artillery Impact Area. Field Artillery units are unable to shoot at appropriate targetry. The installation is seeking procurement of funds to acquire additional targetry to enhance indirect fire training.
Range Support	Movement & Maneuver	●	Recent manpower reductions will cause a 20% cut in range operations starting in FY2012. This will limit installation support for short-term training requests; range reconfiguration projects to support emerging tactics, techniques, and procedures; and preventative maintenance.
	Fire Support	●	Same as above.
	Sustainment	●	Same as above.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Threatened & Endangered Species	Movement & Maneuver	●	The Sage-Grouse protection area restricts use of 13% of the installation. Within the Sage-Grouse protection area, training is constrained, thus resulting in loss of acres available for cross country maneuver. The Army is continuing to implement mitigation strategies and workarounds to avoid training shortfalls.
	Fire Support	●	Same as above.
	Sustainment	●	Same as above.
	Protection	●	Same as above.
Airspace	Movement & Maneuver	●	Airspace along Interstate 90 is reserved for General Aviation (GA) aircraft to fly. No live fire is permitted within 2000 meters of Interstate 90. The Army is continuing to mitigate this restriction through the use of training workarounds.
	Fire Support	●	Same as above.
Wetlands	Movement & Maneuver	●	There is a 100m buffer area around streams and springs, restricted to all digging and maneuver activities. This restricts the area where digging and maneuver can occur, thus reducing the available maneuver land. The Army is continuing implement mitigation strategies and workarounds to avoid training shortfalls.

Table 3-3 Army Range Capability and Encroachment Assessment Comparison

Range Name	Capability Score	Encroachment Score
Fort Benning	9.39	8.81
Fort Bliss	9.40	9.63
Fort Bragg	9.07	9.39
Fort Campbell	9.05	9.88
Fort Carson	9.52	9.71
Fort Drum	9.19	10.00
USAG Hawaii	9.15	8.78
Fort Hood	9.22	9.52
Fort Irwin	8.70	8.61
Fort Lewis	8.33	8.57
Fort Polk	9.33	9.51
Fort Riley	9.17	9.55

Table 3-3 Army Range Capability and Encroachment Assessment Comparison (continued)

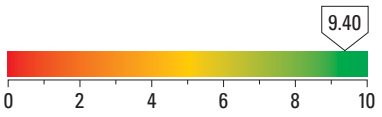
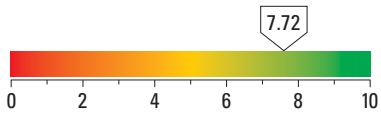
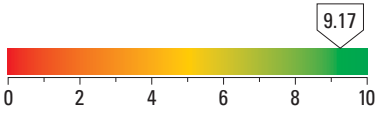
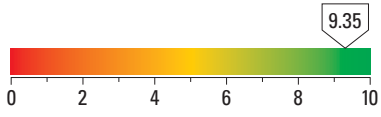
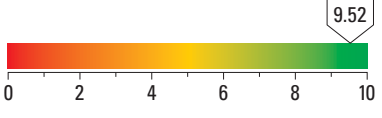
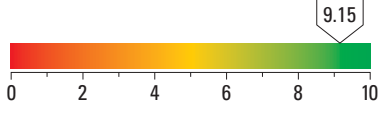
Range Name	Capability Score	Encroachment Score
Fort Stewart		
Fort Wainwright		
Yakima Training Center		

Table 3-4 Army Range Mission Description

Fort Benning
<p>Fort Benning and the MCoE provide trained and adaptive soldiers and Leaders for an Army at War, while developing future requirements for the individual soldier and the Maneuver Force and providing a world class quality of life for our soldiers and Army families. The MCoE Command priorities are to: (1) Fully Support an Army at War; (2) Prepare for the Future; (3) Enhance Quality of Life for soldiers and Army Families; (4) Operate in a Command Climate of Teamwork, Discipline and Standards and Safety; (5) Fully Transition to the MCoE; and (6) Demonstrate Inspired Leadership. Implied in this is the responsibility to provide the Training and Doctrine Command (TRADOC) with a full spectrum of support in doctrine, training, capability development, and training support products for the Maneuver Force. The MCoE's function is to serve as the user representative in the development of training methodologies and products, concepts, doctrine, organizational requirements, and materiel capability requirements for each functional area, as well as to provide instructors to teach classes across the MCoE. Currently, Fort Benning provides the home station and training facilities for FORSCOM's 3-3rd HBCT, 11th Engineer Battalion, 13th Corps Support and Sustainment Battalion, and 14th Combat Support Hospital; Special Operations Command's (SOCOM) 75th Ranger Regiment, and its 3rd Battalion, 75th Ranger Regiment, and Special Troops Battalion; MEDCOM activities; DENTCOM activities; and numerous other active duty deployable units. Also, Fort Benning provides the home station and training facilities for the Western Hemisphere Institute for Security Cooperation (WHINSEC), which has the mission to train cadets, NCOs, and officers from over 25 Western Hemisphere countries. Fort Benning is the sixth largest installation in the United States with the third largest troop density. More than 120,000 Service members, family members, retirees, civilian employees and contractors work, live, and use services on Fort Benning. As Fort Benning transitions to the MCoE, there will be more than 11,000 new jobs on the installation for soldiers, civilians, and contractors. More than \$3.5 billion in construction will be invested on Fort Benning through 2016. The rapid growth of soldiers, families, and civilians that Fort Benning will have to provide services for will grow faster than the means to support all of their needs. Currently, Fort Benning conducts 61 courses; with the MCoE transformation, it will bring 39 new courses, impacting contracted labor and services, over 200 new facilities, and 5 new maneuver training areas.</p>
USAG Hawaii
<p>The mission of the U.S. Army Pacific (USARPAC) is to execute continuous training and readiness oversight responsibilities for Army Force Generation in Hawaii. On order, USARPAC executes Joint Force Land Component Command functions in support of Homeland Defense and Security in Hawaii. The mission of USAG-HI is to: (1) Plan and execute on-order deployment support, force protections, and contingency operations; (2) Plan and execute transformation of the installation garrison that supports Stryker and other mission units; (3) Provide quality installation support and services to our customers; (4) Maintain and improve infrastructure and training areas; (5) Provide proper stewardship of all resources and the environment; (6) Sustain strong community relations; and (7) Provide for the well-being of the Army Family into the 21st Century.</p> <p>USAG-HI comprises two primary installations, Schofield Barracks and Pohakuloa Training Area (PTA), and five primary training annexes. USARPAC provides multiple live fire training venues. Its Basic Weapons Marksmanship Ranges used to qualify or train on small arms weapons. Future Direct Fire Gunnery Ranges are used to qualify and train Stryker crews on Tables I-VIII. USARPAC Collective Live Fire Ranges are used for collective training events, such as infantry squad and platoon battle courses (ISBCs and IPBCs), Urban Assault Courses (UAC) and Aerial Gunnery Ranges (AGRs) used to qualify on Tables IX-XII. Indirect Fire Ranges or dedicated firing points are used for the qualification and training of mortars, field artillery, or air defense artillery and OPs. Special Live Fire Ranges and training areas are used for qualification and training of demolitions, live hand grenades, and claymores, and as test and evaluation ranges and facilities. USARPAC maneuver training land is used to conduct force-on-force maneuver training and Situational Training Exercises (STXs). Areas are classified as light or heavy, depending on the type of training they can support.</p> <p>Based on the geographic location of Hawaii and force structures, the Armed Forces are poised at the center of the Pacific for rapid deployment to any worldwide location, and the ranges and training areas are used by the Joint Forces.</p> <p>Units that train and deploy from USARPAC are: 2nd SBCT, 3rd IBCT, 25th CAB, 25th STB, 25th ID HQ's and Div Base Elements, 8th TSC, 500th MI Group, 516th SIG BDE, 8th MP BDE, 45th Sustainment BDE, 130th ENG BDE, 10th SG, 8th STB, HIARNG, GUARNG, 9th RSC, and the USMC.</p>

3.2.2 Marine Corps Assessment Results¹⁰

Marine Corps Training Range Capability Assessment

Analysis Results

The U.S. Marine Corps (USMC) Capability Assessment data from 10 USMC range complexes are summarized and presented in Table 3-5.

The USMC Range Capability Chart and Scores are presented in Figure 3-11 and assessments by Range, Attributes, and Mission Areas are shown in Figures 3-13, 3-15, and 3-17.

The USMC's 10 individual range capability assessments along with comments for red and yellow ratings are included at the end of this section (Figure 3-19).

Marine Corps Training Range Encroachment

Assessment Analysis Results

USMC Range Encroachment Assessment data from the 10 USMC ranges complexes are summarized in Table 3-6.

The USMC Range Encroachment Chart and Scores are presented in Figure 3-12 and assessments by Range, Factors, and Mission Areas are shown in Figures 3-14, 3-16, and 3-18.

The USMC's 10 individual encroachment assessments along with comments for red and yellow ratings are included at the end of this section (Figure 3-19).

The USMC Range Capability and Encroachment assessment comparisons are presented in Table 3-7.

¹⁰ Of the 14 ranges identified in the Marine Corps' range inventory in Appendix C., four are not assessed. Marine Corps Logistics Base (MCLB) Albany, MCLB Barstow, Marine Corps Air Station Miramar, and Marine Corps Recruit Depot (MCRD) Parris Island have no ranges other than small arm ranges used for the limited purpose of weapons qualification training. Due to their limited nature, the Marine Corps does not intend to formally evaluate these ranges unless the mission changes or some encroachment factor threatens their ability to function. MCB Japan includes MCB Camp Butler.

Table 3-5 Marine Corps Capability Assessment Data Summary

Range	NMC	PMC	FMC	Capability Scores
MCAS Beaufort/Townsend	0	6	8	7.86
MCMWTC Bridgeport	0	8	0	5.00
MCAS Cherry Point	0	8	9	7.65
MCB Hawaii	6	14	2	4.09
MCB Japan	14	11	5	3.50
MCB Camp Lejeune	3	19	8	5.83
MCB Camp Pendleton	4	17	9	5.83
MCB Quantico	0	14	4	6.11
MCAGCC Twentynine Palms	6	15	13	6.03
MCAS Yuma/Bob Stump	0	18	9	6.67
HQ USMC	33	130	67	5.74

Figure 3-11 Marine Corps Capability Chart and Scores

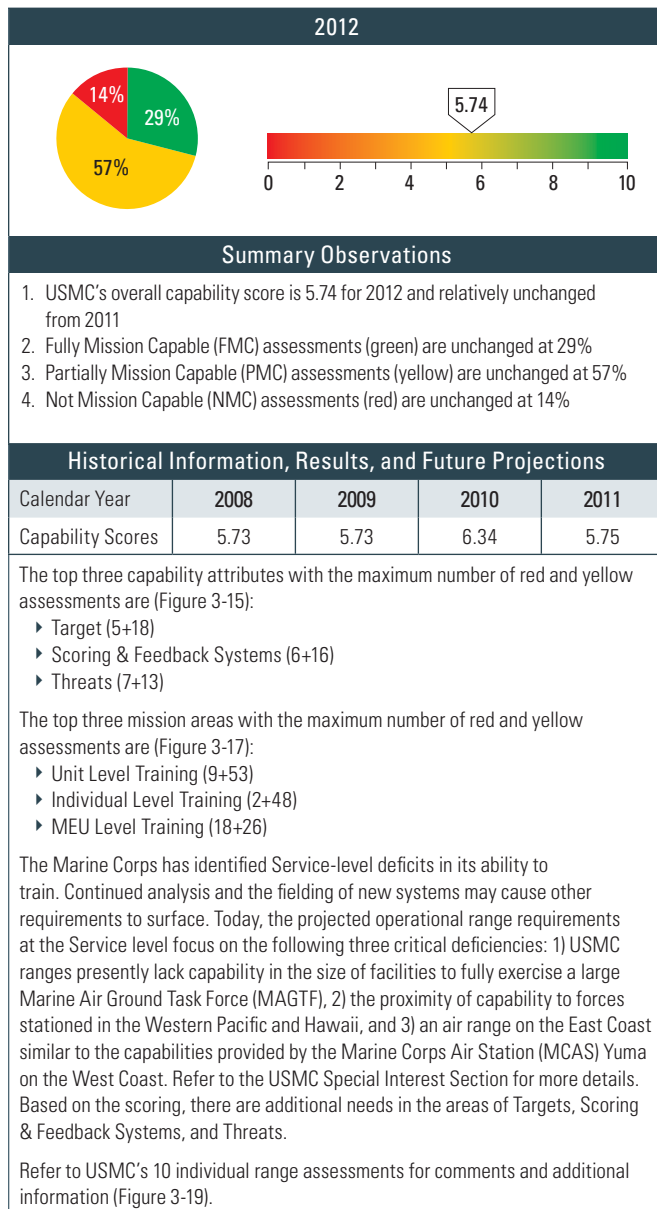


Table 3-6 Marine Corps Encroachment Assessment Data Summary

Range	Severe	Moderate	Minimal	Encroachment Scores
MCAS Beaufort/Townsend	0	0	22	10.00
MCMWTC Bridgeport	2	16	2	5.00
MCAS Cherry Point	0	7	15	8.41
MCB Hawaii	5	6	10	6.19
MCB Japan	7	5	0	2.08
MCB Camp Lejeune	0	18	15	7.27
MCB Camp Pendleton	8	10	15	6.06
MCB Quantico	4	4	14	7.27
MCAGCC Twentynine Palms	0	7	32	9.10
MCAS Yuma/Bob Stump	5	13	12	6.17
HQ USMC	31	86	137	7.09

Figure 3-12 Marine Corps Encroachment Chart and Scores

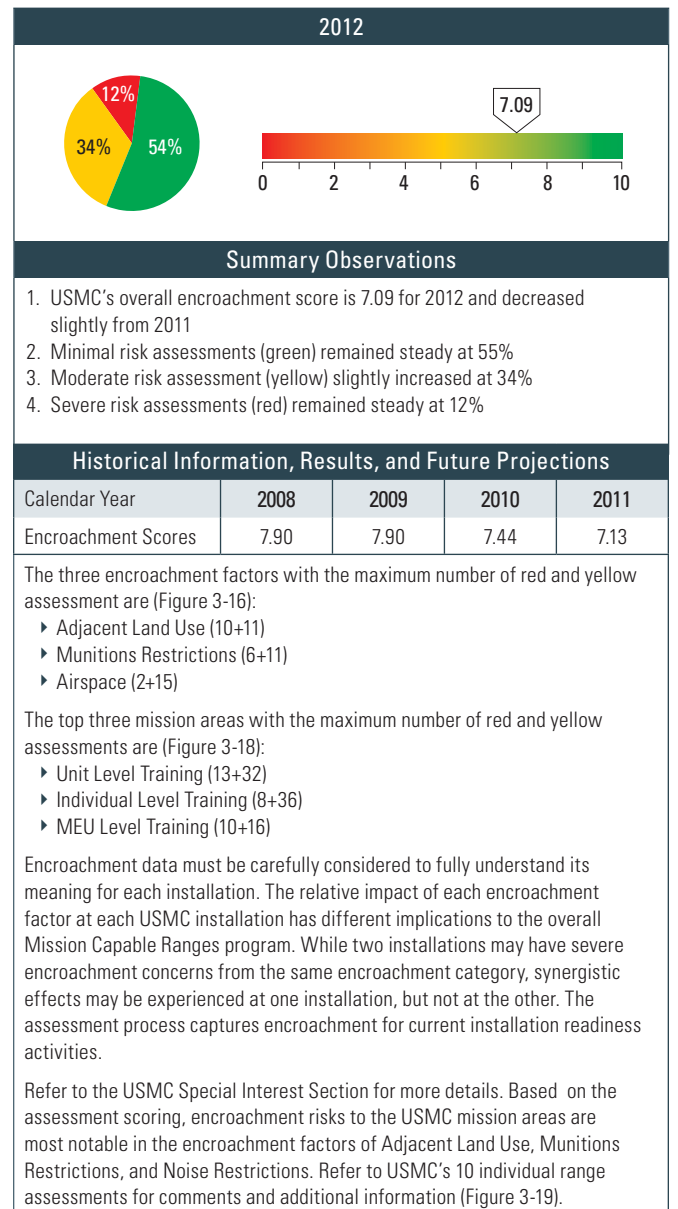


Figure 3-13 Marine Corps Capability Assessments by Range

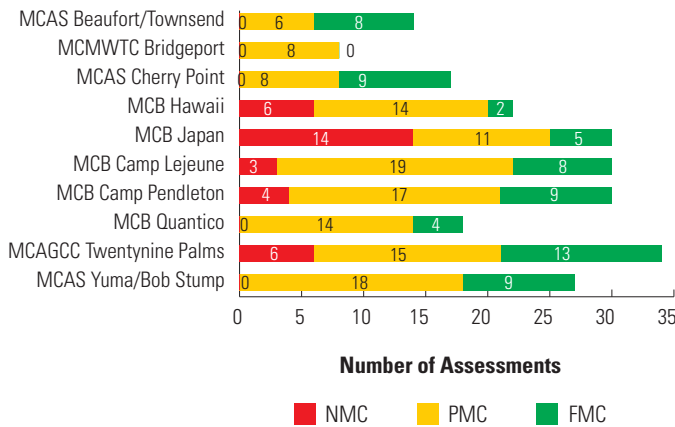


Figure 3-14 Marine Corps Encroachment Assessments by Range

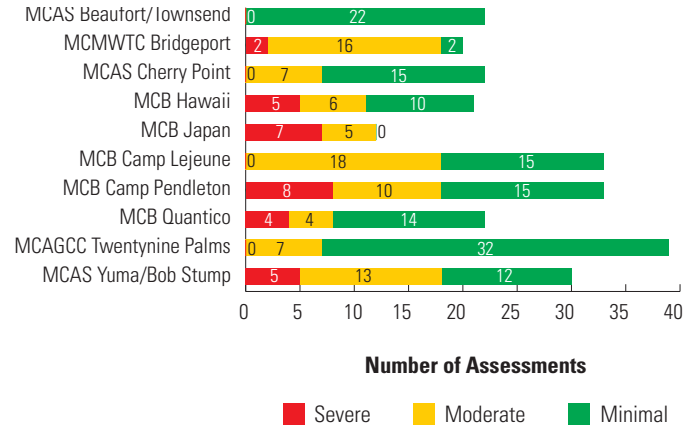


Figure 3-15 Marine Corps Capability Assessment by Attributes

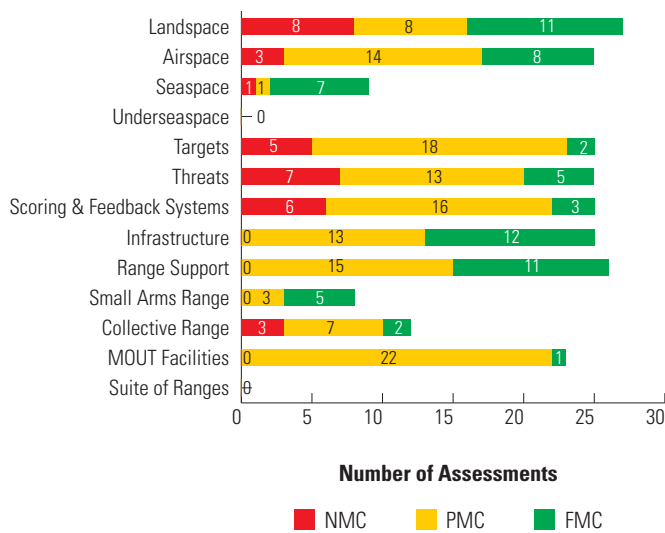


Figure 3-16 Marine Corps Encroachment Assessment by Factors

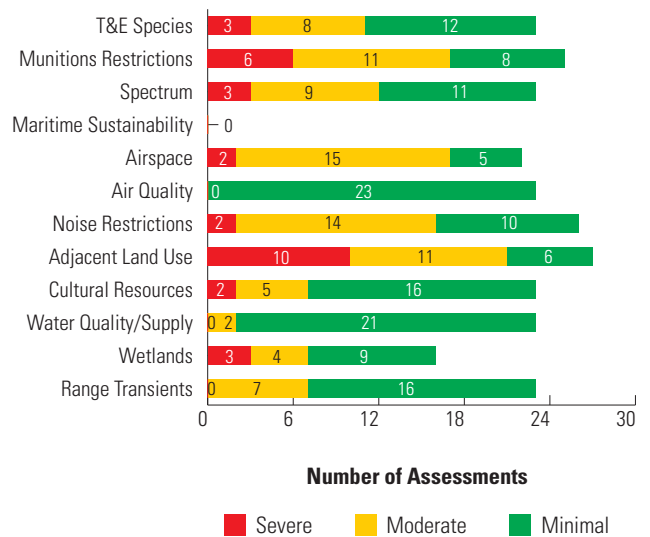


Figure 3-17 Marine Corps Capability Assessment by Mission Areas

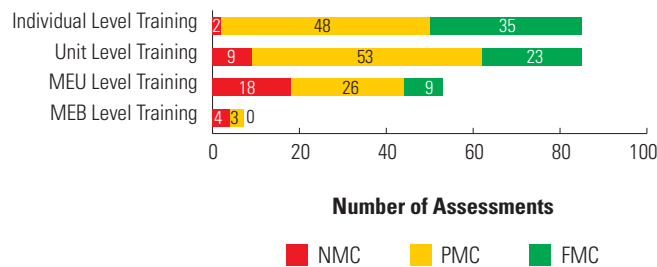
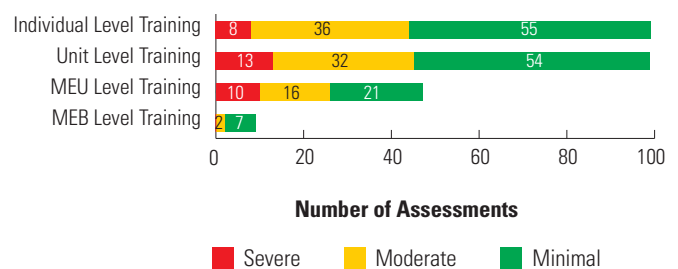


Figure 3-18 Marine Corps Encroachment Assessment by Mission Areas



Marine Corps Special Interest Section

General Issues

The Mission Capable Ranges program provides the Marine Corps with a comprehensive, fully-developed range program that defines current, emerging and future range requirements, and executes range modernization initiatives focused on the needs of the warfighter. Over the past decade, the Marine Corps has invested over \$700 million in ranges. The cornerstone of the program is range modernization through (1) sustainment of ranges to maintain capabilities and protect range investments; (2) re-capitalization to upgrade or replace existing ranges and range resources; and (3) investment in new ranges that leverage advanced instrumentation, targets, and training systems. Range modernization requires a substantial, ongoing commitment of resources to address each of these categories. Without sufficient commitments focused at a minimum on sustainment and re-capitalization, today's range capabilities will become tomorrow's liabilities, with adverse impacts on the ability of our installations to support required training with mission-capable ranges.

Critical Issues: Range Capabilities

The Marine Corps has identified Service-level deficits in its ability to train to the many missions that it faces. Continued analysis and the fielding of new systems may cause other requirements to surface in the future, but today the projected operational range requirements at the Service-level focus on the following three critical deficiencies:

1. Marine Corps ranges presently lack the capability to fully exercise a large MAGTF in a realistic, doctrinally appropriate training scenario. The premiere MCAGCC at Twentynine Palms is the center of excellence for developing and executing combined arms live fire training of MAGTFs; however, MCAGCC cannot accommodate a full-scale, live fire MEB exercise. Expansion of MCAGCC/Marine Air-Ground Task Force Training Center (MAGTFTC) would significantly enhance the Marine Corps' ability to continue providing trained Marines, Marine units, and MAGTFs in furtherance of national security objectives. Having obtained necessary authorizations from DoD, the Marine Corps is proceeding with analysis and assessments that support land expansion and establishing additional airspace.
2. Inadequate training opportunities exist for the Marine units stationed in the Western Pacific and Hawaii. Marine Corps installations in Hawaii lack sufficient range capabilities to fully support training of units stationed there. Therefore, these units train extensively on other Military Service facilities, particularly U.S. Army ranges in Hawaii. The Marine Corps is in the process of assessing approaches to the challenging issue of mitigating range shortfalls within Hawaii. The initiative to relocate units

from Okinawa to Guam and develop training ranges and infrastructure on Guam and selected islands of the Commonwealth of the Northern Mariana Islands may provide additional training opportunities for Marines stationed in Okinawa and the Hawaiian Islands.

3. The Marine Corps has identified the need for an aviation training range on the East Coast of the United States with range capabilities like those provided by Marine Corps Air Station (MCAS) Yuma/Bob Stump on the West Coast. To address this requirement, the Marine Corps has assessed potential alternatives, including expanding the MCAS Beaufort/Townsend range. Based on preliminary analysis, the Marine Corps determined that this expansion is feasible, and that additional assessment and analysis is warranted. Assessing possible courses of action, including Townsend Range expansion, will therefore continue in FY2012.

The Mission Capable Ranges program is also focused on developing aviation training on ranges and enhancing access to training airspace, in addition to expanding Townsend and special use airspace at MCAGCC. In particular, the Marine Corps is engaged in developing airspace access, landing zones, and range support requirements to accommodate MV-22 Osprey and UAS capabilities, and in determining range and airspace needs for the Joint Strike Fighter (JSF). The Mission Capable Ranges program is also increasing the Marine Corps' emphasis on supporting implementation of advanced training technologies for LVC environments. Training technologies have the capability to substantially increase the training value provided by our ranges, and to enhance the realism of virtual and constructive training. Implementing advanced training technologies is a critical component of range modernization.

Critical Issues: Encroachment Factors

Encroachment that constrains the use of Marine Corps installations for realistic military training remains a significant concern. Continued population growth, increased levels of environmental regulation, and expanding development in the regions that are home to Marine Corps installations generate pressure on scarce resources (land, airspace, water space, radio frequency spectrum) that are critical to current and future military training, testing, and general mission activities. The Marine Corps programmatically assesses and addresses encroachment issues, as discussed in Chapter 4.

This report includes assessment of encroachment at Marine Corps complexes, utilizing defined categories of encroachment. The impact of each category of encroachment factor differs across Marine Corps installations. While two installations may have severe encroachment concerns from the same encroachment category, synergistic effects may be experienced at one installation, but not at the other. Accordingly, the data must be carefully considered to fully understand the encroachment effects on each installation. The encroachment

score for Marine Corps installations in total should be considered against the backdrop of each installation's encroachment score.

In addition, the encroachment assessment merely evaluates effects on current operations; it does not predict how future operations may be affected by encroachment. Changes in installation readiness activities, due to changes in doctrine and equipment, or changes in encroachment threats, are not captured by this encroachment assessment. For instance, the introduction of new equipment which requires extended areas in which to train, such as the JSF, may result in significant degradation of encroachment scores at those installations supporting this new aircraft.

A summary of major encroachment concerns at Marine Corps Base Camp Pendleton illustrates the spectrum of challenges that threaten the capabilities of Marine Corps range complexes.

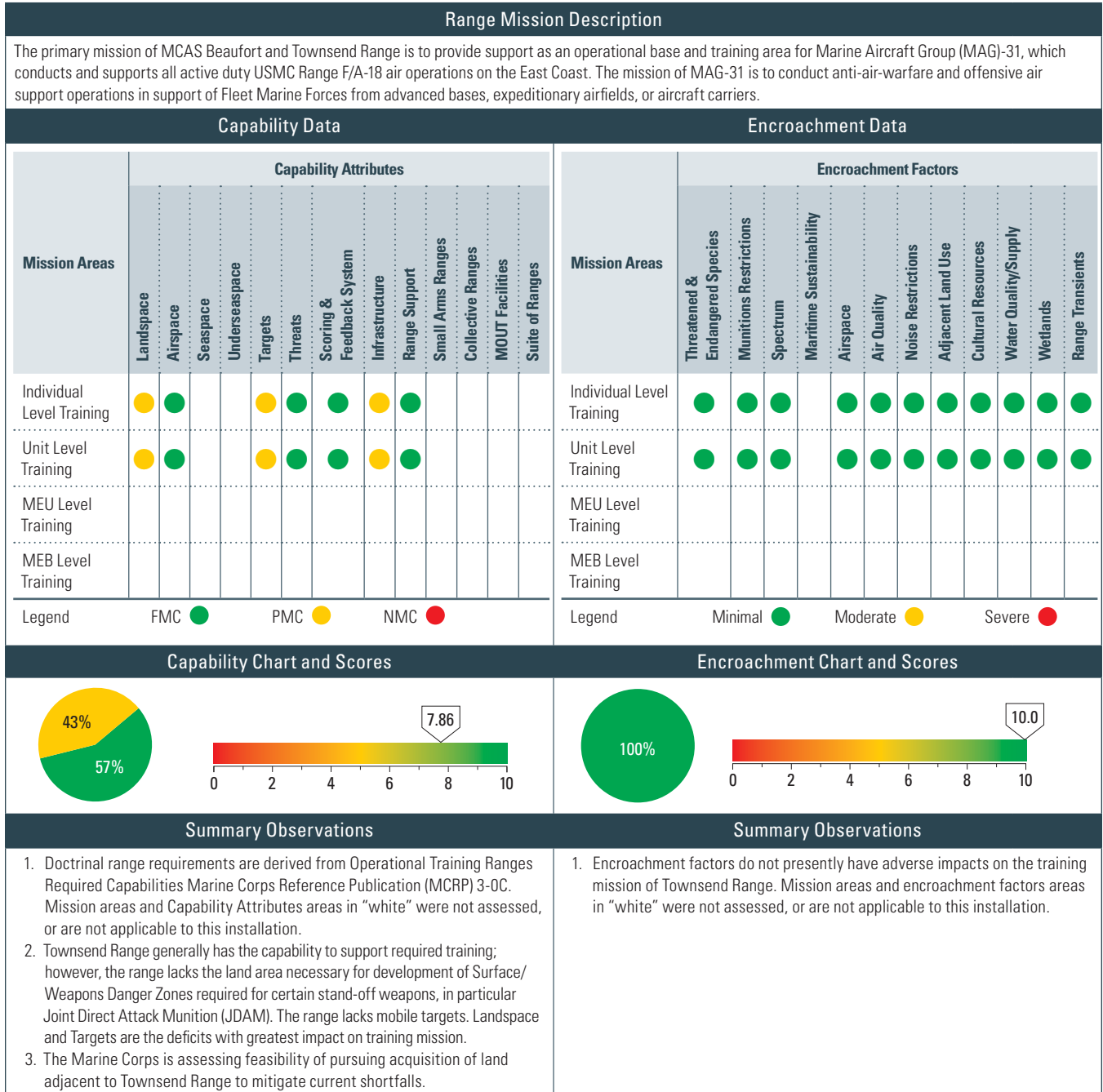
- ▶ Sixteen species listed under the Endangered Species Act (ESA) are found on Camp Pendleton. Their presence limits and in some cases prevents the use of certain areas for training. Seasonal restrictions in the vicinity of sensitive habitats include those designed to prevent digging, off-road vehicle use, and stand-off distance requirements for field activities. Other constraints on training can include speed restrictions, dust minimization requirements, and limits or prohibitions on the use of certain pyrotechnics.
- ▶ Areas defined as wetlands are found throughout Camp Pendleton. Restrictions on training in wetlands areas can include permitting requirements and associated mitigations for soil disturbance, multi-agency coordination or consultation and approval where wetlands support certain species, and specific restrictions on training in the vicinity of vernal pools and coastal marshes and lagoons.
- ▶ Areas of Camp Pendleton are severely constrained from supporting training, due to the presence of cultural resources. Restrictions in the vicinity of known archeological sites include those designed to prevent digging, off-road vehicle use, and stand-off distance requirements for field activities.
- ▶ Urban development has nearly surrounded Camp Pendleton. Proposed development, if executed, has the potential to further encroach on the mission of the installation. Camp Pendleton is at the confluence of the second, third, and fourth most populated counties in California. Pressure continues to be exerted on the installation by surrounding communities' initiatives to develop water, energy, and transportation infrastructure. For example, planning has long been underway for construction of a toll road connecting to Interstate 5

adjacent to Camp Pendleton (although one proposed alignment would actually traverse installation lands that are presently used for training).

While this report includes assessment of encroachment at range complexes, encroachment also threatens Marine Corps installations that do not provide significant range resources, but which are home to operational forces that utilize nearby training areas. Encroachment at these installations also affects training and mission readiness. MCAS Miramar, for example, while not a "range complex," is identified here as an example of a Marine Corps installation that is subject to significant encroachment pressures. Urban growth and land uses adjacent to the installation and airspace congestion present particular concerns, with potential or actual impacts on military aviation activities. MCAS Miramar has implemented a comprehensive Encroachment Control Program and maintains an active community relations program as a core component of its encroachment strategy. The Encroachment Control Program includes monitoring local development planning for consistency with Air Installation Compatible Use Zone (AICUZ) and Airport Land Use Compatibility Plan (ALUCP) guidelines and potential impacts on the installation mission. These efforts are intended to ensure that adequate safety and operation buffers are maintained. The cost of establishing additional buffers, if practically feasible, would be substantial given the urban land use profile in the area.

Figure 3-19 Marine Corps Capability and Encroachment Assessment Detail

Marine Corps Air Station (MCAS) Beaufort/Townsend Assessment Details



Marine Corps Air Station (MCAS) Beaufort/Townsend Assessment Details

Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	8.33	8.33	8.57	7.86	Encroachment Scores	10.00	10.00	10.00	10.00
Impacts from key range capability shortcomings resulted in PMC designations for this installation during FY2008–FY2011, when assessing the installation’s ability to support Marine Corps Task 1.7 (Support Maneuver through the Provision of Training Areas) and Marine Corps Task 3.3 (Support Fires through the Provision of Ranges and Training Areas). Top two capabilities and/or enhancements required to facilitate transition to FMC include: (1) upgraded aviation ordnance delivery training opportunities, and (2) enhanced joint forces training integration. Townsend Bombing Range expansion is currently being analyzed as a venue to address these capability requirements.					Impacts from key encroachment factors threatened to lead to PMC designations for this installation during FY2008–FY2011, when assessing the installation’s ability to support Marine Corps Task 1.7 (Support Maneuver through the Provision of Training Areas) and Marine Corps Task 3.3 (Support Fires through the Provision of Ranges and Training Areas). Successful mitigation of key encroachment factors, including (1) Airspace restrictions, (2) frequency Spectrum limitations, and (3) urban growth, facilitated retention of a FMC designation.				

MCAS Beaufort/Townsend Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Individual Level Training	●	Landspace does not support training using modern inventory of standoff weapons, such as JDAM, in that Surface/ Weapons Danger Zones for these weapons exceed boundaries of the range. The Marine Corps has undertaken preliminary analysis of feasibility of range expansion to accommodate standoff weapons air-to-ground deliveries.
	Unit Level Training	●	Same as above.
Targets	Individual Level Training	●	The range lacks mobile targets, affecting training realism. The Marine Corps Range Modernization/Transformation (RM/T) Program is addressing shortfalls, consistent with available resources.
	Unit Level Training	●	Same as above.
Infrastructure	Individual Level Training	●	Deficiencies in range maintenance and real property due to fiscal constraints.
	Unit Level Training	●	Same as above.

Figure 3-19 Marine Corps Capability and Encroachment Assessment Detail (continued)

Marine Corps Mountain Warfare Training Center (MCMWTC) Bridgeport Assessment Details

Range Mission Description																										
The MCMWTC Bridgeport provides range capabilities to support training of Marines, Marine units, and MAGTF elements in the mission essential tasks of modern expeditionary warfare, focused on the training requirements for operations in mountainous, high altitude, and cold weather environments, and to support the development and testing of specialized equipment for use in mountain and cold weather operations.																										
Capability Data							Encroachment Data																			
Mission Areas	Capability Attributes										Mission Areas	Encroachment Factors														
	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges		Collective Ranges	MOUT Facilities	Suite of Ranges	Threatened & Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
Individual Level Training	●	●						●	●					Individual Level Training	●	●	●		●	●	●	●	●	●	●	●
Unit Level Training	●	●						●	●					Unit Level Training	●	●	●		●	●	●	●	●	●	●	●
MEU Level Training														MEU Level Training												
MEB Level Training														MEB Level Training												
Legend	FMC ●		PMC ●		NMC ●								Legend	Minimal ●		Moderate ●		Severe ●								
Capability Chart and Scores							Encroachment Chart and Scores																			
Summary Observations							Summary Observations																			
<ol style="list-style-type: none"> Doctrinal range requirements are derived from Operational Training Ranges Required Capabilities Operational Training Ranges Required Capabilities MCRP 3-0C. The MCMWTC Bridgeport Range Complex Management Plan (RCMP) analysis (FY2011) provides the basis for this assessment. Attribute areas in "white" were not assessed because the capability is not present at this installation. MCMWTC Bridgeport generally has the capability to support required non-live fire training; however, limitations on munitions use, target and training infrastructure emplacement, and other land use constraints affect its capability to fully support training requirements. Marines and units training at MCMWTC make use of other Service ranges in the region for live fire and maneuver training. 							<ol style="list-style-type: none"> 90% of the range complex mission is moderately or severely impacted by encroachment factors. Munitions Restrictions, Adjacent Land Use, and Wetlands are the encroachment factors with greatest impact on training mission. The RCMP has been prepared (FY2010). The Encroachment Control Plan (ECP) is in progress in FY2011/FY2012. To mitigate encroachment impacts, units training at MCMWTC Bridgeport make use of other Service ranges, particularly the live fire training capabilities of the Army's Hawthorne Ammunition Depot (HWAD) in Nevada. 																			
Historical Information, Results, and Future Projections							Historical Information, Results, and Future Projections																			
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011																	
Capability Scores	N/A	N/A	5.00	5.00	Encroachment Scores	8.00	8.00	4.50	5.00																	
Impacts from key range capabilities shortcomings resulted in PMC designations for this installation during FY2010–FY2011, when assessing the installation's ability to support Marine Corps Task 1.7 (Support Maneuver through the Provision of Training Areas) and Marine Corps Task 3.3 (Support Fires through the Provision of Ranges and Training Areas). The top three capabilities and/or enhancements required to facilitate transition to FMC include: (1) reduction of limitations associated with tenant status on United States Forest Service (USFS) land, (2) fully resourced installation range program, and (3) consistent/permanent funding for range maintenance real property sustainment.							Impacts from key encroachment factors resulted in PMC designations for this installation during FY2008–FY2011, when assessing the installation's ability to support Marine Corps Task 1.7 (Support Maneuver through the Provision of training areas) and Marine Corps Task 3.3 (Support Fires through the Provision of Ranges and Training Areas). Successful mitigation of key encroachment factors, including (1) Airspace restrictions, (2) frequency Spectrum limitations, and (3) urban growth, are required to facilitate transition to a FMC designation.																			

MCMWTC Bridgeport Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landscape	Individual Level Training	●	Training land is sufficient to support required training; however, limitations on land use affect capability of available land to fully support training. The Marine Corps is conducting ongoing planning and analysis and examining options to acquire in-holdings (private lands within the forest area) that would support development of permanent training structures such as MOUT Facilities, to mitigate limitations of USFS constraints.
	Unit Level Training	●	Same as above. Marines and Marine units training in mountain warfare operations make extensive use of other Military Service ranges at Hawthorne Ammunition Depot (HWAD) and also use ranges at Fallon Training Range Complex (FTRC), to supplement training conducted at MCMWTC. HWAD and FTRC permit live fire, but lack ranges to support extended live fire and maneuver training by Marine units.
Airspace	Individual Level Training	●	Use of MCMWTC by aviation assets presents challenges because no special use Airspace is designated.
	Unit Level Training	●	Same as above.
Infrastructure	Individual Level Training	●	MCMWTC is responsible for road maintenance in the MCMWTC training areas. MCMWTC is generally not authorized to develop range infrastructure.
	Unit Level Training	●	Same as above.
Range Support	Individual Level Training	●	Communication infrastructure improvements to enhance Range Control and range safety have been planned, but implementation is subject to funding constraints.
	Unit Level Training	●	Same as above.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Threatened & Endangered Species	Individual Level Training	●	The presence of sensitive species seasonally restricts use of some areas of MCMWTC. The presence of these resources significantly constrains the ability to identify landing zones (LZs) for rotary aircraft. Intensive survey and related environmental planning efforts are underway to address these and other natural resource-based issues and training impacts.
	Unit Level Training	●	Same as above.
Munitions Restrictions	Individual Level Training	●	MCMWTC is situated on land owned by the USFS. Military training proceeds pursuant to Special Use Permits. Training lands of MCMWTC are also used by the public. The Marine Corps has no authority to restrict use of these lands. USFS permits strictly limit live fire training within MCMWTC to limited use of small arms in designated areas. Fire danger is a significant concern, as is public safety. As a result, extensive live fire training at MCMWTC is not feasible.
	Unit Level Training	●	Same as above.
Spectrum	Individual Level Training	●	Communications infrastructure does not support an adequate safety and operational VHF/HF network to cover all of the training areas.
	Unit Level Training	●	Same as above.
Noise Restrictions	Individual Level Training	●	Potential impacts on forest land users (e.g., domestic livestock grazing) from aircraft and ordnance noise contribute to concerns leading to restrictions on military uses of USFS lands that comprise MCMWTC.
	Unit Level Training	●	Same as above.
Adjacent Land Use	Individual Level Training	●	As noted, MCMWTC is situated on land owned by USFS. The entire range complex is a co-use area, contains environmentally sensitive resources, and is subject to permit-based restrictions on land use for military training. Some adjacent lands are designated as wilderness pursuant to the Wilderness Act. These lands are generally not available for training, and the designation may create public expectations about appropriate noise emanating from MCMWTC training activities into wilderness areas. In addition, Congress designated a portion of MCMWTC as a National Winter Recreational Area for snowmobile use by the public.
	Unit Level Training	●	Same as above.
Cultural Resources	Individual Level Training	●	MCMWTC is characterized by cultural sites that must be surveyed and assessed by USFS before USFS will permit training activities in areas with potentially significant sites. Cultural sites presently constrain ground movement and maneuver training, and the ability to identify suitable LZs for rotary aircraft. Analysis currently being conducted addresses these cultural sites to obtain clearance for training and establishment of suitable LZs.
	Unit Level Training	●	Same as above.
Water Quality/ Supply	Individual Level Training	●	Reported high nitrate levels in water supply are being investigated. Waste water treatment plants are near or at capacity during larger Unit training events, limiting opportunity for expansion of training opportunities. One of the two wells that MCMWTC maintains is not usable for potable water, due to reportedly elevated levels of manganese.
	Unit Level Training	●	Same as above.

Figure 3-19 Marine Corps Capability and Encroachment Assessment Detail (continued)

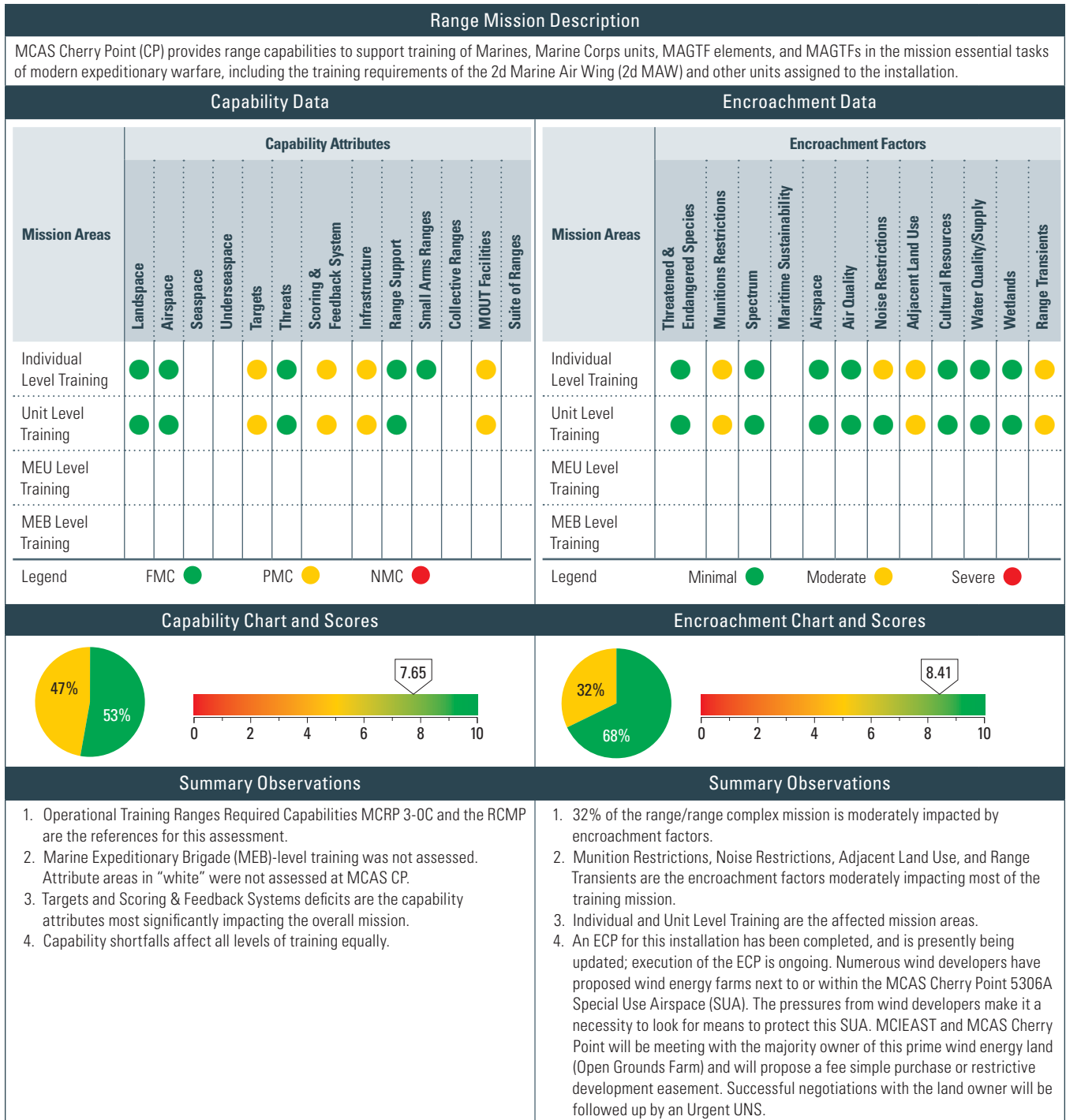
MCMWTC Bridgeport Detailed Comments

Encroachment Observations			
Factors	Assigned Training Mission	Score	Comments
Wetlands	Individual Level Training	●	MCMWTC is characterized by mountain meadows that contain wetland habitats and resources. The presence of these resources constrains training uses of these areas, including restricting avenues of movement through affected training areas. Wetlands also constrain the ability to identify suitable LZs for rotary aircraft. Environmental analysis that is currently being conducted will address wetlands issues. Surveys and other analysis have been conducted and are ongoing to identify and obtain clearance for suitable LZ sites.
	Unit Level Training	●	Same as above.
Range Transients	Individual Level Training	●	The presence of non-military forest users significantly impacts training in that the rights of the public to use these forest lands is a factor in the limited use on most live fire training.
	Unit Level Training	●	Same as above.

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Figure 3-19 Marine Corps Capability and Encroachment Assessment Detail (continued)

MCAS Cherry Point Assessment Details



MCAS Cherry Point Assessment Details

Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	7.0	7.0	8.67	7.65	Encroachment Scores	7.73	7.73	8.41	8.41
Impacts from key range capabilities shortcomings resulted in PMC designations for this installation during FY2008–FY2011, when assessing the installation’s ability to support Marine Corps Task 1.7 (Support Maneuver through the Provision of Training Areas) and Marine Corps Task 3.3 (Support Fires through the Provision of Ranges and Training Areas). The top three capabilities and/or enhancements required to facilitate transition to FMC include: (1) upgraded and enhanced range safety and exercise command and control (C2) communications systems; (2) urban training facilities, including urban close air support (CAS) capability and MOUT Facility; and (3) fully resourced Range Control facility.					Impacts from key encroachment factors resulted in PMC designations for this installation during FY2008–FY2011, when assessing the installation’s ability to support Marine Corps Task 1.7 (Support Maneuver through the Provision of Training Areas) and Marine Corps Task 3.3 (Support Fires through the Provision of Ranges and Training Areas). Successful mitigation of key encroachment factors, including (1) Munitions Restrictions, (2) Noise Restrictions, and (3) urban growth, and (4) Range Transients, are required to facilitate transition to a FMC designation.				

MCAS Cherry Point Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Targets	Individual Level Training	●	Targets do not meet requirements of Operational Training Ranges Required Capabilities MCRP 3-0C; ranges lack structural/urban targets. The Marine Corps RM/T program is addressing shortfalls consistent with available resources and Marine Corps priorities.
	Unit Level Training	●	Same as above.
Scoring & Feedback System	Individual Level Training	●	Scoring & Feedback systems do not meet requirements of Operational Training Ranges Required Capabilities MCRP 3-0C. The RM/T program is addressing shortfalls consistent with available resources and Marine Corps priorities.
	Unit Level Training	●	Same as above.
Infrastructure	Individual Level Training	●	Range control facility resourcing has been addressed with addition of dedicated personnel. A new microwave transmission tower at BT-11 is to be installed to enhance Range Control and communications. Upon completion, the installation Range Control infrastructure will be FMC.
	Unit Level Training	●	Same as above.
MOUT Facilities	Individual Level Training	●	An identified requirement for a MOUT Facility is being addressed in the RM/T Program, with planned MOUT construction at Atlantic Field Marine Corps Outlying Landing Field (MCOLF). Development of urban CAS capability, while required, is not feasible within current installation lands.
	Unit Level Training	●	Same as above.

Figure 3-19 Marine Corps Capability and Encroachment Assessment Detail (continued)

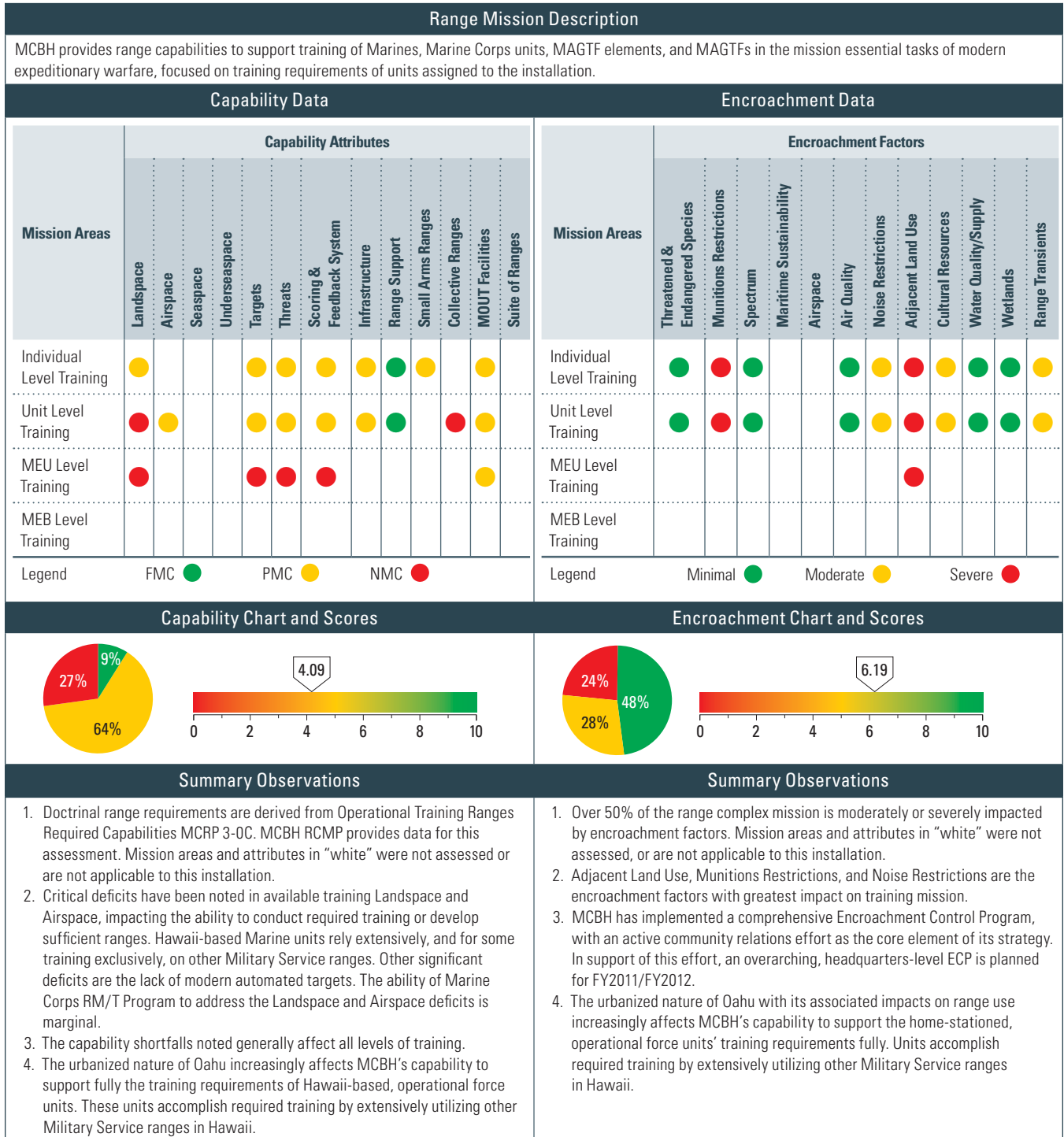
MCAS Cherry Point Detailed Comments

			Encroachment Observations
Factors	Assigned Training Mission	Score	Comments
Munitions Restrictions	Individual Level Training	●	Aerial bombing and gunnery ranges BT-9 and BT-11, situated on islands within R5306A, are surrounded by NC Public Trust Waters with the intra-coastal waterway splitting the two range areas. The area supports fisheries and recreation. Associated limitations on Surface/Weapons Danger Zone (SDZ/WDZ) restrict allowable munitions for aerial bombing and gunnery using BT-9 and BT-11. Inert ordnance is only authorized up to 500 lbs at BT-11; 35 lbs TNT equivalent for BT-9; no cluster munitions. BT-9 and BT-11 range areas are also used by waterborne craft in practicing shallow water target engagements; however, the firing of primary weapons systems using .50 caliber munitions from surface platforms is restricted at BT-11. Actions to address include community liaison; however, remedies remain elusive.
	Unit Level Training	●	Same as above.
Noise Restrictions	Individual Level Training	●	The installation operates a Class C Range for Explosive Ordnance Disposal. The range is capable of disposing of up to 150 lbs net explosive weight (NEW). However, the Base has self-imposed limitations of 50 lbs NEW to ensure noise from detonations does not impact the nearby communities.
Adjacent Land Use	Individual Level Training	●	Population increases in the region are resulting in increased construction of housing and other urban infrastructure in the vicinity of the installation and associated Airspace and ranges. The changing land use increasingly impacts the Base's flexibility to execute training. Marine Corps Auxiliary Landing Field (MCALF) Bogue also has major urban encroachment. BT-9 and BT-11 are affected by civilian use of surrounding waters (see above). Examples of impacts include Noise Restrictions affecting munitions use and night training; increased light that conflicts with flight crews' use of night vision equipment; and alteration of flight patterns to avoid urbanizing areas, both within restricted SUA and for low-altitude routes outside restricted Airspace. Explosive storage areas are negatively impacted by flight corridor civilian overflight and vehicle traffic on adjacent roads. Cellular towers constructed close to Cherry Point boundaries can negatively affect operations by raising the weather minimums required for aircraft conducting instrument approaches. Actions to address include community liaison; however, remedies remain elusive.
	Unit Level Training	●	Same as above.
Range Transients	Individual Level Training	●	As noted above, the waters surrounding BT-9 and BT-11 are used extensively for civilian activities. MCOLF Atlantic is a high value, 1200 acre airfield facility used for numerous supporting arms (aviation) activities. This airfield is subject to incursions by recreational off-road vehicle users. Actions to address include patrolling, reporting, and community liaison.
	Unit Level Training	●	Same as above.

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Figure 3-19 Marine Corps Capability and Encroachment Assessment Detail (continued)

MCB Hawaii (MCBH) Assessment Details



MCBH Assessment Details

Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	4.47	4.47	4.55	4.09	Encroachment Scores	7.27	7.27	6.19	6.19
Impacts from key range capabilities shortcomings resulted in PMC designations for this installation during FY2008–FY2011, when assessing the installation’s ability to support Marine Corps Task 1.7 (Support Maneuver through the Provision of Training Areas) and Marine Corps Task 3.3 (Support Fires through the Provision of Ranges and Training Areas). The top three capabilities and/or enhancements required to facilitate transition to FMC include: (1) sufficient Landspace and Airspace to support a Marine Expeditionary Unit/Battalion Landing Team MEU/BLT non-live fire maneuver in the Hawaiian Islands, (2) fully resourced Range Control facility, and (3) scored aviation and ground ranges.					Impacts from key encroachment factors resulted in PMC designations for this installation during FY2008–FY2011, when assessing the installation’s ability to support Marine Corps Task 1.7 (Support Maneuver through the Provision of Training Areas) and Marine Corps Task 3.3 (Support Fires through the Provision of Ranges and Training Areas). Successful mitigation of key encroachment factors, including (1) Airspace restrictions, (2) frequency Spectrum limitations, and (3) urban growth, are required to facilitate transition to a FMC designation.				

MCBH Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Individual Level Training	●	MCBH ranges support limited live fire training at the individual level. Live fire training of artillery-men and heavy mortar-men are prohibited on MCBH ranges. Convoy operations training is not feasible due to space constraints. Combat logistics training using heavy equipment is severely constrained by space limitations. Required training relies on use of other Military Service ranges and Airspace in Hawaii, which also requires travel with associated costs, and is further constrained by competition to use the ranges. The logistics, costs, and time to conduct required training increase when it is conducted off island at an other Military Service range.
	Unit Level Training	●	Same as above.
	MEU Level Training	●	Due to a lack of sufficient training lands, battalion-level training is not feasible. Home-stationed units of 3D Marine Infantry Regiment rely on the use of other Military Service ranges and Airspace in Hawaii to accomplish their training. The logistics, costs, and time to conduct required training increase when it is conducted off island at an other Military Service range.
Airspace	Unit Level Training	●	There is no restricted Airspace over MCBH ranges. There are no aviation over-land, low-level training routes on Oahu. Units rely on other Military Service ranges and Airspace to complete their training requirements. The logistics, costs, and time to conduct required training increase when it is conducted off island at an other Military Service range.
Targets	Individual Level Training	●	MCBH ranges lack automated, fixed and mobile targets. This shortfall reduces training realism, effectiveness, and training assessment capability. A lack of available training space severely constrains options for range development, threat system employment, and target emplacement; consequently, this shortfall is not likely to be remedied on MCBH ranges.
	Unit Level Training	●	Same as above.
	MEU Level Training	●	Same as above. Training constraints due to lack of available training space are most severe for larger units and MAGTFs.
Threats	Individual Level Training	●	MCBH ranges lack realistic, modern threat representation/simulation capability. This shortfall reduces training realism, effectiveness, and training assessment capability. A lack of available training space severely constrains options for range development, threat system employment, and target emplacement; this shortfall is not likely to be remedied on MCBH ranges.
	Unit Level Training	●	Same as above.
	MEU Level Training	●	Same as above. Training constraints due to lack of available training space are most severe for larger units and MAGTFs.
Scoring & Feedback System	Individual Level Training	●	The MCBH range complex lacks real-time training feedback systems. This shortfall reduces training realism, effectiveness, and training assessment capability. The RM/T Program is addressing shortfalls, consistent with available resources and Service priorities. Increased use of Multipurpose Integrated Laser Engraving System (MILES) 2000-type technology and renewal of the Location of Misses and Hits (LOMAH) maintenance contract for rifle marksmanship range will help to mitigate some instrumentation shortfalls.
	Unit Level Training	●	Same as the preceding comment. In addition, the lack of available training space severely constrains options for range development, threat system employment, and target emplacement.
	MEU Level Training	●	Same as above.
Infrastructure	Individual Level Training	●	Range infrastructure enhancements, including communications, Range Control systems, and staffing requirements are being addressed through the Marine Corps RM/T Program, as consistent with programmatic priorities and subject to available funding.
	Unit Level Training	●	Same as above.

Figure 3-19 Marine Corps Capability and Encroachment Assessment Detail (continued)

MCBH Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Small Arms Ranges	Individual Level Training	●	As noted above, insufficient land area (Landscape) for range development limits required small arms training to static ranges. The comments above regarding deficits in Targets, Threat Systems, and Scoring & Feedback capabilities are also pertinent. This shortfall reduces the effectiveness of live fire training. Units rely on other Services, more advanced range capabilities to meet training requirements.
Collective Ranges	Unit Level Training	●	As noted above, insufficient land area (Landscape) for range development and lack of special use Airspace preclude conducting collective training, except at most basic levels on MCBH ranges. This shortfall limits the utility of MCBH ranges to support collective training. Units are forced to use available other Military Service ranges to accomplish required training.
MOUT Ranges	Individual Level Training	●	MCBH MOUT Facilities are insufficient to meet training needs. Consequently, competition to use these facilities is keen. Development of new MOUT Facilities has received focused attention throughout the Marine Corps. At MCBH (Bellows Training Area), investments in state-of-the-art MOUT Facilities are programmed. Further, construction of a modular MOUT at the U.S. Army's Pohakuloa Training Area is programmed. RM/T Program is continuing to address shortfalls consistent with available resources and Service priorities.
	Unit Level Training	●	Same as above.
	MEU Level Training	●	Same as above.

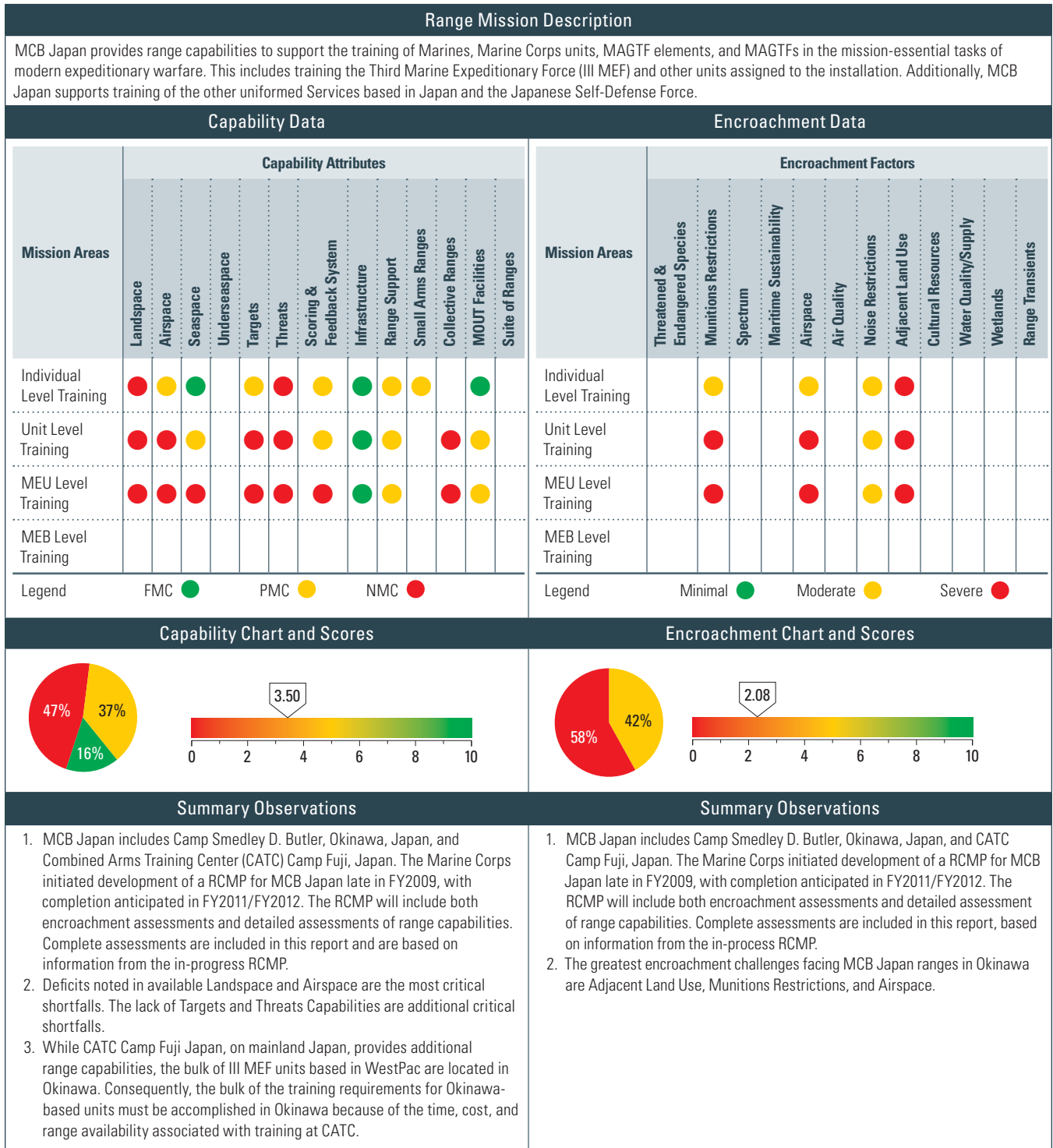
Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Munitions Restrictions	Individual Level Training	●	Live fire training using artillery or 81 mm mortar munitions are prohibited on MCBH ranges. This shortfall negatively impacts training for infantry weapons companies and artillery batteries. These units are forced to accomplish this training at other Service ranges in Hawaii.
	Unit Level Training	●	Same as above.
Noise Restrictions	Individual Level Training	●	Simulated Close Air Support (SIMCAS) training that supports beach landings during Rim of the Pacific (RIMPAC), a multi-national exercise, have been suspended due to noise complaints received from the local community.
	Unit Level Training	●	Same as above.
Adjacent Land Use	Individual Level Training	●	Due to the proximity of civilian housing and other community infrastructure, live fire training is prohibited at Marine Corps Training Area Bellows (an amphibious and MOUT training area), and is limited at Kaneohe Bay. Encroaching development continues with, for example, construction of a health clinic adjacent to Bellows. The urbanized character of the area constrains the development of ranges. As a result, training is generally confined to non-live fire events or the use of static positions when firing small arms. Extremely limited ship-to-shore training areas are available. Community noise concerns, as noted above, are pervasive. Light sources in surrounding communities preclude night vision training for air crews. Convoy training on public roads is not feasible due to traffic congestion. All of these constraints reduce the effectiveness of training to some extent. As a result, training is often often forced off island to other Service ranges.
	Unit Level Training	●	Same as above.
	MEU Level Training	●	Same as above.
Cultural Resources	Individual Level Training	●	Some existing MCBH range areas are considered archaeologically or culturally sensitive and cannot be disturbed. In some instances, these sites restrict training or preclude expanding training facilities. Environmental impacts analyses address these issues, as appropriate.
	Unit Level Training	●	Same as above.
Range Transients	Individual Level Training	●	MCBH live fire ranges are required to cease operations when civilian watercraft enter the confines of a range surface danger zone (SDZ), which extends into the ocean behind the impact area. These intermittent cease fire events disrupt and degrade live fire training events. The cost to provide personnel to watch the area for these intrusions is approximately 3,000 man-hours per year. To mitigate these training interruptions, the following measures have been adopted: placing personnel to watch for boat traffic in the range's SDZ; providing the ranges with radios to communicate with boat traffic; and directing available military vessels to intercept civilian boats in SDZs. In addition, updated notices to all mariners have been published.
	Unit Level Training	●	Same as above.

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Figure 3-19 Marine Corps Capability and Encroachment Assessment Detail (continued)

MCB Japan Assessment Details



MCB Japan Assessment Details

Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	N/A	N/A	N/A	3.79	Encroachment Scores	N/A	N/A	N/A	2.08
When assessing the installation's ability to support Marine Corps Task 1.7 (Support Maneuver through the Provision of Training Areas) and Marine Corps Task 3.3 (Support Fires through the Provision of Ranges and Training Areas), impacts from key range capabilities shortcomings resulted in PMC designations for this installation in 2011. The top three capabilities and/or enhancements required to facilitate transition to FMC include: (1) enhanced/scored ground combat element direct and indirect fire ranges, (2) MAGTF combined arms live fire and maneuver training capability, and (3) scored aviation ranges (rotary and fixed wing).					Impacts from key encroachment factors resulted in PMC designations for this installation in 2011 when assessing the installation's ability to support Marine Corps Task 1.7 (Support Maneuver through the Provision of Training Areas) and Marine Corps Task 3.3 (Support Fires through the Provision of Ranges and Training Areas). Successful mitigation of key encroachment factors, including (1) Airspace restrictions, (2) Adjacent Land Use/urban growth, and (3) Munitions Restrictions are required to facilitate transition to a FMC designation.				

MCB Japan Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Individual Level Training	●	Effective training is possible on Okinawa; however, it will take imagination, creativity, and a continuously-aggressive outreach program to comply with the physical limitations of being located on a small island. The Central Training Area (the CTA) comprises MCB Camp Butler's training facilities. Public roads trisect and surround the CTA. Two impact areas occupy a significant portion of the south and north the CTA. The largest section of maneuver area is approximately 7.5 km x 3 km, but it is a heavily vegetated terrain full of ravines and, therefore, can restrict mobility. As such, this small area limits the types of training that can be conducted and the types of weapons that can be fired. Conversely, all weapons systems organic to the MEU can be fired within the CTA, with limitations. For example, not-fired and wire-guided munitions are excluded due to environmental limitations and political agreements on Okinawa. The Defense Policy Review Initiative (DPRI) is a U.S. Government/ Government of Japan (USG/GoJ) agreement signed at the Secretary of State/Secretary of Defense (State/SecDef) level that reduces the impact and scope of U.S. Marine training on Okinawa. Any expansion of training space or capability will need robust support from the State and DoD levels through the USG/GoJ Joint Committee.
	Unit Level Training	●	Same as above.
	MEU Level Training	●	Same as above.
Airspace	Individual Level Training	●	The dimensions of the SUA is limited over the CTA, especially vertically. Its ceiling varies from 1,000 ft above Mean Sea Level (MSL) to 3,000 ft MSL. Some of the instrument approaches are into Kadena Air Base and overlie this SUA. Additionally, the relatively low ceilings for this SUA are minimally adequate to support individual weapons firing; however, expanding this SUA vertically is not likely to happen.
	Unit Level Training	●	With SUA over the CTA capped at either 1,000' or 3,000' MSL. Mortars must fire at a minimum charge to preclude exiting the Airspace. Fixed wing aircraft cannot support training operations within the CTA. The limitations imposed on mortar fires limit combined-arms fires to platoon level. Fixed wing aircraft cannot operate within the CTA to support ground training, but CAS is available at nearby U.S. Air Force ranges just off Okinawa. Expanding this SUA vertically is being explored with the U.S. Air Force and the Japanese Civil Aeronautics Bureau.
	MEU Level Training	●	Same as above.
Seaspace	Unit Level Training	●	Per agreement with the GOJ, there are several water surface areas available for training 120 days per year. Two small training beach areas, Kin Red and Kin Blue, provide access to the sea and land, but traveling from them requires the use of public roads. Available beaches are not contiguous with the available training space within the CTA or at CATC Fuji, and no beach training areas exist on Ie Shima island currently. The limited beach areas for landings precludes conducting large-scale amphibious assaults or raids. The DPRI is a U.S. Government/GOJ agreement signed at the State/SecDef level which agrees to reduce the impact and scope of U.S. Marine training on Okinawa. Any expansion of training space or capability will need robust support from the State/SecDef level through the USG/GoJ Joint Committee.
	MEU Level Training	●	Same as above.
Targets	Individual Level Training	●	Twenty-five vehicle type steel targets have been recently added across five ranges within the CTA as part of the Operational Range Clearance Program. The lack of adequate targets makes it difficult to improve weapons skills.
	Unit Level Training	●	Same as above.
	MEU Level Training	●	Same as above.

Figure 3-19 Marine Corps Capability and Encroachment Assessment Detail (continued)

MCB Japan Detailed Comments

Capability Observations

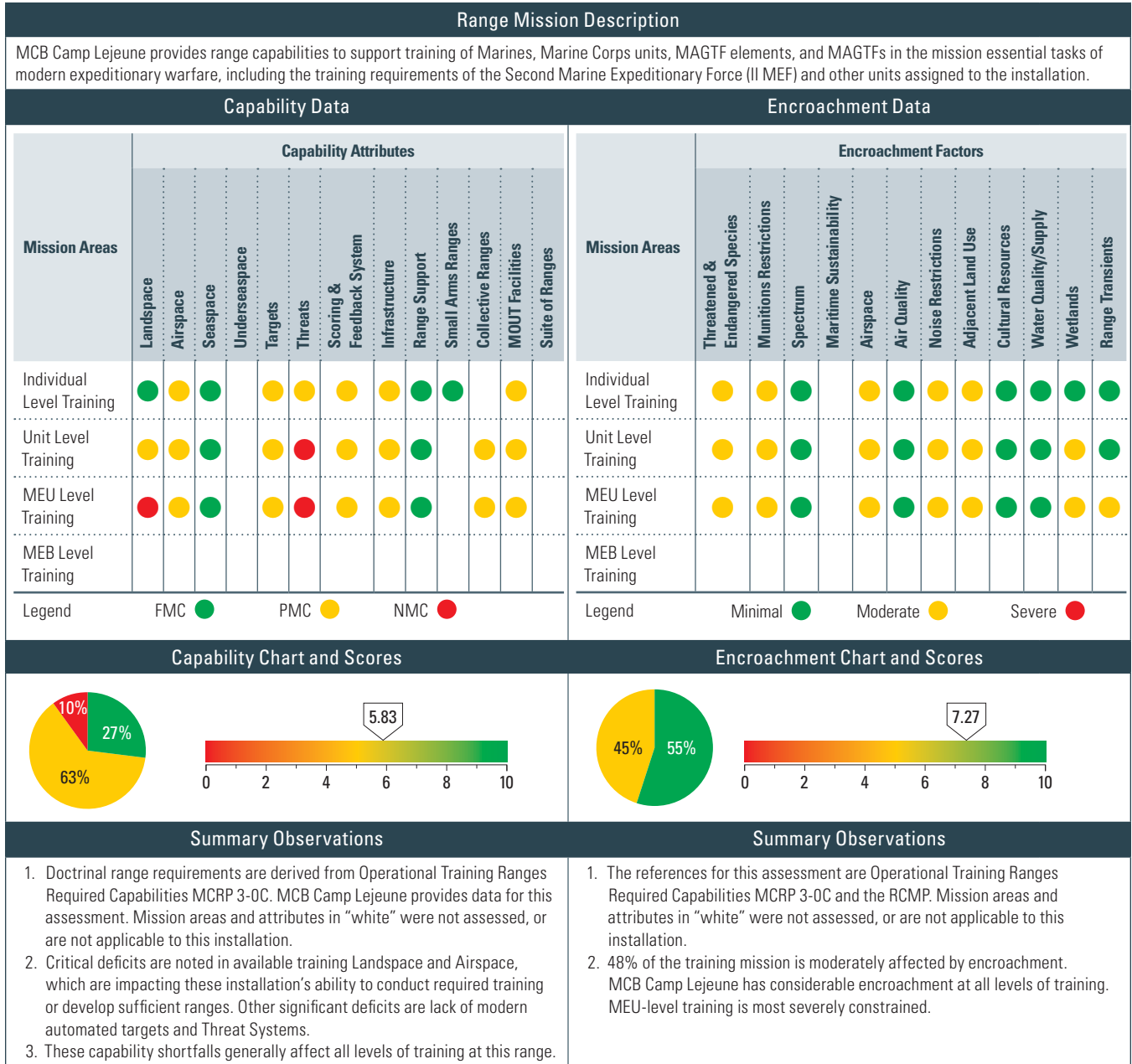
Attributes	Assigned Training Mission	Score	Comments
Threats	Individual Level Training	●	There are no Electronic Warfare (EW) threats for aviation on Okinawa or mainland Japan. There is no standing Operating Force (OPFOR) to support ground training. Aviators are unable to familiarize themselves with EW Threat Systems or practice tactics against them. Ground OPFOR normally comes from a sister unit, which is not trained to execute threat tactics, and thus, provides a less effective training experience. Approaches to mitigating these shortfalls are being analyzed in the ongoing RCMP process.
	Unit Level Training	●	Same as above.
	MEU Level Training	●	Same as above.
Scoring & Feedback System	Individual Level Training	●	There are a limited number of ranges at MCB Japan that have automated or scored targets. Targets that do not provide scoring are less effective for improving weapons skills. The RM/T Program provides upgrades within its available resources.
	Unit Level Training	●	Same as above. In addition, there are currently two ranges that provide an after action review capability (R18 and R16 Shoot House). Plans are underway to expand the capability for individual and unit level training for Range 18.
	MEU Level Training	●	Same as above, but even more aggravated in proportion to the size of the unit.
Range Support	Individual Level Training	●	There is limited communications capability with units in the field. Also, there is currently no capability to monitor air traffic in the training areas. Communications outages interrupt training events and there is no means to monitor air traffic situational awareness until the situation is fixed. The RM/T Program is upgrading communications capabilities and installing the Integrated Range Status System (IRSS) to provide an air picture. These improvements are planned for 2011.
	Unit Level Training	●	Same as above.
	MEU Level Training	●	Same as above.
Small Arms Ranges	Individual Level Training	●	The targetry on existing ranges is very limited, which degrades its utility. Without adequate targets to fire at, individual weapons skills are degraded. There is an initiative to place additional targets in the impact area.
Collective Ranges	Unit Level Training	●	There are two ranges in Okinawa that support live fire and maneuver (LFAM) training to the platoon level, and none for live fire convoy operations. International agreements, such as the DPRI, impact any significant attempt at expansion to develop LFAM or convoy ranges. Integrating supporting arms is limited to restricted mortar fires. This lack of LFAM and convoy ranges limits opportunities for ground units to train in an LFAM or combined-arms environment. Range Operations is working to expand the capabilities of the existing LFAM ranges.
	MEU Level Training	●	Same as above.
MOUT Facilities	Unit Level Training	●	There are three non-live fire, MOUT Facilities in Okinawa. The largest is an 11-building facility made up of shipping containers. This facility could support training up to a company level, but there is not enough capacity to support all of the units that need it. MOUT Facilities have tripled over the past two years, as a result of the RM/T Program, which continues to address shortfalls consistent with available assets.
	MEU Level Training	●	Same as above.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Munitions Restrictions	Individual Level Training	●	Munitions Restrictions in the CTA on Okinawa are driven primarily by three factors working in consonance: geographic constraints, political constraints, and virtually unimpeded encroachment by local communities. Per agreement with the GOJ, artillery live fire training is no longer conducted on Okinawa. Instead, it takes place at five Japanese Ground Self Defense Force ranges. Okinawa has two ranges where .50cal machine guns may be fired. At one range, the gun's barrel must be placed into a physical restraint to prevent its movement. Guns must be bore sighted and have restraining devices added to ensure no rounds impact outside of a concrete tunnel approximately 20m wide and 15m high. Land and Airspace are also not large enough to allow for close air support training on Okinawa. CAS is conducted on Air Force ranges just off of Okinawa by both Marine rotary-wing and fixed-wing units. These restrictions limit the conduct of basic and combined-arms live fire training operations to the platoon level. The DPRI, an agreement between the U.S. and Japanese governments, reduces the impact and scope of U.S. Marine training on Okinawa. Expanding training space or capability on Okinawa requires robust support from the Departments of State and Defense through the USG/GoJ.
	Unit Level Training	●	Same as above, but even more aggravated in proportion to the size of the unit.
	MEU Level Training	●	Same as above.
Airspace	Individual Level Training	●	MCB Camp Butler SUA's dimensions are very limited, particularly vertically. Its ceiling varies from 1,000 ft MSL to 3,000 ft MSL, and some of the instrument approaches into Kadena Air Base overly this SUA. Additionally, the relatively low ceilings for this SUA are minimally adequate to support individual weapons firing. Expanding this SUA vertically is being explored with the U.S. Air Force and Japanese Civil Aeronautics Bureau.
	Unit Level Training	●	Same as above. In addition, the relatively low ceilings for this SUA limit live fire operations, like mortar employment and restrict fixed-wing aircraft from providing training support for ground units, such as simulated close air support. Expanding this SUA vertically is being explored with the U.S. Air Force and Japanese Civil Aeronautics Bureau; however, simulated Fixed-Wing/Rotary-Wing (RW/FW) Simulated Close Air Support (SIMCAS) remain unlikely because of the size and geographic constraints of the training area and existing political constraints and noise concerns. Accordingly, FW/RW SIMCAS and Fire Support Team/FAC training occur at an island location off the west coast of the main island of Okinawa, well clear of the CTA. Workarounds for mortar firing currently exist by putting someone from Range Control in the Naha Approach Control to provide positive communications between the firing party and the control tower, calling a cease-fire when aircraft are in the Airspace.
	MEU Level Training	●	Same as above.
Noise Restrictions	Individual Level Training	●	Small villages and municipalities surround the CTA, particularly the Hansen impact area, located on the southwest end of the CTA. Japan has no zoning laws. Thus, there is no buffer between these towns and the CTA. Noise from training, especially live fire operations, migrates off-base. As a result of having to operate in such a compact, urbanized area, training operations may be limited. Although the U.S. Marine Corps respects its surrounding communities, it must continue to train locally and conduct live fire operations. Therefore, through its aggressive outreach program, MCB Japan works to minimize this impact. During certain times of the year, training operations may be limited or suspended as a courtesy during school testing.
	Unit Level Training	●	Same as above.
	MEU Level Training	●	Same as above.
Adjacent Land Use	Individual Level Training	●	Public roads trisect the CTA and small towns surround it. This is particularly evident near the Hansen impact area, located on the southwest end of the CTA. In addition, tacit farms occupy a few areas within the borders of the CTA. Since there is no buffer between these towns and the CTA, noise from training, such as that from live fire operations, migrates off-base. During certain times of the year, training operations may be limited or suspended to prevent fires. Developing additional ranges in such a compact, urbanized area is also very challenging. As a result of these constraints, training operations have been limited in the past, and expanding the ranges is very difficult. These limitations require flexibility and creative training to realize effective training support. Furthermore, the DPRI reduces the impact and scope of U.S. Marine training on Okinawa. Expanding training space or capability requires support from the Departments of State and Defense through the USG/GoJ.
	Unit Level Training	●	Same as above.
	MEU Level Training	●	Same as above.

Figure 3-19 Marine Corps Capability and Encroachment Assessment Detail (continued)

MCB Camp Lejeune Assessment Details



MCB Camp Lejeune Assessment Details

Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	5.24	5.24	6.33	5.83	Encroachment Scores	7.58	7.58	7.58	7.58
Impacts from key range capabilities shortcomings resulted in PMC designations for this installation during FY2008–FY2011, when assessing the installation’s ability to support Marine Corps Task 1.7 (Support Maneuver through the Provision of Training Areas) and Marine Corps Task 3.3 (Support Fires through the Provision of Ranges and Training Areas). Top capabilities and/or enhancements required to facilitate transition to FMC include: (1) off-base MV-22 tactical training areas/landing zones, (2) MAGTF level instrumented MOUT capabilities, (3) upgraded and enhanced range safety and exercise C2 communications systems, (4) upgrade and modernize targets, (5) a combined arms maneuver course for individual, collective, and MEU level training, and (6) small arms ranges are generally 1970 vintage designs. These deficiencies have or will be addressed by Urgent Needs Statement (off base Tactical Training Areas supporting flight ops), PMC funded training system projects, Enterprise Land Mobile Radio (ELMR) fielding, and MILCON.					Impacts from key encroachment factors resulted in PMC designations for this installation during FY2008–FY2011, when assessing the installation’s ability to support Marine Corps Task 1.7 (Support Maneuver through the Provision of Training Areas) and Marine Corps Task 3.3 (Support Fires through the Provision of Ranges and Training Areas). Successful mitigation of key encroachment factors, including (1) Airspace restrictions, (2) frequency Spectrum limitations, and (3) urban growth, are required to facilitate transition to a FMC designation.				

MCB Camp Lejeune Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Unit Level Training	●	Limited available land training area limits options for siting/development of new ranges. Range planning seeks to maximize efficient use of available land for training. Expansion is not feasible. Landspace requirements include off-installation areas for dedicated landing zone use by MV-22 aircraft. Lack of ground space for unit level training per the Operational Training Ranges Required Capabilities MCRP 3-0C. The FY-11 Tank OAG highlighted the fact that maneuver training for tanks cannot be accomplished above the platoon level.
	MEU Level Training	●	Landspace for the training area does not meet Operational Training Ranges Required Capabilities MCRP 3-0C requirements. Range planning seeks to maximize efficient use of available land for training. Expansion is not feasible. Lack of ground space for unit level training per the Operational Training Ranges Required Capabilities MCRP 3-0C. The FY-11 Tank OAG highlighted the fact that maneuver training for tanks cannot be accomplished above the platoon level.
Airspace	Individual Level Training	●	Airspace extends from surface to only 17,999 ft.; it does not extend 10 nautical miles (NM) beyond land area as necessary to avoid “spill outs” by military aircraft and incursions over ranges by civilian aircraft; supersonic flight is not authorized; fixed-wing flight operations restricted. Urbanization issues (e.g., noise and light) limit use of training Airspace that is not SUA (e.g., Terrain Flight [TERF]), including extended range Airspace areas required for MV-22 tactical training.
	Unit Level Training	●	Same as above.
	MEU Level Training	●	Same as above.
Targets	Individual Level Training	●	Not all ranges and targets meet Training Readiness/Individual Training Standards (T&R/ITS) training requirements for weapon systems, specifically for Infantry, Expeditionary Fighting Vehicle (EFV), and engineering systems; range area, distance, and feedback are limited; the EFV waterborne requirement is not met; minimal urban/structural targets. The RM/T Program is addressing shortfalls consistent with available resources and Service priorities.
	Unit Level Training	●	Targets do not meet full T&R training requirements. A-G bombs limited to inert only. The RM/T Program is addressing shortfalls consistent with available resources and Service priorities.
	MEU Level Training	●	Targets are not all set to T&R/ITS standards; A-G bombs are limited to inert only. The RM/T Program is addressing shortfalls consistent with available resources and Service priorities.
Threats	Individual Level Training	●	Limited to MILES 2000 equipment during tactical operations. The RM/T Program is addressing shortfalls consistent with available resources and Service priorities.
	Unit Level Training	●	OPFOR are provided by contracted Iraqi or Afghan Role Players who are not formally instructed on enemy tactics, techniques, and procedures; however, Role Players provide a second best alternative.
	MEU Level Training	●	No dedicated OPFOR, normally makeshift and controlled by handlers who are not trained to enemy tactics or techniques.
Scoring & Feedback System	Individual Level Training	●	Tracking—Radar Inputs Only; RC—2-D Capability Only; EC&C—Operational Unit Owned and Operated; M&S—Only S-S Scenarios; Scoring—At least 1 range to Training Standard; Debrief/AAR—Primarily Observers/Hit-or-Miss Targets. The RM/T Program is addressing shortfalls consistent with available resources and Service priorities.
	Unit Level Training	●	Same as above.
	MEU Level Training	●	Same as above.

Figure 3-19 Marine Corps Capability and Encroachment Assessment Detail (continued)

MCB Camp Lejeune Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Infrastructure	Individual Level Training	●	Range communication systems do not support full spectrum of Range Control functions. This deficiency is being addressed through fielding of the ELMR system.
	Unit Level Training	●	Same as above.
	MEU Level Training	●	Same as above.
Collective Ranges	Unit Level Training	●	See comments above regarding Landspace, Airspace, Range Control, and Targets deficits. The RM/T Program is addressing shortfalls consistent with available resources and Service priorities.
	MEU Level Training	●	Same as above.
MOUT Facilities	Individual Level Training	●	Development of new MOUT Facilities has received focused attention throughout the Marine Corps, resulting in significant improvements; however, deficiencies remain. The RM/T Program is continuing to address shortfalls consistent with available resources and Service priorities.
	Unit Level Training	●	Same as above.
	MEU Level Training	●	Same as above.

Encroachment Observations

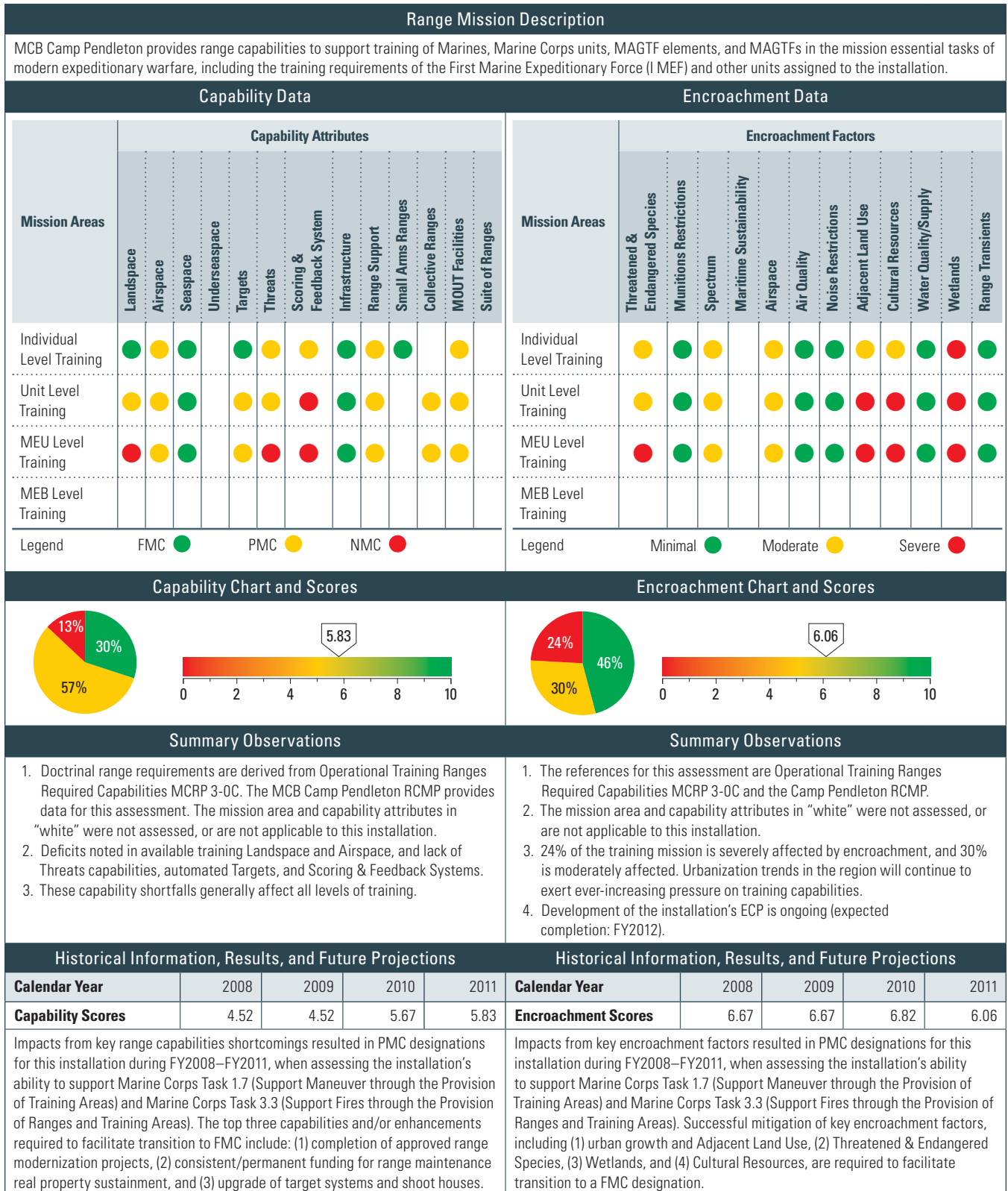
Factors	Assigned Training Mission	Score	Comments
Threatened & Endangered Species	Individual Level Training	●	There are constraints on training due to the presence of the Endangered Species Act (ESA)-listed Red-Cockaded Woodpecker (RCW), especially within the High Value Training Areas. These constraints are addressed with the Environmental Division and the U.S. Fish and Wildlife Service (the USFWS) as range development and maneuver training requirements are identified. Bombing operations are restricted to inert ordnance. Bombing with live ordnance has been shifted to other bases. Consultations with the USFWS are ongoing concerning impacts of vegetation clearing within the G-10 impact area regarding RCW sites surrounding the impact area.
	Unit Level Training	●	Same as above. Additionally, constraints due to T&E species and wetlands confine tracked and armored vehicles such as tanks to existing trails; therefore maneuver training for tanks cannot be accomplished above the platoon level. Additionally, habitat and other environmental concerns have made range enhancements and site selection for new ranges difficult, and, in some instances, have forced the installation to choose less desirable alternatives or limit range size/capability.
	MEU Level Training	●	Same as above. Additionally, as a result of the constraints on training due to presence on beaches of the ESA-listed Sea Turtles during breeding season (May–Oct), use of much of the beach is restricted for amphibious vehicles and other types of training during this time. Dunes are “out of bounds” and must be maneuvered around. The remedy is elusive.
Munitions Restrictions	Individual Level Training	●	Bombing operations at MCB Camp Lejeune are restricted to inert ordnance, due in part to concerns about the noise levels from use of explosive ordnance. Additional constraints are due to restrictions associated with presence of the ESA-listed RCW in the impact area and range areas; consultations are ongoing with the USFWS.
	Unit Level Training	●	Tank operations at SR-7 Range have been suspended since 1998 due to noise complaints from the nearby community (although noise levels were within DoD standards).
	MEU Level Training	●	The use of smoke at Camp Johnson is prohibited, except when the wind blows to the south, to ensure smoke does not drift over Highway 17, which, due to recent construction, is now quite close to the training areas at Camp Johnson. (CLUS App. D. Part II. 1 and 2)
Airspace	Individual Level Training	●	No fixed wing operations are allowed in R5303 and R5304. Ranges that the SUA supports cannot be active unless the area has aviation radar coverage. R5306D cannot be expanded, due to civilian use of local beaches and the Hwy 17 corridor. Ship to shore movements require aircraft to utilize Airspace other than restricted areas to complete scenario based training. Increased civilian density in nearby areas leads to increases in noise complaints about aircraft flying tactical profiles during the day and night. As encroachment continues, Airspace and operating hours will become more restrictive. (MCAS New River adjacent to MCB Camp Lejeune)
	Unit Level Training	●	Same as above.
	MEU Level Training	●	Same as above.
Noise Restrictions	Individual Level Training	●	Off-base noise concerns have resulted in the relocation of certain training venues, such as the Tank Live fire Range and steel cutting pit, to more centralized areas of the installation, which further reduces available training lands for non-noise producing training venues. The installation’s flexibility to absorb the requirements of the future force structure and weapons training needs may be hampered by noise constraints. Remedies include ongoing community liaison.
	Unit Level Training	●	Same as above.
	MEU Level Training	●	Same as above.

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Adjacent Land Use	Individual Level Training	●	From 1990 to 2000, the population of the Camp Lejeune region (Onslow County, NC) was essentially stable (1990 pop-149,838; 2000 pop.-150,335 [U.S. Census Bureau]). Between 2000 and 2008, the population surged, with an increase of over 10%. This trend continues, resulting in increased construction of housing and other urban infrastructure in the vicinity of the MCB and associated training areas and Airspace. The changing land use increasingly impacts the Base's flexibility to execute training. Examples of impacts include Noise Restrictions affecting munitions use and night training, increased light that conflicts with flight crews use of night vision equipment, and alteration of flight pattern to avoid new housing areas. Actions to address this challenge include aggressive community liaison; however, remedies remain elusive.
	Unit Level Training	●	Same as above.
	MEU Level Training	●	Same as above.
Wetlands	Unit Level Training	●	Regulatory constraints due to wetlands and also T&E species confine tracked and armored vehicles such as tanks to existing trails; therefore maneuver training for tanks cannot be accomplished above the platoon level.
	MEU Level Training	●	Same as above.
Range Transients	MEU Level Training	●	Silting in the Intracoastal Waterway causes civilian vessels (usually recreational) to sometimes run aground in inlets adjacent to or within the Base (Browns and New River), leading to training disruptions . Remedies include ongoing activities with community liaison.

Figure 3-19 Marine Corps Capability and Encroachment Assessment Detail (continued)

MCB Camp Pendleton Assessment Details



MCB Camp Pendleton Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landscape	Unit Level Training	●	Land training area (Landscape) does not meet Operational Training Ranges Required Capabilities MCRP 3-0C requirements. Range planning seeks to maximize efficient use of available land for training. Expansion is not feasible.
	MEU Level Training	●	Same as above.
Airspace	Individual Level Training	●	Lateral Airspace does not extend 10NM beyond land area as necessary to avoid "spill outs" by military aircraft and incursions over ranges by civilian aircraft; there is insufficient lateral air space for combined arms training in accordance with Operational Training Ranges Required Capabilities MCRP 3-0C. Urbanization and encroachment issues (e.g., noise, light) limit use of training Airspace that is not SUA (e.g., TERF).
	Unit Level Training	●	Same as above.
	MEU Level Training	●	Same as above.
Targets	Unit Level Training	●	There are a number of required ranges and target areas that need modernization to meet USMC training requirements. These shortfalls span all levels of Unit training. Shortfalls include infantry and mechanized automated ranges and targets, battle-course ranges and targets, and assault/breaching/demolition ranges. The Marine Corps RM/T Program is addressing these shortfalls through range investments consistent with available resources. The RM/T Program is addressing shortfalls consistent with available resources and Service priorities.
	MEU Level Training	●	Same as above.
Threats	Individual Level Training	●	Camp Pendleton requires a comprehensive electronic training environment, supporting basic through advanced collective training. The capability must simulate neutral, hostile, and non-hostile ground, air defense, and airborne weapons systems; OPFOR C2; neutral, hostile, and non-hostile cryptologic systems; and hostile jamming. There are efforts underway to study OPFOR capability alternatives and to develop shortfall strategies. Role player program (not a program-of-record) is a significant training enhancement.
	Unit Level Training	●	Same as above.
	MEU Level Training	●	Same as above. Shortfalls in Threat capabilities have the most significant impact on more complex training events.
Scoring & Feedback System	Individual Level Training	●	Many existing ranges lack modern Scoring & Feedback Systems. The Marine Corps RM/T Program is addressing these shortfalls through range investments consistent with available resources.
	Unit Level Training	●	Unit and MEU-level training require enhanced instrumentation for training event reconstruction, debriefing, and replay. MCB Camp Pendleton generally lacks such capabilities. The Marine Corps RM/T Program continues to analyze and address these shortfalls through range investments consistent with available resources. Construction of a state-of-the-art, large, instrumented MOUT facility has mitigated the issue, but an extensive number of ranges still do not have Scoring & Feedback Systems.
	MEU Level Training	●	Same as above.
Range Support	Individual Level Training	●	Range radio communication system failures at times have caused the cessation of training. Not all of the ranges have telephone capability. The installation does not have exercise C2 circuits or secure communications capable for Range Control. The Marine Corps RM/T Program continues to analyze and address these shortfalls through range investments consistent with available resources.
	Unit Level Training	●	Same as above.
	MEU Level Training	●	MCB Camp Pendleton lacks comprehensive exercise control capabilities integrated with Range Control functions. The Marine Corps RM/T Program continues to analyze and address these shortfalls through range investments consistent with available resources.
Collective Ranges	Unit Level Training	●	See comments above regarding land, Airspace, Range Control, target, and scoring deficits. The Marine Corps RM/T Program continues to analyze and address these shortfalls through range investments consistent with available resources.
	MEU Level Training	●	Same as above.
MOUT Facilities	Individual Level Training	●	Development of new MOUT Facilities has received focused attention throughout the Marine Corps, resulting in significant improvements; however, deficiencies remain. The RM/T Program is continuing to analyze and address shortfalls through range investments consistent with available resources.
	Unit Level Training	●	Same as above.
	MEU Level Training	●	Same as above.

Figure 3-19 Marine Corps Capability and Encroachment Assessment Detail (continued)

MCB Camp Pendleton Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Threatened & Endangered Species	Individual Level Training	●	Constraints on training, due to presence of multiple the ESA-listed species, include an inability to conduct training that requires digging/earth moving; and limitations on use of military vehicles in some training areas; limitations on training use of beaches. Of 17 miles of coast, 6,000 yards are available for training use, and only approximately 1,500 linear yards of beach is currently available for non-restricted amphibious operations, due to ESA and other regulatory constraints, and encumbrances, such as long-term leases. MCB Camp Pendleton coordinates and consults extensively with the USFWS, with the objective of reducing constraints on training resulting from application of the ESA.
	Unit Level Training	●	Same as above.
	MEU Level Training	●	Same as above.
Spectrum	Individual Level Training	●	Competition for access to and use of the frequency Spectrum has resulted in moderate to severe impacts on some training activities, including training requiring use of satellite communications frequencies, and training with UAS.
	Unit Level Training	●	Same as above.
	MEU Level Training	●	Same as above.
Airspace	Individual Level Training	●	Intense competition and pressure from commercial and general aviation for access to and use of Airspace in the critically overcrowded coastal Airspace corridors threatens to impact military aviation operations in ranges and training areas. These concerns are addressed in inter-agency dialogue with the FAA.
	Unit Level Training	●	Same as above.
	MEU Level Training	●	Same as above.
Adjacent Land Use	Individual Level Training	●	High density urban infrastructure contiguous to MCB Camp Pendleton inhibits the ability to train with night vision goggles (NVGs) and constrains training in some areas, due to noise considerations. Urbanization of the region puts pressure on off-installation natural resources (including sensitive and the ESA-listed species), potentially increasing the Base's share of remaining regional resources with increased management constraints affecting training. Regional growth affects access to off installation lands for training, and inhibits NVG training by aircraft crews when transiting from offshore littoral areas or from the Base to other training areas or installations within the region. Base lands are encumbered by long-term leasing outgrants to the State of California, a nuclear power plant facility, and agriculture field operations. Initiatives have been executed to reclaim training land formerly used for agricultural leases have been executed. Buffer-lands acquisition program is being executed. Expansion is not feasible.
	Unit Level Training	●	Same as above. The location of Interstate 5 precludes NSFS training or external load ship-to-shore aviation support training.
	MEU Level Training	●	Same as above.
Cultural Resources	Individual Level Training	●	Constraints on training, due to the presence of cultural resources, include an inability to conduct training that requires digging/earth moving in some training areas and cultural resources on beaches result in limitations on use, which are cumulative with other limitations, such as ESA-based restrictions. The Base coordinates and consults with the State Historic Preservation Office, with the objective of reducing constraints on training.
	Unit Level Training	●	Same as above. Impacts on training from cultural resources constraints are more severe for complex unit-level and MEU-level training.
	MEU Level Training	●	Same as above.
Wetlands	Individual Level Training	●	Regulatory constraints on use of wetlands for training impose limitations on uses of riverine areas, some watershed areas, and areas that contain vernal pools. The Base coordinates and consults with the U.S. Army Corps of Engineers, with the objective of reducing constraints on training.
	Unit Level Training	●	Same as above.
	MEU Level Training	●	Same as above.

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Figure 3-19 Marine Corps Capability and Encroachment Assessment Detail (continued)

MCB Quantico Assessment Details

Range Mission Description																										
The MCB Quantico Training Range Complex mission is to provide Individual level training support to TECOM formal schools. As a secondary priority, the Quantico Range Complex supports Unit level training conducted by Marine Reserve units. Other training includes operations by the Marine Corps Embassy Security Group, non-Department of Defense (DoD) tenants (FBI, DEA), and other Federal and law enforcement agencies and university ROTC programs.																										
Capability Data							Encroachment Data																			
Mission Areas	Capability Attributes										Mission Areas	Encroachment Factors														
	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges		Collective Ranges	MOUT Facilities	Suite of Ranges	Threatened & Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
Individual Level Training	●	●			●	●	●	●	●	●	●	●	●	Individual Level Training	●	●	●		●	●	●	●	●	●	●	●
Unit Level Training	●	●			●	●	●	●	●		●	●	●	Unit Level Training	●	●	●		●	●	●	●	●	●	●	●
MEU Level Training														MEU Level Training												
MEB Level Training														MEB Level Training												
Legend	FMC ●		PMC ●		NMC ●								Legend	Minimal ●		Moderate ●		Severe ●								
Capability Chart and Scores							Encroachment Chart and Scores																			
Summary Observations							Summary Observations																			
<ol style="list-style-type: none"> Doctrinal range requirements are derived from Operational Training Ranges Required Capabilities MCRP 3-0C. MCB Quantico finalized its RCMP analysis in 4th Qtr FY2010. Observations made in the course of RCMP development are the basis for this assessment. Mission areas and attributes in "white" were not assessed, or are not applicable to this installation. MCB Quantico generally has the capability to support required training; however, Unit-level training capability is limited to platoon-sized and smaller units. The lack of modern, automated infantry Targets and Scoring & Feedback Systems are the deficits with greatest impact on training mission. 							<ol style="list-style-type: none"> 18% of the range complex mission is moderately impacted by encroachment factors. Adjacent Land Use, Munitions Restrictions, and Noise Restrictions are the encroachment factors with greatest impact on training mission. Urbanization trends and associated impacts on range uses increasingly affect capability of installations to fully support initial Officer training at The Basic School, and the Infantry Officer Course MOS training. Growth pressures from cantonment are reducing utility of some range areas. An ECP has been completed, and is being executed. 																			
Historical Information, Results, and Future Projections							Historical Information, Results, and Future Projections																			
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011																	
Capability Scores	6.43	6.43	6.67	6.11	Encroachment Scores	9.09	9.09	7.27	7.27																	
Impacts from key range capabilities shortcomings resulted in PMC designations for this installation during FY2008–FY2011, when assessing the installation's ability to support Marine Corps Task 1.7 (Support Maneuver through the Provision of Training Areas) and Marine Corps Task 3.3 (Support Fires through the Provision of Ranges and Training Areas). The top three capabilities and/or enhancements required to facilitate transition to FMC include: (1) instrumented MOUT capabilities, (2) fully resourced Range Control facility, and (3) upgraded and modernized targets.							Impacts from key encroachment factors resulted in PMC designations for this installation during FY2008–FY2011, when assessing the installation's ability to support Marine Corps Task 1.7 (Support Maneuver through the Provision of Training Areas) and Marine Corps Task 3.3 (Support Fires through the Provision of Ranges and Training Areas). Successful mitigation of key encroachment factors, including (1) urban growth and Adjacent Land Use, (2) Airspace restrictions, and (3) Noise Restrictions are required to facilitate transition to a FMC designation.																			

MCB Quantico Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Targets	Individual Level Training	●	Ranges lack automated, fixed and mobile targets. The lack of adequate targetry reduces training realism and effectiveness, and training assessment capability. The RM/T Program is addressing shortfalls consistent with available resources.
	Unit Level Training	●	Same as above.
Threats	Individual Level Training	●	Ranges lack realistic, modern threat representation/simulation capability. Lack of modern threat representation reduces training realism and effectiveness, and training assessment capability. The RM/T Program is addressing shortfalls consistent with available resources.
	Unit Level Training	●	Same as above.
Scoring & Feedback System	Individual Level Training	●	The range complex lacks real-time training Scoring & Feedback Systems and position-location systems. Lack of real-time feedback reduces training realism and effectiveness, and training assessment capability. The RM/T Program is addressing shortfalls consistent with available resources. Current projects include an audio-visual feedback system and additional tracking systems for personnel and vehicles.
	Unit Level Training	●	Same as above.
Infrastructure	Individual Level Training	●	The condition of unimproved roadways and tank trails has, at times, limited the use of transportation assets to the ranges.
	Unit Level Training	●	Same as above.
Range Support	Individual Level Training	●	The base has limited C2 communications capability for exercise and training support. Limited C2 reduces exercise monitoring and management control. The RM/T Program is addressing shortfalls consistent with available resources.
	Unit Level Training	●	Same as above.
Small Arms Ranges	Individual Level Training	●	MCB Quantico ranges lack optimal targets and training feedback systems. Limited targetry reduces training realism and effectiveness, and training assessment capability. The RM/T Program is addressing shortfalls consistent with available resources.
Collective Ranges	Unit Level Training	●	MCB Quantico has a single live fire and maneuver range capable of supporting platoon-level training. The Base is incapable of supporting company-level live fire training. Platoon range, and squad-level ranges lack optimal targets and training feedback systems. These limitations reduce training realism and effectiveness, and training assessment capability. The RM/T Program is addressing shortfalls consistent with available resources.
MOUT Facilities	Individual Level Training	●	Development of new MOUT Facilities has received focused attention throughout the Marine Corps, resulting in improvements at Quantico; however, deficiencies remain. MOUT limitations reduce training realism and limit training feedback. The RM/T Program is continuing to address shortfalls consistent with available resources and Service priorities.
	Unit Level Training	●	Same as above.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Munitions Restrictions	Individual Level Training	●	Use of explosive ordnance is limited by noise concerns. MCB Quantico has come under increasing pressure to reduce use of demolition ordnance for training. Constraints affect ability of Explosive Ordnance Disposal (EOD) teams to conduct range clearance activities, resulting in pressures to reduce use of dud-producing ordnance on ranges. ECP has been completed. Development of new MOUT Facilities has received focused attention throughout the Marine Corps, resulting in improvements at Quantico; however, deficiencies remain.
	Unit Level Training	●	Same as above.
Airspace	Individual Level Training	●	From 2000 to 2008, the population of the MCB Quantico region (Prince William County, VA) has increased by 30% (U.S. Census Bureau). This burgeoning population exerts significant encroachment pressure on the Base, including Airspace limitations due to noise concerns, and safety concerns with regard training by fixed-wing military aircraft. Satisfactory remedies are elusive.
	Unit Level Training	●	Same as above.

Figure 3-19 Marine Corps Capability and Encroachment Assessment Detail (continued)

MCB Quantico Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Noise Restrictions	Individual Level Training	●	From 2000 to 2008, the population of the region of MCB Quantico region (Prince William County, VA) increased by 30% (U.S. Census Bureau). This burgeoning population exerts significant encroachment pressure on the Base, including restrictions on land uses for live fire training due to noise concerns. EOD demolition activity is prohibited after 2220 hrs. Encroachment pressures have significantly reduced the capability of the installation to support Unit training and increasingly effect its capability to support Individual training of newly commissioned lieutenants at The Basic School. ECP has been completed.
	Unit Level Training	●	From 2000 to 2008, the population of the region of MCB Quantico region (Prince William County, VA) increased by 30% (U.S. Census Bureau). This burgeoning exerts significant encroachment pressure on the Base, including restrictions on land uses for live fire training due to noise concerns. EOD demolition activity is prohibited after 2220 hrs. Encroachment pressures have significantly reduced the capability of the installation to support Unit training and increasingly effect its capability to support Individual training of newly commissioned lieutenants at The Basic School. As with Individual training, noise constraints affect Unit-level training. ECP has been completed.
Adjacent Land Use	Individual Level Training	●	From 2000 to 2008, the population of the region of MCB Quantico region (Prince William County, VA) increased by 30% (U.S. Census Bureau). Burgeoning population exerts significant encroachment pressure on the Base, resulting in Airspace use limitations, munitions constraints, and restrictions on land uses for live fire training due to noise concerns. Encroachment pressures have significantly reduced the capability of the installation to support Unit training, and increasingly affect its capability to fully support Individual training of newly commissioned lieutenants at The Basic School and MOS training of infantry officers. Growth pressures from non-DoD tenants (e.g., FBI, DEA) reduce the utility of some range areas. ECP has been completed; however, satisfactory remedies remain elusive.
	Unit Level Training	●	Same as above.

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Figure 3-19 Marine Corps Capability and Encroachment Assessment Detail (continued)

Marine Corps Air Ground Combat Center (MCAGCC) Twentynine Palms Assessment Details

Range Mission Description																										
The MCAGCC Twentynine Palms provides range capabilities to support training of Marines, Marine Corps units, MAGTF elements, and MAGTFs in the mission essential tasks of modern expeditionary warfare, including Service-directed pre-deployment training exercises and training of units of the First Marine Expeditionary Force (I MEF) that are assigned to the installation. The Marine Air Ground Task Force Training Command (MAGTFTC) maintains its headquarters at MCAGCC Twentynine Palms.																										
Capability Data							Encroachment Data																			
Mission Areas	Capability Attributes											Mission Areas	Encroachment Factors													
	Landscape	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges		MOUT Facilities	Suite of Ranges	Threatened & Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
Individual Level Training	●	●			●	●	●	●	●	●		●		Individual Level Training	●	●	●		●	●	●	●	●	●		●
Unit Level Training	●	●			●	●	●	●	●			●	●	Unit Level Training	●	●	●		●	●	●	●	●	●		●
MEU Level Training	●	●			●	●	●	●	●			●	●	MEU Level Training	●	●	●		●	●	●	●	●	●		●
MEB Level Training	●	●			●	●	●	●	●			●	●	MEB Level Training	●		●		●	●	●	●	●	●		●
Legend	FMC ●		PMC ●			NMC ●						Legend		Minimal ●		Moderate ●			Severe ●							
Capability Chart and Scores							Encroachment Chart and Scores																			
Summary Observations							Summary Observations																			
<ol style="list-style-type: none"> Doctrinal range requirements are derived from Operational Training Ranges Required Capabilities MCRP 3-0C. The MCAGCC Twentynine Palms RCMP provides data for this assessment. Mission areas and attributes in "white" were not assessed, or are not applicable to this installation. Deficits noted in available training Land (Landscape) space and Airspace, impacting ability to conduct required Service-level training of large Marine Air Ground Task Forces (MAGTFs). Other significant deficits are lack of modern automated Targets, Threat Systems, and Scoring & Feedback Systems. The Land and Airspace Expansion Initiative is expected to significantly enhance range complex for MAGTF training. 							<ol style="list-style-type: none"> The references for this assessment are Operational Training Ranges Required Capabilities Operational Training Ranges Required Capabilities MCRP 3-0C and RCMP. 18% of the range/range complex mission is moderately impacted by encroachment factors. Spectrum and Airspace are the encroachment factors moderately impacting the training mission. These impacts affect all levels of training. An ECP has been completed and is being executed. 																			
Historical Information, Results, and Future Projections							Historical Information, Results, and Future Projections																			
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011																	
Capability Scores	5.63	5.63	6.03	6.03	Encroachment Scores	9.00	9.00	9.10	9.10																	
Impacts from key range capabilities shortcomings resulted in PMC designations for this installation during FY2008–FY2011, when assessing the installation's ability to support Marine Corps Task 1.7 (Support Maneuver through the Provision of Training Areas) and Marine Corps Task 3.3 (Support Fires through the Provision of Ranges and Training Areas). The top three capabilities and/or enhancements required to facilitate transition to FMC include: (1) MEB-level combined arms live fire and maneuver training capability, (2) exercise C2 battle staff training capability, and (3) enhancement and upgrade of large scale urban training capability.							Impacts from key encroachment factors resulted in PMC designations for this installation during FY2008–FY2011, when assessing the installation's ability to support Marine Corps Task 1.7 (Support Maneuver through the Provision of Training Areas) and Marine Corps Task 3.3 (Support Fires through the Provision of Ranges and Training Areas). Successful mitigation of key encroachment factors, including (1) Airspace restrictions and (2) frequency Spectrum limitations, are required to facilitate transition to a FMC designation.																			

MCAGCC Twentynine Palms Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	MEU Level Training	●	There is insufficient Landspace and Airspace to meet USMC Operational Training Ranges Required Capabilities MCRP 3-0C and to conduct large-scale MAGTF and Joint exercises that involve all elements of combined arms training. Landspace and Airspace expansion planning is underway, including preparation of an Environmental Impact Statement addressing proposed alternatives to meet requirements.
	MEB Level Training	●	Same as above.
Airspace	MEU Level Training	●	Same as above.
	MEB Level Training	●	Same as above.
Targets	Unit Level Training	●	There are a number of required ranges and target areas that either don't exist or need modernization to meet USMC training requirements. These shortfalls span all levels of Unit training. Shortfalls include infantry and mechanized automated ranges and targets, battle-course ranges and targets, assault/breaching/demolition ranges, and others. The Marine Corps RM/T Program is addressing these shortfalls through range investments consistent with available resources.
	MEU Level Training	●	Target shortfalls affect the realism of MAGTF training. Due to the nature and size of the training area (i.e., an open, live fire impact area covering hundreds of square miles), target systems for large exercises are generally not automated. The Marine Corps RM/T Program is analyzing approaches to addressing these shortfalls through range investments consistent with available resources.
	MEB Level Training	●	Same as above.
Threats	Unit Level Training	●	MCAGCC Twentynine Palms requires a comprehensive electronic training environment supporting basic through advanced collective training. The capability must simulate neutral, hostile, and non-hostile ground, air defense, and airborne weapons systems; OPFOR C2; neutral, hostile, and non-hostile cryptologic systems; and hostile jamming. There are efforts underway to study OPFOR capability alternatives and to develop shortfall strategies. The role player program (not a program-of-record) is significant training enhancement.
	MEU Level Training	●	Same as above.
	MEB Level Training	●	MCAGCC Twentynine Palms requires a comprehensive electronic training environment supporting basic through advanced collective training. The capability must simulate neutral, hostile, and non-hostile ground, air defense, and airborne weapons systems; OPFOR C2; neutral, hostile, and non-hostile cryptologic systems; and hostile jamming. Through the RM/T Program efforts are underway to study OPFOR capability alternatives and to develop shortfall strategies. The role player program (not a program-of-record) is significant training enhancement.
Scoring & Feedback System	Unit Level Training	●	Some existing ranges lack modern Scoring & Feedback Systems. The Marine Corps RM/T Program is addressing these shortfalls through range investments consistent with available resources.
	MEU Level Training	●	MAGTF-level training requires enhanced instrumentation for training event reconstruction, debriefing, and replay. MCAGCC Twentynine Palms currently lacks such capabilities. The Marine Corps RM/T Program continues to analyze and address these shortfalls through range investments consistent with available resources. Current initiative to construct a state-of-the-art MAGTF-level MOUT Facility will mitigate some issues. The expected completion date is 2012.
	MEB Level Training	●	Same as above.
Range Support	MEU Level Training	●	Exercise Control facilities are insufficient for large-scale MAGTF and Joint exercises. MCAGCC Twentynine Palms has an effort for a design study and DD 1391s to construct and equip a C22/Exercise Control facility for large-scale exercises. The Bases's C4 infrastructure requires expansion to accommodate MAGTF- level training.
	MEB Level Training	●	Same as above.
Collective Ranges	Unit Level Training	●	See comments above regarding Target deficits.
	MEU Level Training	●	See comments above regarding Landspace, Airspace, Range Control, and Target deficits.
MOUT Facilities	Individual Level Training	●	Development of new MOUT Facilities has received focused attention throughout the Marine Corps, resulting in significant improvements; however, deficiencies remain. The RM/T Program is continuing to address shortfalls consistent with available resources and Service priorities.
	Unit Level Training	●	Same as above.
	MEU Level Training	●	A current initiative to construct a state-of-the-art MAGTF-level MOUT Facility will mitigate shortfall. The expected completion date is 2012.
	MEB Level Training	●	Same as above.

Figure 3-19 Marine Corps Capability and Encroachment Assessment Detail (continued)

MCAGCC Twentynine Palms Detailed Comments

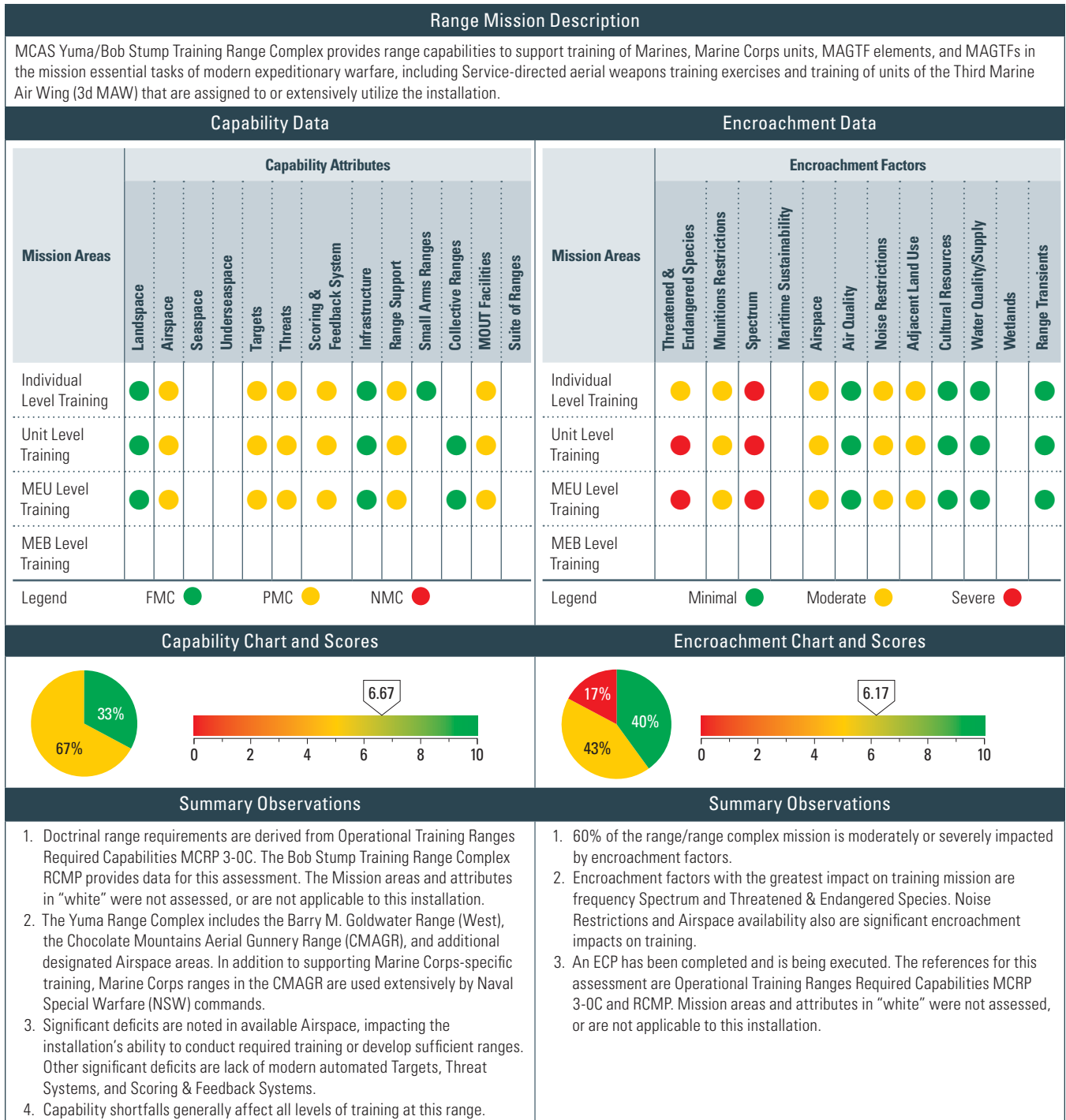
Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Spectrum	Individual Level Training	●	The congested frequency Spectrum limits frequency availability/deconfliction. This deficiency affects all levels of training through frequency Spectrum interference. Assessment and mitigation planning actions and milestones are being implemented.
	Unit Level Training	●	Same as above.
	MEU Level Training	●	Same as above.
	MEB Level Training	●	Same as above.
Airspace	Unit Level Training	●	Congested regional Airspace surrounds the the SUA supporting MCAGCC Twentynine Palms ranges, resulting in FAA pressure for access to SUA. Interruptions and modifications of training result in limitations on the capabilities of fixed wing aviation assets to ingress/egress in tactical profiles over range areas. An initiative to expand Airspace access is ongoing, USMC is coordinating with FAA to discuss of land expansion.
	MEU Level Training	●	Same as above.
	MEB Level Training	●	Same as above.

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Figure 3-19 Marine Corps Capability and Encroachment Assessment Detail (continued)

MCAS Yuma/Bob Stump Assessment Details



MCAS Yuma/Bob Stump Assessment Details

Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	5.28	5.28	6.67	6.67	Encroachment Scores	5.25	5.25	6.17	6.17
Impacts from key range capabilities shortcomings resulted in PMC designations for this installation during FY2008–FY2011, when assessing the installation’s ability to support Marine Corps Task 1.7 (Support Maneuver through the Provision of Training Areas) and Marine Corps Task 3.3 (Support Fires through the Provision of Ranges and Training Areas). The top three capabilities and/or enhancements required to facilitate transition to FMC include: (1) available Airspace, (2) modern automated Targets, and (3) Scoring & Feedback Systems.					Impacts from key encroachment factors resulted in PMC designations for this installation during FY2008–FY2011, when assessing the installation’s ability to support Marine Corps Task 1.7 (Support Maneuver through the Provision of Training Areas) and Marine Corps Task 3.3 (Support Fires through the Provision of Ranges and Training Areas). Successful mitigation of key encroachment factors, including (1) Airspace restrictions, (2) frequency Spectrum limitations, and (3) urban growth, are required to facilitate transition to a FMC designation.				

MCAS Yuma/Bob Stump Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Airspace	Individual Level Training	●	Airspace requirements for Individual training are fully met within the range complex with the exception of the objective requirement of 30 NM x 60 NM for EW ranges.
	Unit Level Training	●	The objective requirement for a 40 NM x 60 NM AAW and 30 NM x 60 NM EW range is not met within the range complex. The altitude blocks are not consistent causing the Airspace to be fragmented. Airspace has limited availability to non-participating units during WTI, other Service-level pre-deployment training exercises, and unit detachments to MCAS Yuma. Efforts are ongoing to improve Airspace scheduling and management to optimize Airspace availability and utilization. The Marine Corps is coordinating with the FAA to provide enhanced Airspace for larger training events. The Marine Corps is also evaluating the potential of a Memorandum of Agreement (MOA) with Luke AFB regarding use of R-2301E.
	MEU Level Training	●	Same as above.
Targets	Individual Level Training	●	The fidelity and quality of tactical targets are limited for training of aviation ground support units; however, the RM/T Program is addressing shortfalls consistent with available resources. Planned upgrades include investment in welded and pop-up targets; buildings for convoy operations; and enhanced marksmanship program (EMP) training.
	Unit Level Training	●	The type, quality, fidelity, and quantity of targets are inadequate. There is a limited number of JDAM targets. The range has no targets with infrared (IR) signature capability. Urban Close Air Support Range (Yodaville) does not provide a realistic urban training environment for helicopter gunnery operations. The RM/T Program is addressing shortfalls consistent with available resources.
	MEU Level Training	●	Same as above.
Threats	Individual Level Training	●	Shortfalls in threat aircraft include: no rotary-wing threat aircraft, no aircraft with A-A radar missile presentations, and radar capability is limited on the F-5. Solutions or workarounds include units-in-training providing their own OPFOR and joint training with the USAF using F-15/16. Other shortfalls include: Threat Level 3 and 4 EC signature equipment, and limited coverage of EW Threat Systems and OPFOR simulators beyond R-2301W. The RM/T Program is addressing shortfalls consistent with available resources.
	Unit Level Training	●	Same as above.
	MEU Level Training	●	Same as above.
Scoring & Feedback System	Individual Level Training	●	TACTS and EC&C coverage is limited to R-2301W. S-A threat simulations are limited. Tactical targets are not scored and there is no scoring feedback in R-2507. Debrief capability is limited to MCAS Yuma, MCAS Miramar, and NAF El Centro. Low altitude communication is limited. EC&C is limited to R-2301W. There are no secure EC&C circuits. The RM/T Program is addressing shortfalls consistent with available resources. Initiatives include: investments in JNTC compliant tracking and EC&C equipment to cover the entire range complex; provision of staffing support for Range Operational Control Center (ROCC); upgrade of S-A simulations; provision of scoring for tactical targets in R-2507N/S; upgrade of TACTS to TCTS; and communications upgrades to resolve low altitude shortfall and shortage of secure communication circuits.
	Unit Level Training	●	Same as above.
	MEU Level Training	●	Same as above.
Range Support	Individual Level Training	●	Range support shortfalls include a lack of remote weather sensors on the range. The Range Operational Control Center (ROCC) is currently not functional; hardware is in place, but there is no trained staff.
	Unit Level Training	●	Same as above.
	MEU Level Training	●	Same as above.

Figure 3-19 Marine Corps Capability and Encroachment Assessment Detail (continued)

MCAS Yuma/Bob Stump Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
MOUT Facilities	Individual Level Training	●	Development of new MOUT Facilities has received focused attention throughout the Marine Corps, resulting in significant improvements; however, deficiencies remain. The RM/T Program is continuing to address shortfalls consistent with available resources and Service priorities.
	Unit Level Training	●	Same as above.
	MEU Level Training	●	Same as above.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Threatened & Endangered Species	Individual Level Training	●	Endangered species and habitat protection requirements result in significant challenges to effective training involving earthwork or heavy equipment operations. Range delays are encountered for some training activities involving high explosive ordnance due to the requirement to physically inspect the ranges to ensure that no endangered wildlife species are occupying the area. MCAS Yuma maintains close coordination with the USFWS to address ESA-based constraints on training.
	Unit Level Training	●	Same as above. Impacts are more significant for unit- and MEU-level training.
	MEU Level Training	●	Same as above. Impacts are more significant for unit- and MEU-level training.
Munitions Restrictions	Individual Level Training	●	Due to UXO presence, convoy security elements are not authorized to depart existing roads or trails, which limits the realism of required training. Range clearance procedures mitigate impacts.
	Unit Level Training	●	Same as above.
	MEU Level Training	●	Same as above.
Spectrum	Individual Level Training	●	MCAS Yuma is a joint military-civilian use airfield. Significant civilian aircraft operations often crowd tower and approach frequencies. Civilian and military frequencies are separate; however, ATC's response to military aircraft is often delayed due to communications with civilian traffic. Growth in regional communications infrastructure, including south of the border with Mexico and new commercial cell phone towers, increase noise floor levels. Some of the systems operate in the same frequency bands as the equipment used by MCAS Yuma or tenant units. The ability to use the full spectrum of L-Band (D-Band) for AN/TPS-59 (V)3 radar system, to include secondary radar (i.e., Identification Friend or Foe [IFF], specifically Mode-4 and Mode 5) is adversely effected. To date, Mode-4/5 cannot be used. Current impacts are manageable; however, trends, including proposed broadband allocation initiatives, threaten to significantly impact training and daily airfield operations.
	Unit Level Training	●	Same as above.
	MEU Level Training	●	Same as above.
Airspace	Individual Level Training	●	When the FAA (LA Center) experiences significant en route weather issues, commercial air traffic sometimes is re-routed around or through MCAS controlled restricted Airspace. Typically, through Letter of Agreement (LOA), the use of MCAS Airspace is granted by MCAS, if not being utilized by scheduled military training, but emergent cases have led to LA Center assuming the Airspace, affecting military training. (CLUS App. D. Part II. 1 and 3). Aircraft ordnance takeoffs and recoveries are restricted to certain runways. As a shared use airfield, significant civilian a/c ops often delay military aircraft takeoffs and require military a/c to extend traffic pattern for proper spacing to land. Quiet hours have been imposed on a few occasions. Crop dusters operating within the tower's Airspace are mitigated by flying normal course rules into and out of airfield for helos and are distracting. Power lines planned around base underlying Class D Airspace impact instrument approach procedures.
	Unit Level Training	●	Same as above.
	MEU Level Training	●	Same as above.
Noise Restrictions	Individual Level Training	●	Supersonic flight is restricted to a corridor located in the R2301W and is restricted to only one direction, inhibiting realistic training. Noise complaints stem from aircraft aligning to use targets in restricted areas that may be close to the borders of the area (R2301W/BMGR). Residential expansion towards the boundary of the range areas contributes to this. Low-level aircraft (helos) transiting to and from these areas have resulted in noise complaint issues as housing grows in the Foothills area. (JLUS App. D. Part II. 1 and 3). MCAS Yuma's community liaison and outreach program seeks to influence community understanding of training and operational concerns.
	Unit Level Training	●	Same as above.
	MEU Level Training	●	Same as above.

MCAS Yuma/Bob Stump Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Adjacent Land Use	Individual Level Training	●	The population of the MCAS Yuma region (Yuma County, AZ) increased 20% between 2000 and 2008 (U.S. Census Bureau). This trend is expected to continue, increasing urbanization in the vicinity of the Air Station and Yuma ranges, raising concerns about encroachment. Communications and electrical transmission infrastructure threatens to interfere with flight patterns and military use of critical bands of the frequency Spectrum. Light sources associated with urban growth around the airfield currently are impacting aircrews' ability to train with Night Vision Devices (NVDs). Noise Restrictions have resulted in alteration of flight corridors to mitigate community impacts. MCAS Yuma's community liaison and outreach program seeks to influence community understanding of training and operational concerns.
	Unit Level Training	●	Same as above.
	MEU Level Training	●	Same as above.

Table 3-7 Marine Corps Capability and Encroachment Assessment Comparison

Range Name	Capability Score	Encroachment Score
MCAS Beaufort/ Townsend	A horizontal bar chart with a color gradient from red (0) to green (10). A white callout box above the bar indicates a score of 7.86.	A horizontal bar chart with a color gradient from red (0) to green (10). A white callout box above the bar indicates a score of 10.0.
MCMWTC Bridgeport	A horizontal bar chart with a color gradient from red (0) to green (10). A white callout box above the bar indicates a score of 5.00.	A horizontal bar chart with a color gradient from red (0) to green (10). A white callout box above the bar indicates a score of 5.00.
MCAS Cherry Point	A horizontal bar chart with a color gradient from red (0) to green (10). A white callout box above the bar indicates a score of 7.65.	A horizontal bar chart with a color gradient from red (0) to green (10). A white callout box above the bar indicates a score of 8.41.
MCBH	A horizontal bar chart with a color gradient from red (0) to green (10). A white callout box above the bar indicates a score of 4.09.	A horizontal bar chart with a color gradient from red (0) to green (10). A white callout box above the bar indicates a score of 6.19.
MCB Japan	A horizontal bar chart with a color gradient from red (0) to green (10). A white callout box above the bar indicates a score of 3.50.	A horizontal bar chart with a color gradient from red (0) to green (10). A white callout box above the bar indicates a score of 2.08.
MCB Camp Lejeune	A horizontal bar chart with a color gradient from red (0) to green (10). A white callout box above the bar indicates a score of 5.83.	A horizontal bar chart with a color gradient from red (0) to green (10). A white callout box above the bar indicates a score of 7.27.
MCB Camp Pendleton	A horizontal bar chart with a color gradient from red (0) to green (10). A white callout box above the bar indicates a score of 5.83.	A horizontal bar chart with a color gradient from red (0) to green (10). A white callout box above the bar indicates a score of 6.06.
MCB Quantico	A horizontal bar chart with a color gradient from red (0) to green (10). A white callout box above the bar indicates a score of 6.11.	A horizontal bar chart with a color gradient from red (0) to green (10). A white callout box above the bar indicates a score of 7.27.
MCAGCC Twentynine Palms Twentynine Palms	A horizontal bar chart with a color gradient from red (0) to green (10). A white callout box above the bar indicates a score of 6.03.	A horizontal bar chart with a color gradient from red (0) to green (10). A white callout box above the bar indicates a score of 9.10.
MCAS Yuma/Bob Stump	A horizontal bar chart with a color gradient from red (0) to green (10). A white callout box above the bar indicates a score of 6.67.	A horizontal bar chart with a color gradient from red (0) to green (10). A white callout box above the bar indicates a score of 6.17.

3.2.3 Navy Assessment Results¹¹

Navy Training Range Capability Assessment Analysis Results

The Range Capability Assessment data from 21 Navy range complexes are summarized and presented in Table 3-8.

The Navy Range Capability Chart and Scores are presented in Figure 3-20 and assessments by Range, Attributes, and Mission Areas are shown in Figures 3-22, 3-24, and 3-26.

The Navy's 21 individual range capability assessments along with comments for red and yellow ratings are included at the end of this section (Figure 3-28).

Navy Training Range Encroachment Assessment

Analysis Results

Navy Range Encroachment Assessment data from the 21 Navy ranges complexes are summarized in Table 3-9.

The Navy Range Encroachment Chart and Scores are presented in Figure 3-21 and assessments by Range, Factors, and Mission Areas are shown in Figures 3-23, 3-25, and 3-27.

The Navy's 21 individual encroachment assessments along with comments for red and yellow ratings are included at the end of this section (Figure 3-28).

The Navy Range Capability and Encroachment assessment comparisons are presented in Table 3-10.

¹¹ Of the 23 Navy Range Complexes identified in the 2012 Sustainable Ranges Report inventory in Appendix C, the Guantanamo and Diego Garcia Range Complexes were not assessed. The decision to exclude the range complexes from reporting is based on the Navy's near-term fleet training patterns, which no longer include either geographic location, as well as a lack of permanent training range infrastructure supporting these complexes. The limited utilization and capability of the range space associated with these complexes is in no way related to the role of their associated installations for supporting naval operations. As a part of ongoing reviews, the Navy will re-evaluate potential reinstatement of capability and encroachment assessments for both range complexes.

Table 3-8 Navy Capability Assessment Data Summary

Range	NMC	PMC	FMC	Capability Scores
Atlantic City	0	1	6	9.29
Atlantic Test Ranges	0	17	24	7.93
Atlantic Undersea Test and Evaluation Center (AUTEC)	0	1	35	9.86
Boston	0	2	12	9.29
China Lake	0	1	27	9.82
El Centro	0	1	4	9.00
Fallon Range Training Complex	0	14	9	6.96
Gulf of Mexico (GOMEX)	0	4	25	9.31
Hawaii	1	21	36	8.02
Jacksonville	1	17	24	7.74
Japan	9	22	13	5.45
Key West	0	3	4	7.86
Mariana Islands	32	14	13	3.39
Narragansett Bay	0	3	4	7.86
Navy Cherry Point	1	22	28	7.65
Northern California (NOCAL)	3	7	20	7.83
Northwest Training Range Complex	1	22	29	7.69
Okinawa	9	31	10	5.10
Point Mugu Sea Range	0	4	47	9.61
Southern California (SOCAL)	2	28	30	7.33
Virginia Capes (VACAPES)	1	22	28	7.65
HQ Navy	60	257	428	7.47

Table 3-9 Navy Encroachment Assessment Data Summary

Range	Severe	Moderate	Minimal	Encroachment Scores
Atlantic City	0	2	4	8.33
Atlantic Test Ranges	0	20	40	8.33
Atlantic Undersea Test and Evaluation Center (AUTEC)	0	9	18	8.33
Boston	0	4	6	8.00
China Lake	0	15	25	8.13
El Centro	0	0	11	10.00
Fallon Range Training Complex	0	14	25	8.21
Gulf of Mexico (GOMEX)	0	7	18	8.60
Hawaii	1	20	41	8.23
Jacksonville	0	18	22	7.75
Japan	2	7	20	8.10
Key West	0	2	4	8.33
Mariana Islands	1	29	33	7.54
Narragansett Bay	0	2	3	8.00
Navy Cherry Point	0	11	25	8.47
Northern California (NOCAL)	0	2	22	9.58
Northwest Training Range Complex	4	12	36	8.08
Okinawa	2	14	33	8.16
Point Mugu Sea Range	0	18	56	8.78
Southern California (SOCAL)	2	32	32	7.27
Virginia Capes (VACAPES)	0	26	18	7.05
HQ Navy	12	264	492	8.13

Figure 3-20 Navy Capability Chart and Scores

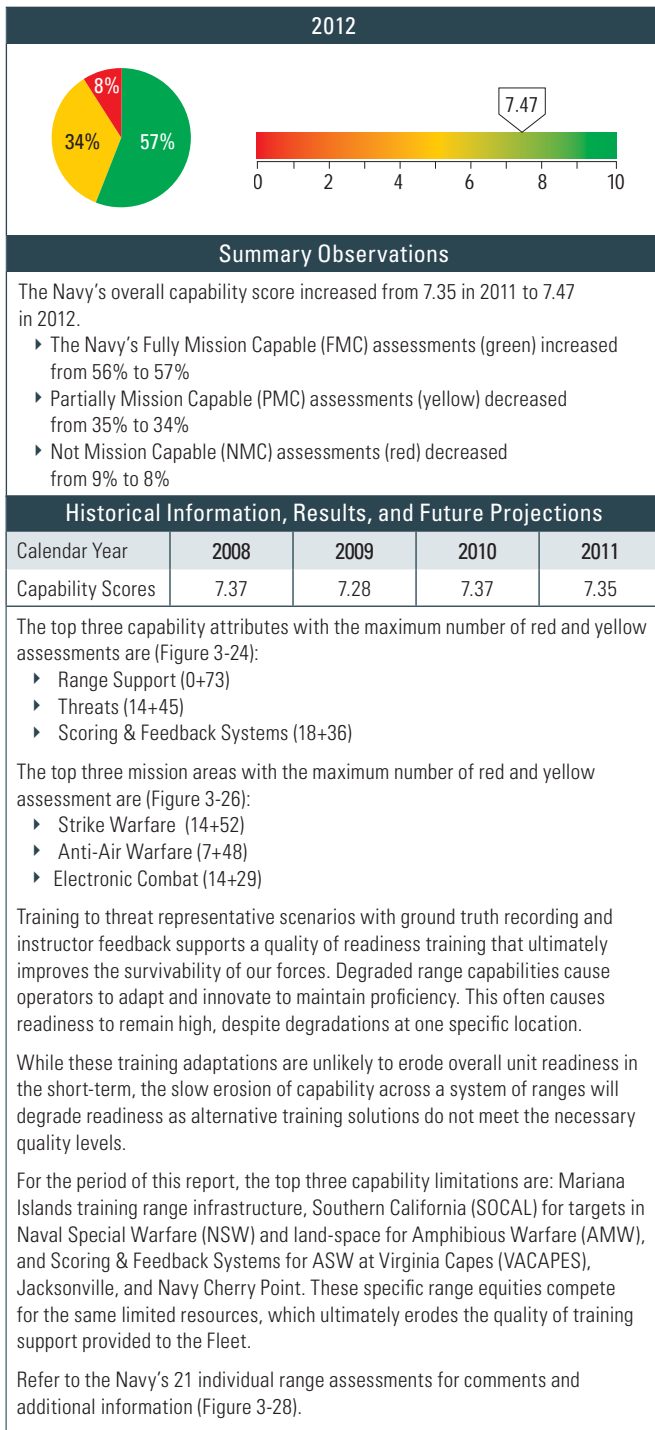


Figure 3-21 Navy Encroachment Chart and Scores

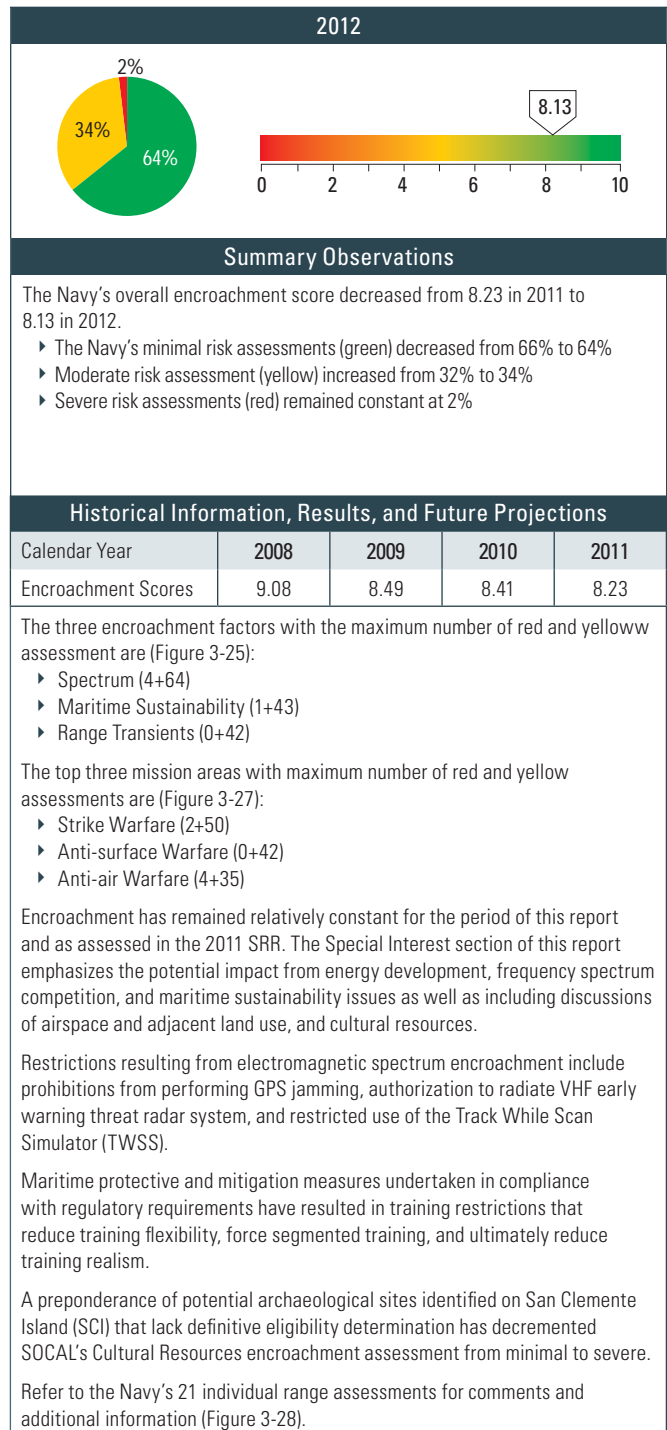


Figure 3-22 Navy Capability Assessments by Range

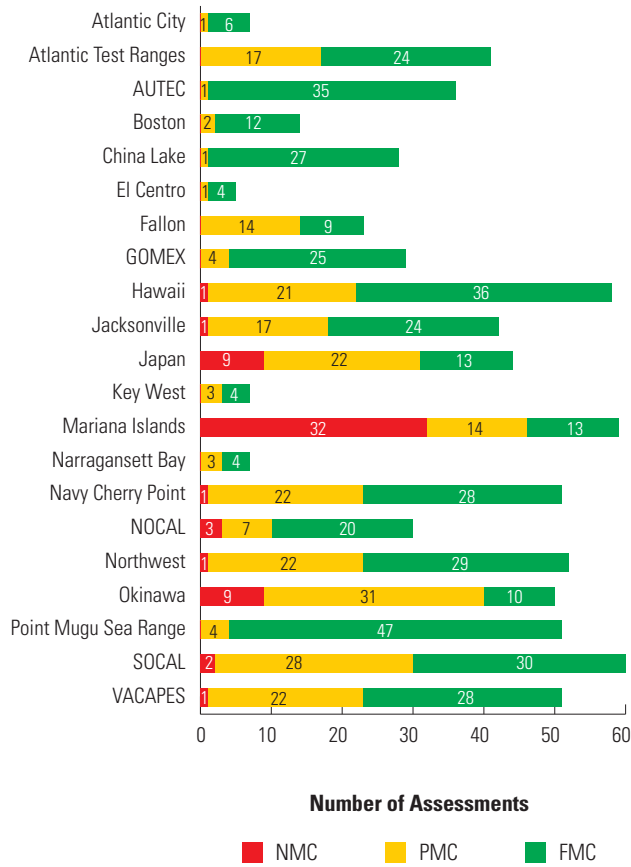


Figure 3-23 Navy Encroachment Assessments by Range

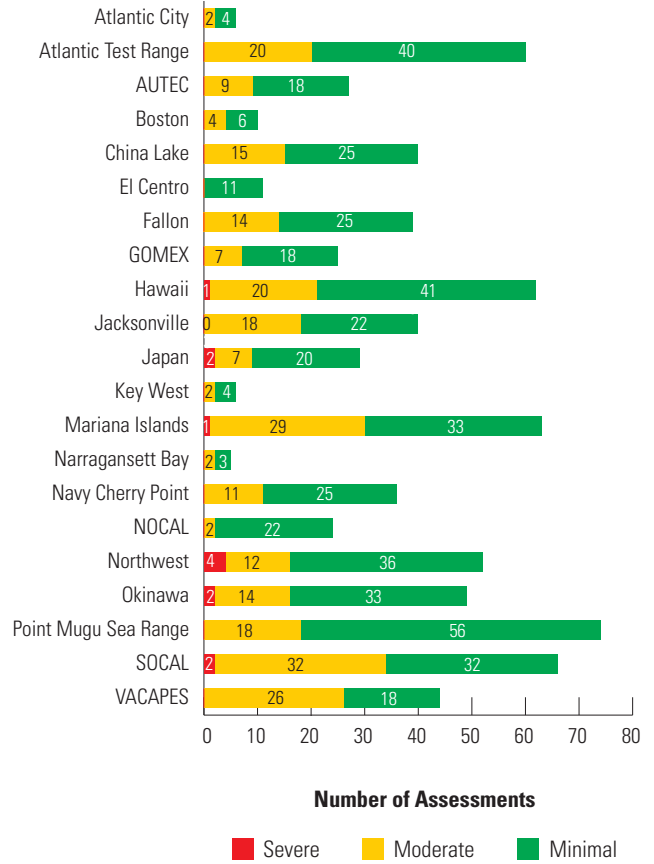


Figure 3-24 Navy Capability Assessment by Attributes

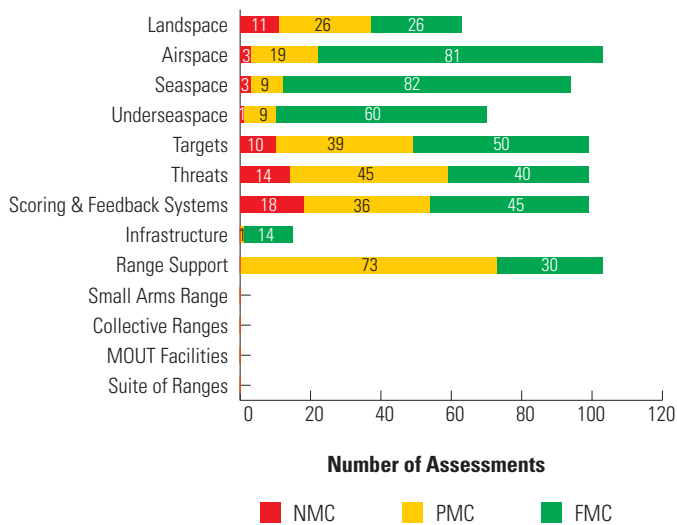


Figure 3-25 Navy Encroachment Assessment by Factors

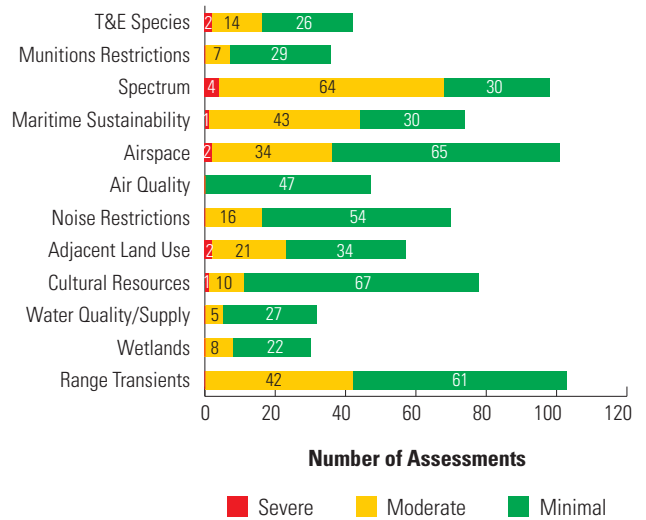


Figure 3-26 Navy Capability Assessment by Mission Areas

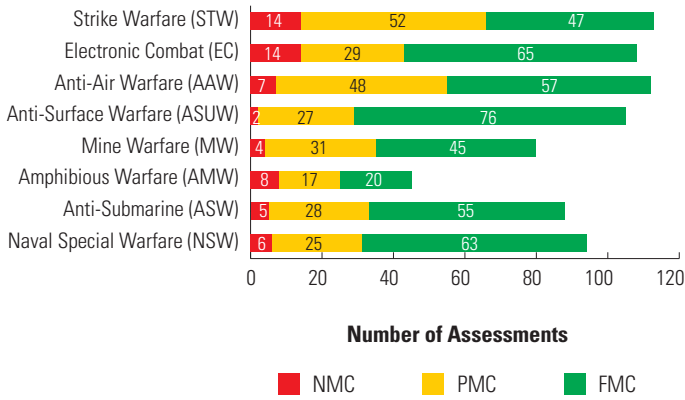
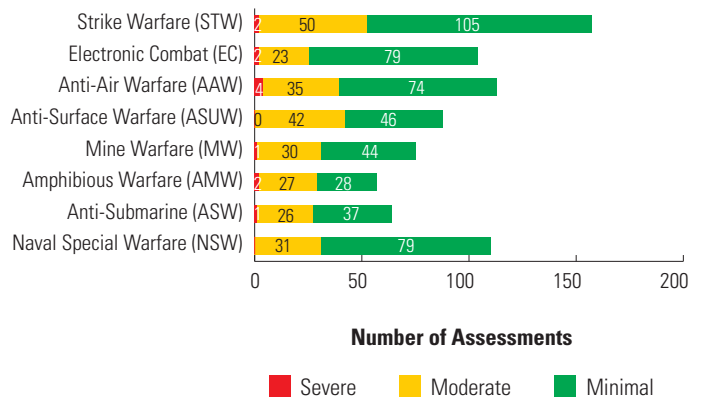


Figure 3-27 Navy Encroachment Assessment by Mission Areas



Navy Special Interest Section

General Issues

Since publication of the 2011 SRR, Navy training range management efforts have focused on mitigating energy development issues with the potential to impact range sustainment. While the Navy is committed to the Nation's energy goals, conventional and renewable energy development projects have increased pressure on future training space availability. Separately, Federal Communication Commission (FCC) initiatives to re-allocate military frequency bands for civilian and commercial use in support of the National Broadband Plan directly restrict the Navy's use of the frequency spectrum to test, train, and operate. When these forms of encroachment prevent or degrade training, weapon system operators are at risk for "negative-training"—operating restrictions that drive training practices away from tactics to be employed in combat. As training mitigations drive threat scenarios away from combat realism, military forces become increasingly vulnerable to reduced combat effectiveness.

The remainder of the Special Interest Section discusses off-range encroachment issues, specifically world-wide proliferation of ocean observing systems that, if employed in the absence of Navy engagement, may adversely impact how the Fleet operates. Additionally, significant range capability shortfalls and range impacts from encroachment factors are addressed. Most frequently these external influences result in a more controlled, restrained, or restrictive training environment and shape how the Navy trains to achieve combat readiness. When appropriate, each issue will be assessed in the POM-14 budget planning cycle.

Alternative Energy Development, Wind Farms

The Navy's energy strategy is centered on mission assurance, energy security, energy efficiency, and environmental stewardship, while retaining the ability to sustain military readiness and remain the pre-eminent maritime power. The Department of Navy (DoN) supports the Office of the Secretary of Defense (OSD) efforts to analyze, assess, and communicate potential impacts to naval training. The Navy participates in current OSD initiatives, such as the DoD Siting Clearinghouse, to establish a single DoD point of contact for all civil or non-governmental entities to determine renewable energy project impacts to service interests. In the case of offshore wind energy project proposals, close coordination with DUSD(P&R) and the Department of the Interior's Bureau of Ocean Energy Management (BOEM) remains critical to the preservation of range space and maneuver areas that support essential fleet training operations and present minimal impact to stringent test events. To date, the Navy has participated in or provided compatibility assessments to nine coastal state BOEM Renewable Energy Task Forces responsible for commercial development lease areas in federal waters.

A win-win situation for DoD and civil/commercial interests relies upon detailed proposal descriptions and open discussions of specific military operational limitations in an iterative process with energy stakeholders so actionable feedback is generated for both claimants. This dependency is interrelated. The more detailed and complete the energy proposal from commercial developers, the more accurate and comprehensive the Navy's impact assessment on service interests, such as installations, ranges, and specific capabilities, will be. For example, it is impracticable to discuss measurable impacts to training in the absence of planning details, such as turbine height and placement density of wind farm projects. In locations near surface ship training and aviation-related operations, wind farms can interfere with Doppler-based ground, shipboard, and airborne weapon system radars. Demanding flight operations, such as low altitude terrain clearance training or precision weapon delivery events, require unfettered safety-of-flight radar support to minimize hazards to civilian personnel.

Adverse weather and/or a high volume of commercial aviation exacerbates the tracking challenges posed to older, less capable military air traffic control systems where wind towers populate airspace inside the radar's field of view. Additionally, the electromagnetic effects of a single wind turbine upon legacy radars are far less than that of a dense wind farm grid. As the number of wind farms increases within military airspace, the radar controlled range space for supporting precision aerial weapon test events or high-volume, low altitude training events, such as student pilot instrument approach training, diminishes measurably. Naval Air Warfare Center (NAWC) China Lake and NAS Kingsville are actively engaged with local government and regional leaders to effectively site wind farms near military airspace in ways that mitigate the adverse effects upon safety-of-flight radars.

Shipboard radars can also be affected during key training events, such as airborne target tracking and engagement. The Navy awaits the results of ongoing studies to assess potential electromagnetic interference impacts to shipboard radars during training and testing evolutions. If impacts are measured or observed, these studies may further identify technical mitigations to reduce any adverse effect.

Frequency Spectrum Use Competition—The National Broadband Plan

Demand for use of the electromagnetic spectrum is increasing, both commercially and within DoD. In the spring of 2010, the National Telecommunications and Information Administration (NTIA) introduced specific sharing and reallocation proposals for eleven specific frequency bands to support the FCC plan to connect 100 million homes in the next 10 years with broadband, the National Broadband Plan. It is imperative that the Navy remain fully engaged in the military spectrum reallocation discussions.

A critical Navy range capability directly challenged by the broadband initiative is the employment of modern combat weapon systems within an electronic warfare (EW) threat representative environment. Today's military frequency band allocation supports training with weapon sensors and targeting systems, instrumented range monitoring and recording systems, and threat replicated EW defense systems (i.e. surface-to-air missile radars, communication jammers). Training within a robust electronic environment saturated with offensive and defensive weapons systems pose unique weapon system deconfliction challenges similar to what is experienced in modern conflicts and ensures the greatest fidelity for realistic training. These systems require DoD-managed, commercially-exclusive frequency bands to support military units during live training. Numerous spectrum bands, utilized by the Navy and other defense agencies, are increasingly encroached upon for use by non-DoD organizations. Of specific concern to instrumented training range complexes is the proposed loss of spectrum that supports employment of the Tactical Combat Training System (TCTS), an instrumented aerial and surface tracking system needed for minute-by-minute playback and assessment of recorded multi-participant training evolutions. Under review is the reallocation of the TCTS frequency band (1755-1780 MHz) to the 10-year assessment plan that supports the National Broadband Plan. If this band is not protected or economically replaced by technically feasible spectrum, existing capabilities as well as emerging capabilities such as secure LVC (sensor stimulation) enablers will be lost, seriously impacting the training superiority established through instrumented training.

Proliferation of Ocean Observing Systems

An increasingly wider variety and greater number of government, academic and commercial entities are fielding a new generation of Ocean Observing Systems (OOSs) to monitor and study the world's oceans. The motivation for the majority of OOS is marine mammal and weather research, weather and climate interests, tsunami warning/verification, and seismic/earthquake monitoring. OOS located on or near Navy training ranges pose a threat to Navy national security interests. There are three training ranges of immediate concern.

- ▶ The Northwest Training Range Complex is impacted by the Canadian Northeast Pacific Time-Series Undersea Networked Experiments (NEPTUNE). Operated by the University of Victoria, NEPTUNE is a cabled system of seismometers, hydrophones and other sensors that provide real-time data via the internet. Also of interest is Cascadia, a field of approximately 210 Ocean Bottom Seismometers (OBSs) scheduled for phased deployment in the vicinity of the Northwest Training Range Complex between August 2011 and August 2013.

- ▶ The SOCAL training range area was impacted by ALBACORE, a field of over 30 OBSs deployed for a year with retrieval in September 2011 and also by a field of 27 High Frequency Acoustic Recording Package (HARP) buoys sponsored by the Navy and National Oceanographic and Atmospheric Administration (NOAA). HARP buoys are used to routinely locate and monitor marine mammal activity. Neither the ALBACORE OBS nor the HARP buoys provide real-time acoustic data.
- ▶ The Hawaiian Islands Complex is impacted by the Aloha Cabled Observatory OOS operated by the University of Hawaii. The Aloha OOS re-uses an abandoned telecommunications cable to gather acoustic data from two hydrophones and provide real-time data *via* the internet.

Legitimate protection of all Navy national security interests would require controlling access to all marine monitoring, the majority of which is funded by non-DoD or international entities. This universal approach is not practicable. However, the Navy continues to consider means of protecting sensitive information, which requires improving the Navy's awareness of when and where sensors are placed in operation. Given the significance of placing OOSs in the vicinity of Navy training ranges, a process of notifying the Navy of planned OOS placement would assist in the continuing effort to balance national security concerns with academic and commercial interests. The Navy will continue cooperation and consultation with civilian agencies, foreign navies, academic institutions, and industry to build on current agreements and allow for additional negotiated agreements as appropriate on the placement of sensors and shared data management.

Critical Issues: Range Capability

While the Navy strives to model resource-aligned range capabilities versus combat readiness, an exact tipping point between "combat ready" and "not combat ready" assessments is difficult to predictably measure. However, live training in a threat representative scenario with ground truth recording and instructor feedback contributes to a quality of readiness that improves combat mission success and warrior survivability. Quite often, combat operators meet fleet requirements supported by range instrumentation restrictions, threat scenario artificialities, and/or modified mission profiles to fit within range restrictions. For example, fleet EW operators build scenarios where the operator reacts to a "notional threat" that is derived from an FCC compliant blue-force signal or from the narrow transmission of a simulated threat system.

Three capability attributes assessed as NMC impact training range support to the fleet in varying degrees. For the period of this report, the top three capability limitations are: Mariana Islands training range infrastructure, SOCAL for targets in

Naval Special Warfare (NSW) and land-space for Amphibious Warfare (AMW), and Scoring & Feedback for ASW at Virginia Capes (VACAPES), Jacksonville, and Navy Cherry Point. These specific range equities compete for the same limited resources which ultimately erodes the quality of training support provided to the fleet.

- ▶ **Mariana Islands Training Space, Targets, Threats, Scoring & Feedback**—The Navy is committed to sustainable development and improvement of training range capabilities in the Marianas. As the regional joint force presence increases, the overall naval and joint force demand for training range capability will continue to be a critical issue. While a slight improvement in range capability has been achieved since the 2011 SRR, the approval of National Environmental Policy Act-related documentation has paved the way for further near-term improvements. In July 2010, the Marianas Islands Final Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS) was signed. Range enhancements to increase existing training capabilities (especially in undersea and air warfare areas) are necessary to maintain a state of military readiness commensurate with national defense requirements. The pending delivery of a Multi-Purpose Range Craft (MPRC) to support target services will continue to increase the capability of this range complex. Multiple range support challenges remain unresolved—the most significant being expanding special use airspace, installing scoring & feedback systems, procuring a portable undersea warfare training range, and procuring threat systems and opposition forces for air, surface, and subsurface users. A comprehensive, DoD-led approach to resourcing joint requirements in the Marianas is required for this complex to support joint training. Component Commands, along with U.S. Pacific Command, are actively engaged in this process and in developing a training range planning strategy.
- ▶ **Jacksonville ASW Scoring & Feedback**—Program management of the East Coast Undersea Warfare Training Range (USWTR) marked a new milestone of progress toward construction of this important Anti-Submarine Warfare (ASW) training capability. In FY2011, the request for proposal (RFP) was released for solicitation of bids; source selection was made in the fourth quarter. As the contract nears awarding, sea floor installation is expected to commence in FY2013. The USWTR will initially be capable of supporting limited fleet training at the close of CY2017. When complete, the USWTR will cover approximately 500-square-nautical miles (nm) within the water space commonly referred to as the Jacksonville OPAREA. This new capability will add value to combat readiness training for surface, subsurface, and air units preparing for anti-submarine warfare

operations. In the absence of an underwater training range, VACAPES and Cherry Point will remain NMC in ASW Scoring & Feedback in the foreseeable future.

- ▶ **SOCAL NSW Targets and AMW Landspace**—Target sets that support NSW fire-and-maneuver requirements fail to replicate threat objectives, support simplistic vice challenging target training scenarios, and inhibit new tactics development. The Naval Special Warfare Command is reviewing SEAL training requirements on San Clemente Island. As a result of this review, target-sets are being assessed for upgrades to increase threat realism. SOCAL is also challenged with insufficient landspace to support Amphibious Warfare training at San Clemente Island and the Silver Strand training complex. Current training is limited to amphibious landings using smaller footprints that support only basic level training; larger amphibious events are not approved at these sites.

Critical Issues: Encroachment Factors

The situation regarding encroachment remains essentially unchanged in this report as it existed and was described in the 2011 SRR. Four encroachment factors received severe or moderate ratings that adversely impact or have potential to impact training range support to the fleet. They are Frequency Spectrum Competition, Airspace, Adjacent Land Use, and Cultural Resources.

- ▶ **Spectrum Restrictions (Severe/Moderate)**—Restrictions resulting from electromagnetic spectrum encroachment include prohibitions from performing Global Positioning System (GPS) jamming, authorization to radiate VHF early warning threat radar system, and restricted use of the Track While Scan Simulator (TWSS). Electronic combat attack platforms, such as the EA-18G and EA-6B, and electronic defense systems onboard other Naval platforms, are constrained by numerous frequency emission limitations. Additionally, employment of the SPY-1 and SPS-49 radars, IFF jamming, and the Link 16 data link are severely restricted within narrow frequency bands. Electromagnetic spectrum constraints reduce combat realism by the introduction of training artificialities, segment aviation training between live systems restrictions and full-spectrum cockpit simulators, limit application of emergent weapon technologies, and inhibit new tactics development. Located in electronically dense environments, ranges such as Point Mugu, SOCAL, and VACAPES have extremely limited abilities to support electronic combat testing and training. The Navy continues to coordinate with appropriate frequency allocation and oversight agencies to seek spectrum relief and develop encroachment strategies to reduce frequency interference to optimize use of competing spectrum technologies. Proposed frequency spectrum reallocation

initiatives add increased pressure on current military bandwidth use.

- ▶ **Restricted Airspace, Ground Training and Adjacent Land Use (Severe)**—Ongoing and proposed wind farm power generation projects pose an encroachment threat to established training requirements and installations. Both training space, such as the Boardman target complex in Oregon, and military installations, such as Naval Air Station Kingsville, Texas, are impacted by wind farm development. Encroachment is characterized as physical obstruction of large groupings of turbines or the electromagnetic interference created from moving turbine blades. Mitigation of these impacts requires sufficient time to engage commercial developers to identify alternative low impact wind farm locations and to develop and integrate technical mitigation solutions to military electronic systems. Considerable funding resources are also required that would otherwise be invested on readiness training. Additionally, wind farm proposals differ subject to space availability requiring site specific analysis often supported by technical studies to ensure a proper balance between the Navy's readiness requirements and overall energy generation objectives.

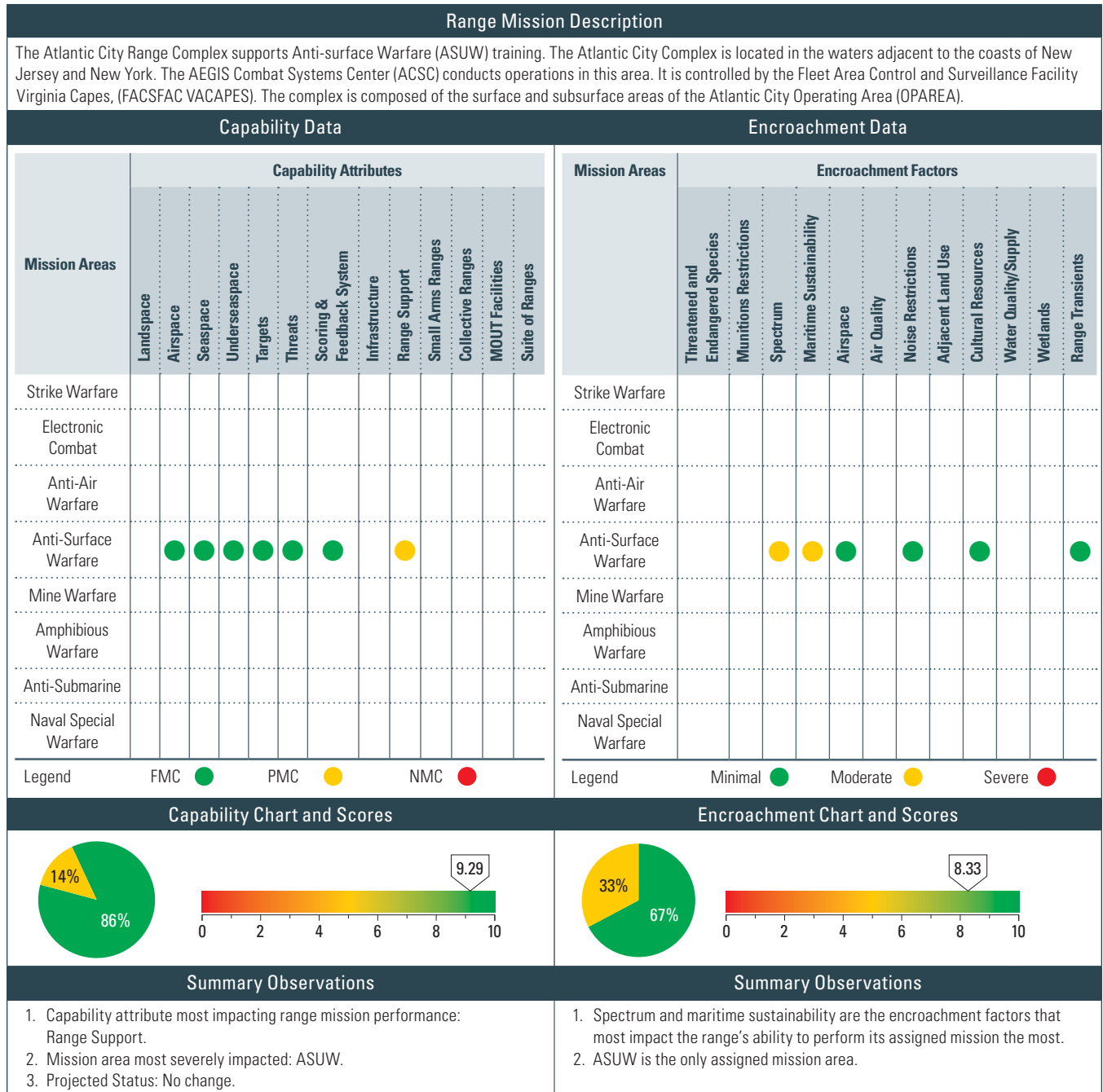
Similarly, geothermal exploitation and development or other forms of energies on adjacent federal lands to installations could have impacts to land space set aside to support ground training. Navy SEALs conduct land warfare training at both NAS Fallon in Nevada, and the Chocolate Mountain Aerial Gunnery Range (CMAGR) in California. The Navy must balance fulfilling maritime national security readiness requirements with contributing to national energy security solutions that guard local/ regional economies. The Military Services could benefit from establishing an automated system to input projected commercial and private projects along with subsequent training and testing impact analyses. Such a system would be an effective planning tool that could be made visible to leadership and decision makers. This process would enhance energy project development while simultaneously avoiding an adverse impact on combat readiness.

- ▶ **SOCAL Cultural Resources (Severe/Moderate)**—A preponderance of potential archaeological sites identified on SOCAL's San Clemente Island (SCI) that lack definitive eligibility determination has decremented SOCAL's Cultural Resources encroachment assessment from minimal to severe. In the absence of eligibility determination, over 7,000 potential sites are treated as if eligible under the National Historic Preservation Act (NHPA), creating a considerable number of avoidance areas throughout range maneuver space designated in the SOCAL EIS/OEIS as the USMC Assault Vehicle Maneuver Area, Artillery Firing Positions, and Assault

Maneuver Positions. SCI is the sole maritime training area that supports both MEF Battalion Landings and Artillery/Small Arms live fire targeting. This range also constitutes the major West Coast training site in support of Navy SEAL Unit Level Training for Military Operations in Urban Terrain. The thirty-five building, live fire complex adjacent to a littoral environment allows Navy SEALs and Special Warfare Combatant Crewman (SWCC) to conduct over-the-beach interoperability for both surface and land SPECOPS Force capabilities. The presence of an overwhelming number of un-assessed archaeological sites restricts Naval Special Warfare tactical training. SCI also supports the only location for Basic Underwater Demolition/SEAL (BUD/S) live underwater and land demolitions training. To avoid further adverse impact to SEAL and SWCC training, the potential archaeological sites near-term adjudication of eligibility determination is required. The presence of numerous informally established potential cultural sites constitutes a major impediment to training.

Figure 3-28 Navy Capability and Encroachment Assessment Detail

Atlantic City Assessment Details



Atlantic City Assessment Details

Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	8.93	8.93	8.93	8.93	Encroachment Scores	8.75	8.33	8.33	8.33
1. The capability assessment has been stable from CY2008 to CY2011. CY2012: Anti-Air Warfare mission area deleted by United States Fleet Forces (USFF).					1. Encroachment assessments for CY2008 were different than those for CY2009 to CY2011. The algorithm for the overall assessment score for CY2009 to CY2011 was revised from the original algorithm used in CY2008 to provide greater fidelity and consistency across all range complexes. Based on an improved review process and revised algorithms, the assessments for CY2009 to CY2011 provide a more accurate assessment of encroachment. The assessments for the latter three years reveal there has been little encroachment change from year to year, with relatively constant overall scores for CY2009 to CY2011. 2. The VACAPES-Northeast RCMP update is currently underway. 3. Attention from the Department of Interior (DOI) and private energy interests in the Outer Continental Shelf (OCS) is increasing as domestic energy demand builds. Naval offshore operating areas and training events may be affected. High priority areas include training ranges and sea space in and adjacent to all Navy OPAREAs. OASN (E,I&E), as DoD spokesman for military offshore use, continues to work closely with the Fleet's & DOI's Bureau of Ocean Energy Management (BOEM) to resolve issues of combined use of the OCS important to both agencies. Fleet review and analysis of impacts from both oil/gas and wind energy "lease sale" areas (i.e., Mission Critical Areas-[MCAs]) have been reviewed and forwarded to OSD. DoD and DOI coordination continues. 4. Atlantic City had no emerging encroachment issues during CY2012 that affect its operations. The CY2012 Atlantic City encroachment assessment has removed AAW as a mission area per USFF direction. All other CY2012 assessment data remain the same as CY2011. 5. The Northeast Encroachment Action Plan, including Atlantic City, is programmed for FY2013.				

Atlantic City Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Range Support	Anti-Surface Warfare (ASUW)	●	Lack of a web-based scheduling system with pre-event, real-time, and post-event modules precludes most efficient scheduling and documenting of range usage. Post-event reporting is particularly critical for ordnance expenditures or active sonar usage in at-sea OPAREAs, since the Marine Mammal Protection Act (MMPA) permits require the Navy to periodically report these values. Non-compliance or inaccurately reporting post-event values to regulators risks range access or prohibitions on training events that involve active sonar or high explosives at-sea. PACFLT is developing a Data Collection and Scheduling Tool (DCAST) that includes a post-event module to mitigate the issues outlined above. If successful, the Navy could consider adopting it for use at all range scheduling facilities.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Spectrum	Anti-Surface Warfare (ASUW)	●	Employment of Link 16, SPY-1 radar, SPS 49 radar, and IFF are restricted. Restrictions limit spectrum operations and prohibit certain training events, segment training/reduce realism, reduce training days, limit application of new weapons technologies, and inhibit new tactics development. The Navy continues to coordinate with appropriate frequency allocation and oversight agencies to seek spectrum relief, and to develop encroachment strategies that will reduce encroachment while ensuring pending use of emerging spectrum technologies. Competition for frequency spectrum will add increased pressure on available bandwidth for Naval operations.

Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

Atlantic City Detailed Comments

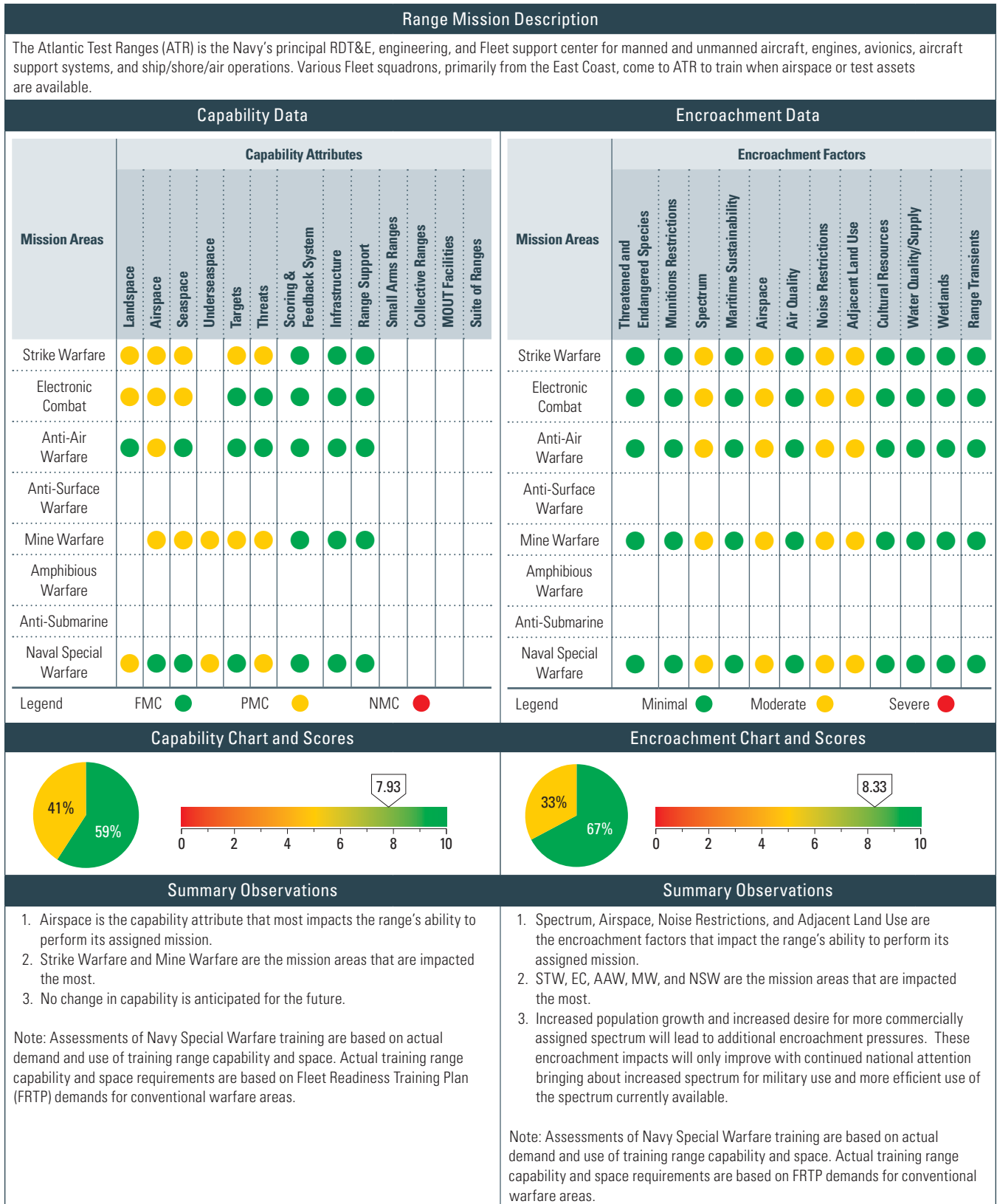
Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Maritime Sustainability	Anti-Surface Warfare (ASUW)	●	<p>Maritime protective and mitigation measures undertaken in compliance with regulatory requirements have resulted in training restrictions that reduce training flexibility, force segmented training, and ultimately reduce training realism. All at-sea training is impacted to some degree; impacts are most significant to integrated warfare training using active underwater acoustic sources or in-water explosive ordnance. The Navy and National Marine Fisheries Service (NMFS) have developed science based protective and mitigation measures that adequately protect marine species while accommodating military readiness activities. The Navy continues to develop Environmental Impact Statements, and obtain permits and authorizations for its range complexes to ensure military training complies with applicable laws and regulations.</p> <p>Litigation risks remain a concern, entailing the potential to delay or further restrict training, despite the protective and mitigation measures applied by the Navy in compliance with the MMPA and the Endangered Species Act (ESA). Endangered species encroachment from the North Atlantic Right Whale has created avoidance areas that have resulted in some reduction of training days and prohibits certain training events. This area is relatively small in scope; however, if these types of restrictions were applied to other species/areas, there would be significant impacts to readiness through reduction in range access, segmentation of training/reduction in realism, limits on the application of new technologies, raised flight altitudes, reduced live fire proficiency, increased personnel tempo, and increased O&M costs.</p> <p>The Navy will continue to invest in marine mammal research, rely on scientifically valid empirical data results as the basis of marine mammal mitigation development, factor mitigation effectiveness into permit requests, and continue education of Fleet units to adhere to the maritime protective and mitigation measures and public education outreach efforts.</p> <p>The Navy's authorizations under the MMPA and ESA include an adaptive management approach that includes continually evaluating existing mitigation measures for their potential impacts on training. If impacts on training from mitigation measures are identified and documented, the Navy will raise these impacts with the NMFS for resolution during an annual adaptive management review process. The Navy is currently preparing environmental compliance documentation to renew its MMPA and ESA authorizations by January 2014, which will consider any impacts on training stemming from existing mitigations measures and propose changes as warranted.</p>

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Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

Atlantic Test Ranges Assessment Details



Atlantic Test Ranges Assessment Details

Historical Information, Results, and Future Projections				Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	Calendar Year	2008	2009	2010	2011
Capability Scores	7.17	7.93	7.93	Encroachment Scores	8.33	8.33	8.33	8.33
1. Capability at ATR has remained steady since CY2008. It is anticipated capability will remain steady in the future.				1. Encroachment pressures have remained constant at ATR since CY2008. It is anticipated that they will remain stable in the future.				

Atlantic Test Ranges Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Strike Warfare (STW)	●	ATR provides the resources and capabilities to support a subset (typically limited to unit [basic] and intermediate level or phases of training) of the total Navy mission warfare requirements, even though units are no longer able to use Bloodsworth Island for impact operations. The range offers land-based targets, but units are limited to no-drop training. This limits realistic training. There is no planned remedy at this time.
	Electronic Combat (EC)	●	ATR provides the resources and capabilities to support a subset (typically limited to unit [basic] and intermediate level or phases of training) of the total Navy mission warfare requirements, often with limited realistic training. The Navy plans to continue to provide the resources and capabilities to support this subset of the total Navy mission warfare requirements.
	Naval Special Warfare (NSW)	●	Same as above.
Airspace	Strike Warfare (STW)	●	ATR and the associated SUA provide the resources and capabilities to support a subset (typically limited to unit [basic] and intermediate level or phases of training) of the total Navy mission warfare requirements, often with limited realistic training. The Navy plans to continue to provide the resources and capabilities to support this subset of the total Navy mission warfare requirements.
	Electronic Combat (EC)	●	Same as above.
	Anti-Air Warfare (AAW)	●	Same as above.
	Mine Warfare (MW)	●	ATR and the associated SUA provide the resources and capabilities to support a subset (typically limited to unit [basic] and intermediate level or phases of training) of the total Navy mission warfare requirements. Aerial Mining exercises (supported by F/A-18, P-3, and B-52 aircraft) have been supported and mine shapes have been provided to support mine detection events, often with limited realistic training. The Navy plans to continue to provide the resources and this subset of the total Navy mission warfare requirements.
Seaspace	Strike Warfare (STW)	●	ATR provide the resources and capabilities to support a subset (typically limited to unit [basic] and intermediate level or phases of training) of the total Navy mission warfare requirements. It offers sea-based targets but is limited to no-drop and or limited "blue bomb" training operations, which leads to limited realistic training. The Navy plans to continue to provide the resources and capabilities to support this subset of the total Navy mission warfare requirements.
	Electronic Combat (EC)	●	ATR provides the resources and capabilities to support a subset (typically limited to unit [basic] and intermediate level or phases of training) of the total Navy mission warfare requirements. The Chesapeake Bay OPAREAs limit the size of operations and limit realistic training. The Navy will continue to provide the resources and capabilities to support this subset of the total Navy mission warfare requirements.
	Mine Warfare (MW)	●	ATR and the associated SUA provide the resources and capabilities to support a subset (typically limited to unit [basic] and intermediate level or phases of training) of the total Navy mission warfare requirements. Aerial Mining exercises (supported by F/A-18, P-3, and B-52 aircraft) have been supported and mine shapes have been provided to support mine detection events. The Chesapeake Bay also has water depth limitations. This leads to limited realistic training. The Navy plans to continue to provide the resources and capabilities to support this subset of the total Navy mission warfare requirements.

Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

Atlantic Test Ranges Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Undersea Space	Mine Warfare (MW)	●	ATR and the associated SUA provide the resources and capabilities to support a subset (typically limited to unit [basic] and intermediate level or phases of training) of the total Navy mission warfare requirements. Aerial Mining exercises (supported by F/A-18, P-3, and B-52 aircraft) have been supported and mine shapes have been provided to support mine detection events. The Chesapeake Bay also has water depth limitations. This leads to limited realistic training. The Navy plans to continue to provide the resources and capabilities to support this subset of the total Navy mission warfare requirements.
	Naval Special Warfare (NSW)	●	ATR provides the resources and capabilities to support a subset (typically limited to unit [basic] and intermediate level or phases of training) of the total Navy mission warfare requirements, often with limited realistic training. The Navy plans to continue to provide the resources and capabilities to support this subset of the total Navy mission warfare requirements.
Targets	Strike Warfare (STW)	●	ATR provides the resources and capabilities to support a subset (typically limited to unit [basic] and intermediate level or phases of training) of the total Navy mission warfare requirements. It offers sea-based targets but is limited to no-drop and or limited "blue bomb" training operations. This leads to limited realistic training. The Navy plans to continue to provide the resources and capabilities to support this subset of the total Navy mission warfare requirements.
	Mine Warfare (MW)	●	ATR and the associated SUA provide the resources and capabilities to support a subset (typically limited to unit (basic) and intermediate level or phases of training) of the total Navy mission warfare requirements. Aerial Mining exercises (F/A-18, P-3, and B-52) have been supported and mine shapes have been provided to support mine detection events. The Chesapeake Bay also has water depth limitations. This leads to limited realistic training. The Navy plans to continue to provide the resources and capabilities to support a subset (typically limited to unit (basic) and intermediate level or phases of training) of the total Navy mission warfare requirements.
Threats	Strike Warfare (STW)	●	ATR provides the resources and capabilities to support a subset (typically limited to unit (basic) and intermediate level or phases of training) of the total Navy mission warfare requirements. We offer sea-based targets but are limited to no-drop and or limited "blue bomb" training operations. This leads to limited realistic training. The Navy plans to continue to provide the resources and capabilities to support a subset (typically limited to unit (basic) and intermediate level or phases of training) of the total Navy mission warfare requirements.
	Mine Warfare (MW)	●	ATR and the associated SUA provide the resources and capabilities to support a subset (typically limited to unit (basic) and intermediate level or phases of training) of the total Navy mission warfare requirements. Aerial Mining exercises (F/A-18, P-3, and B-52) have been supported and mine shapes have been provided to support mine detection events. The Chesapeake Bay also has water depth limitations. This leads to limited realistic training. The Navy plans to continue to provide the resources and capabilities to support a subset (typically limited to unit (basic) and intermediate level or phases of training) of the total Navy mission warfare requirements.
	Naval Special Warfare (NSW)	●	ATR provides the resources and capabilities to support a subset (typically limited to unit (basic) and intermediate level or phases of training) of the total Navy mission warfare requirements, often with limited realistic training. The Navy plans to continue to provide the resources and capabilities to support a subset (typically limited to unit (basic) and intermediate level or phases of training) of the total Navy mission warfare requirements.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Spectrum	Strike Warfare (STW)	●	The reduction of available spectrum, coupled with the increase in spectrum requirements, limits ability to schedule certain types of events and many concurrent activities. The Navy plans to work through the Range Commanders Council to address spectrum requirements at the national level, as well as continue to pressure the availability of spectrum for use by both the community and the Navy.
	Electronic Combat (EC)	●	Same as above.
	Anti-Air Warfare (AAW)	●	Same as above.
	Mine Warfare (MW)	●	Same as above.
	Naval Special Warfare (NSW)	●	Same as above.

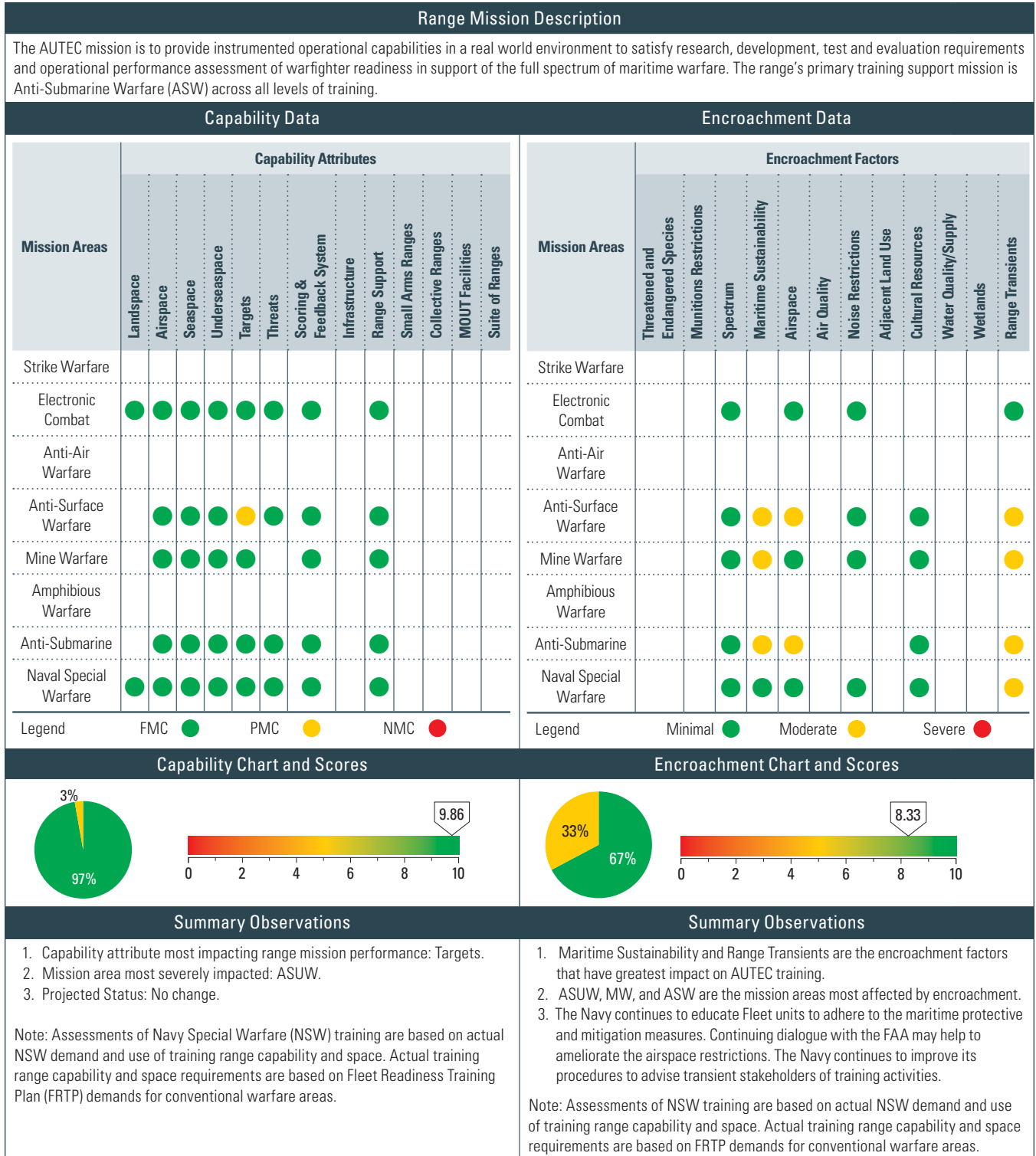
Atlantic Test Ranges Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Airspace	Strike Warfare (STW)	●	Pressure from the Federal Aviation Administration (FAA) to route civil air traffic into operational areas can impact flight operations during normal periods. Private and commercial flights increase the volume of traffic and spill in to the Special Use Airspace (SUA). There is currently a proposed expansion of Washington Air Defense Identification Zone (ADIZ) under review. Traffic spilling into the SUA can limit or change flight operations. The proposed expansion of Washington ADIZ would force workarounds or negative impacts to operations. The Navy plans to continue coordination with airport planning agencies and the FAA to mitigate impacts.
	Electronic Combat (EC)	●	Same as above.
	Anti-Air Warfare (AAW)	●	Same as above.
	Mine Warfare (MW)	●	Same as above.
	Naval Special Warfare (NSW)	●	Same as above.
Noise Restrictions	Strike Warfare (STW)	●	Operations pose noise impacts on communities. Sonic booms are problematic over shoreline communities, and daily operations are troublesome near Outlying Field (OLF) Webster. Although noise complaints are generated around both airfields, they are primarily linked to operations at NAS Patuxent River. NAS Patuxent River is currently modifying operations to reduce noise. Increased noise complaints could compromise operations through pressure to modify or discontinue specific ops. The Navy plans to continue to respond to community concerns via the noise hotline, mitigate sonic boom impacts via the sonic boom monitors and sonic boom prediction tool model, issue press releases for noisy operations, conduct awareness regarding noise issues to squadrons, and convey to the importance of the Navy's mission to the public.
	Electronic Combat (EC)	●	Same as above.
	Anti-Air Warfare (AAW)	●	Same as above.
	Mine Warfare (MW)	●	Same as above.
	Naval Special Warfare (NSW)	●	Same as above.
Adjacent Land Use	Strike Warfare (STW)	●	Development on the Eastern Shore can result in reduced access to land based targets and surface operating areas at the Bloodsworth Island Range (BIR). Development in Lexington Park has the potential to impact preferred flight paths, especially in the vicinity of Great Mills Road. This can lead to modifications to some operations and flight paths. The Navy plans to continue its effort to monitor planned and proposed development, and will provide feedback to community planners and developers.
	Electronic Combat (EC)	●	Same as above.
	Anti-Air Warfare (AAW)	●	Same as above.
	Mine Warfare (MW)	●	Same as above.
	Naval Special Warfare (NSW)	●	Same as above.

Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

Atlantic Undersea Test and Evaluation Center (AUTEC) Assessment Details



Atlantic Undersea Test and Evaluation Center (AUTEC) Assessment Details

Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	9.86	9.86	9.86	9.86	Encroachment Scores	9.25	8.33	8.33	8.33
<p>1. The AUTEC capability assessment has been stable from year to year, with relatively constant overall scores for CY2010 and CY2011.</p>					<p>1. Encroachment assessments for CY2008 were different than for CY2009, CY2010, and CY2011. The algorithm for the overall assessment score for CY2009 through CY2011 was revised from the original algorithm used in CY2008 to provide greater fidelity and consistency across all range complexes. Based on an improved review process and revised algorithms, the assessments for CY2009, CY2010, and CY2011 provide a more accurate assessment of encroachment. The assessments for the latter three years reveal there has been little encroachment change from year to year, with relatively constant overall scores for CY2009, CY2010, and CY2011.</p> <p>2. The RCMP update is scheduled to begin in August 2011; no EAP is planned at this time.</p> <p>3. Department of Interior (DOI) and private energy interests in the Outer Continental Shelf (OCS) are increasing as domestic energy demand builds. Naval offshore operating areas and training events may be affected. High priority areas include training ranges and seaspace in and adjacent to all Navy OPAREAs. OASN (E,I&E), as DoD spokesman for military offshore use, continues to work closely with the Fleets and DOI's Bureau of Ocean Energy Management (BOEM) to resolve issues of combined use of the OCS important to both agencies. Fleet review and analysis of impacts from both oil/gas and wind energy "lease sale" areas (Mission Critical Areas [MCAs]) have been reviewed and forwarded to OSD. DoD and DOI coordination continues.</p> <p>4. AUTEC had no emerging encroachment issues during CY2011 that affect its operations. The CY2012 AUTEC encroachment assessment remains the same as in CY2011.</p>				

Atlantic Undersea Test and Evaluation Center (AUTEC) Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Targets	Anti-Surface Warfare (ASUW)	●	Targets lack the required spectral threat signature and may not be engaged with live ordnance (e.g., Hellfire Missiles) due to net explosive weight (NEW) limits. This reduces realism and limits tactics. The Navy recommends investing in spectral augmentation and investigating options to obtain inert Hellfire assets. No completion date has been identified.

Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

Atlantic Undersea Test and Evaluation Center (AUTECH) Detailed Comments

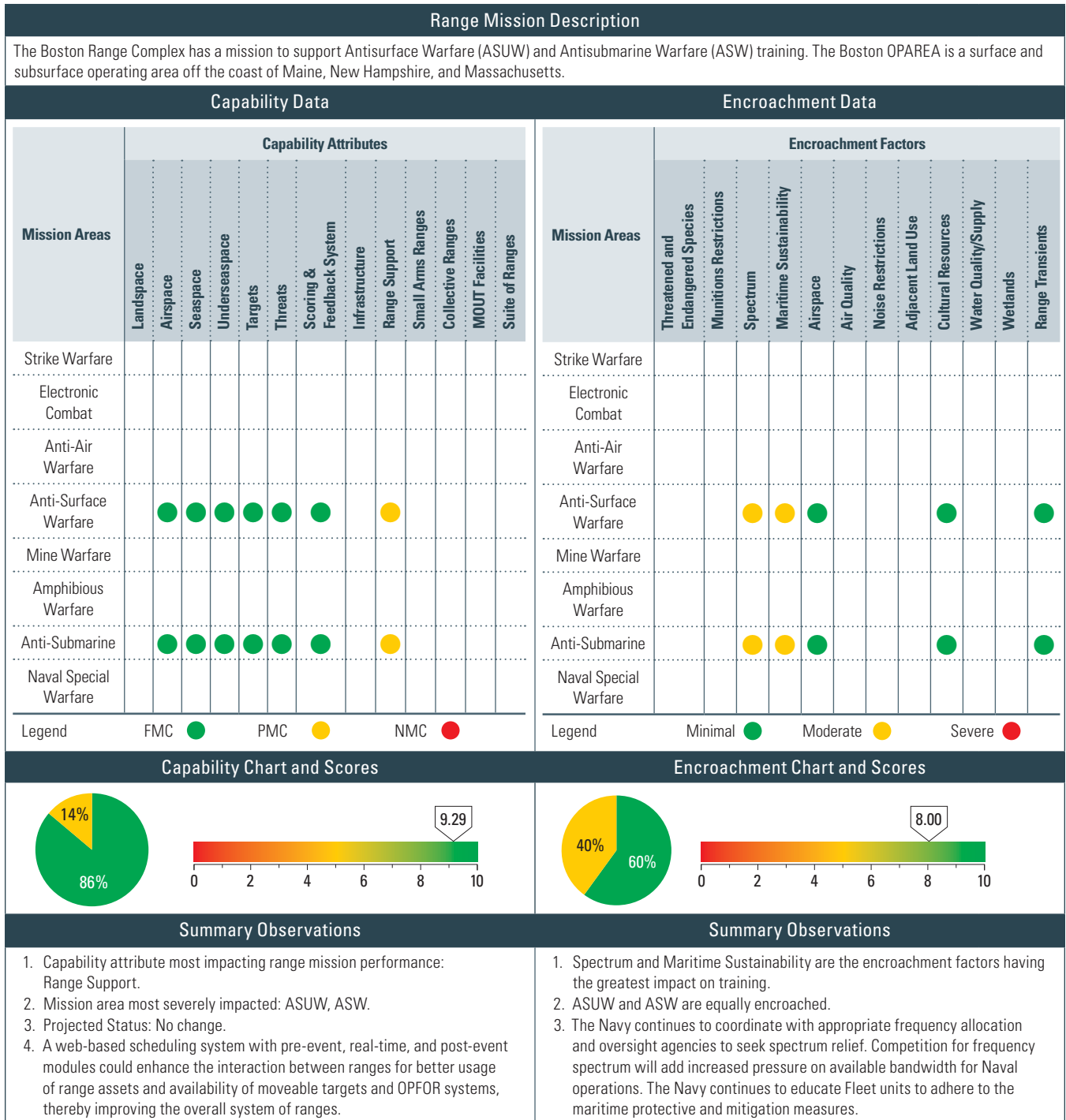
Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Maritime Sustainability	Anti-Surface Warfare (ASUW)	●	The Navy uses the Protective Measures Assessment Protocol (PMAP) to assess range specific marine mammal encroachment issues and to identify specific protection measures. PMAP provides a fleet-wide set of protective measures for particular maritime activities and for designated geographic areas of interest. PMAP procedures have resulted in some training restrictions that reduce training flexibility, force segmented training, and ultimately reduce training realism. All at-sea training is impacted to some degree; impacts are most significant to integrated warfare training using active underwater acoustic sources or in-water explosive ordnance. This existing encroachment is relatively small in scope. Should the encroachment become more pervasive across additional species and locations, there could be other training and readiness impacts through reduced range access, segmented training, reduced realism, limited application of new technologies, raised flight altitudes, reduced live fire proficiency, increased personnel tempo, and increased O&M costs. The Navy continues to invest in marine mammal research; to rely on scientifically valid empirical data results as basis of marine mammal mitigation development; and to factor mitigation effectiveness into maritime operations. All Navy units are expected to adhere to PMAP. The Navy continually evaluates existing PMAP measures for their potential encroachment and impacts on training. If impacts on training from PMAP are identified and documented, the Navy will address impact resolution during management review processes.
	Mine Warfare (MW)	●	Same as above.
	Anti-Submarine (ASW)	●	Same as above.
Airspace	Anti-Surface Warfare (ASUW)	●	Miami Center may decline Notices to Airmen (NOTAMs) and not release airspace in a timely manner over the Bahamas. Airspace restrictions segment training and/or reduce realism, reduce range access, and increase O&M costs. Operations may be delayed until the SUA is released. The Navy is engaging in continuing dialogue with the FAA to help ameliorate the airspace restrictions.
	Anti-Submarine (ASW)	●	Same as above.
Range Transients	Anti-Surface Warfare (ASUW)	●	Range transients, involving commercial shipping, commercial fishing, and private pleasure boating encroach on training, either by delaying events or forcing relocation to less than optimum locations. Commercial vessel and recreational vessel encroachment creates avoidance areas and segments training/reduces realism. The Navy will continue to pursue opportunities to inform industry and the public of the impact of range transient encroachment on at-sea OPAREAs and Navy readiness.
	Mine Warfare (MW)	●	Same as above.
	Anti-Submarine (ASW)	●	Same as above.
	Naval Special Warfare (NSW)	●	Same as above.

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Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

Boston Assessment Details



Boston Assessment Details

Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	8.93	9.29	9.29	9.29	Encroachment Scores	9.17	8.00	8.00	8.00
<p>1. The ASW threat requirement was re-evaluated after the CY2008 report from yellow to green due to changes in training to be supported by the range.</p>					<p>1. Encroachment assessments for CY2008 were different than for CY2009, CY2010, and CY2011. The algorithm for the overall assessment score for CY2009 through CY2011 was revised from the original algorithm used in CY2008 to provide greater fidelity and consistency across all range complexes. Based on an improved review process and revised algorithms, the assessments for CY2009, CY2010, and CY2011 provide a more accurate assessment of encroachment. The assessments for the latter three years reveal there has been little encroachment change from year to year, with relatively constant overall scores for CY2009, CY2010, and CY2011.</p> <p>2. The Virginia Capes VACAPES-Northeast RCMP (which includes Boston) is currently being updated.</p> <p>3. Department of Interior (DOI) and private energy interests in the Outer Continental Shelf (OCS) are increasing as domestic energy demand builds. Naval offshore operating areas and training events may be affected. High priority areas include training ranges and sea space in and adjacent to all Navy OPAREAs. OASN (E,I&E), as DoD spokesman for military offshore use, continues to work closely with the Fleets and DOI's Bureau of Ocean Energy Management (BOEM) to resolve issues of combined use of the OCS important to both agencies. Fleet review and analysis of impacts from both oil, gas and wind energy "lease sale" areas (i.e., Mission Critical Areas [MCAs]) have been reviewed and forwarded to OSD. DoD and DOI coordination continues.</p> <p>4. Massachusetts and Federal officials designated a 3,000 square mile area of ocean south of Cape Cod available to lease to developers of commercial scale offshore wind farms. Future wind farms have the potential to affect military operations in the Boston training areas.</p>				

Boston Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Range Support	Anti-Surface Warfare (ASUW)	●	The lack of web-based scheduling system with pre-event, real-time, and post-event modules precludes most efficient scheduling and documenting of range usage. Post-event reporting is particularly critical for ordnance expenditures or active sonar usage in at-sea OPAREAs, since the MMPA permits require the Navy to periodically report these values. Non-compliance or inaccurately reporting post-event values to regulators risks range access or prohibitions on training events that involve active sonar or high explosives at-sea. Pacific Fleet (PACFLT) is developing a Data Collection and Scheduling Tool (DCAST) that includes a post-event module to mitigate issues outlined above. If successful, the Navy could consider adopting it at all range scheduling facilities.
	Anti-Submarine (ASW)	●	Same as above.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Spectrum	Anti-Surface Warfare (ASUW)	●	Employment of Link 16, SPY-1 radar, SPS 49 radar, and IFF are restricted. Restrictions limit spectrum operations and prohibit certain training events, segment training/reduce realism, reduce training days, limit application of new weapons technologies, and inhibit new tactics development. The Navy continues to coordinate with appropriate frequency allocation and oversight agencies to seek spectrum relief, and to develop encroachment strategies that will reduce encroachment while ensuring pending use of emerging spectrum technologies. Competition for frequency spectrum will add increased pressure on available bandwidth for Naval operations.
	Anti-Submarine (ASW)	●	Same as above.

Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

Boston Detailed Comments

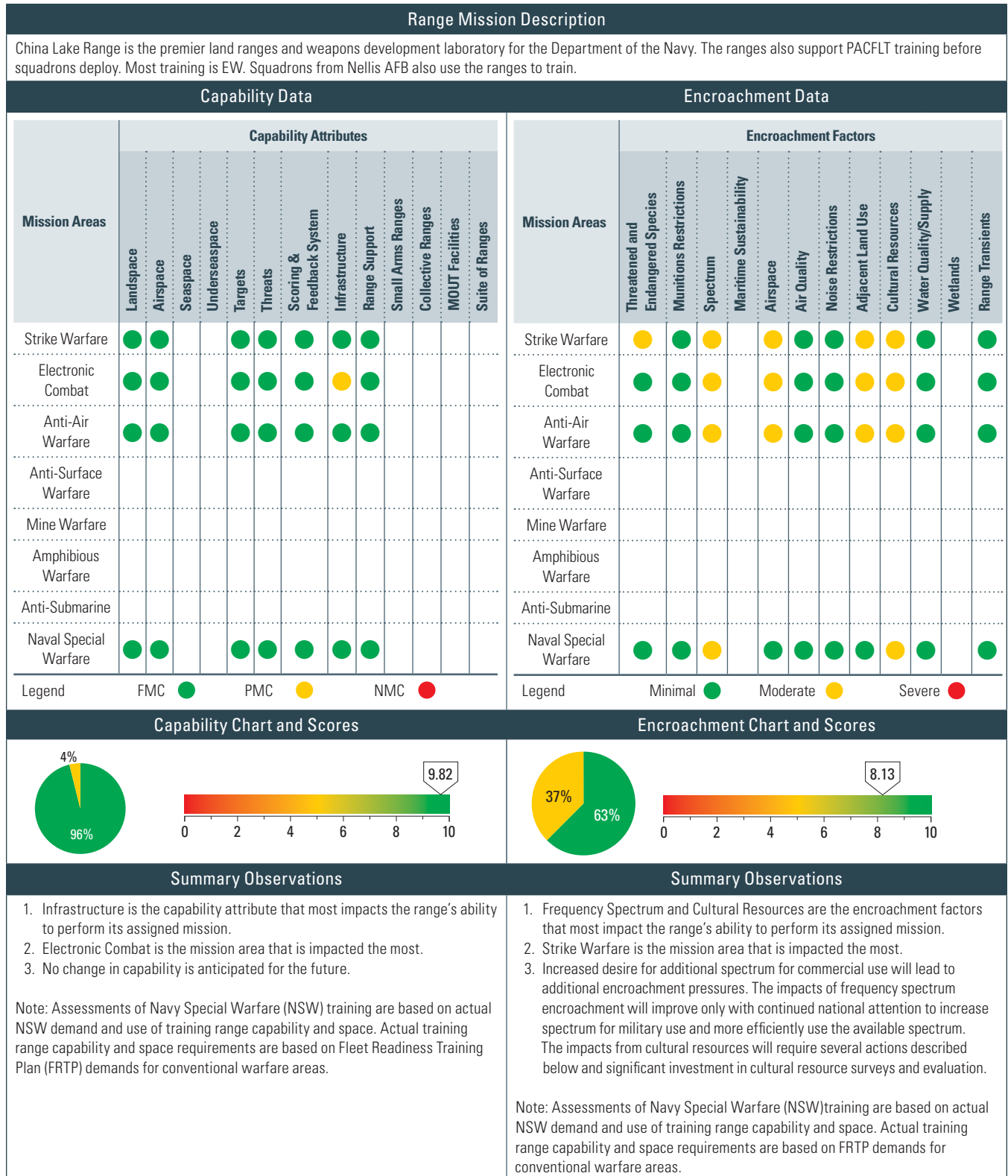
Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Maritime Sustainability	Anti-Surface Warfare (ASUW)	●	<p>Maritime protective and mitigation measures undertaken in compliance with regulatory requirements have resulted in training restrictions that reduce training flexibility, force segmented training, and ultimately reduce training realism. All at-sea training is impacted to some degree; impacts are most significant to integrated warfare training using active underwater acoustic sources or in-water explosive ordnance. The Navy and the National Marine Fisheries Service (NMFS) have developed science based protective and mitigation measures that adequately protect marine species while accommodating military readiness activities. The Navy continues to develop EISs and obtain permits and authorizations for its range complexes to ensure military training complies with applicable laws and regulations.</p> <p>Litigation risks remain a concern, entailing the potential to delay or further restrict training, despite the protective and mitigation measures applied by the Navy in compliance with the MMPA and the Endangered Species Act (ESA). Endangered species encroachment from the North Atlantic Right Whale has created avoidance areas that have resulted in some reduction of training days and prohibits certain training events. This area is relatively small in scope; however, if these types of restrictions were applied to other species/areas, there would be significant impacts to readiness through reduction in range access, segmentation of training/reduction in realism, limits on the application of new technologies, raised flight altitudes, reduced live fire proficiency, increased personnel tempo, and increased O&M costs. The Navy will continue to invest in marine mammal research; rely on scientifically valid empirical data results as basis of marine mammal mitigation development; factor mitigation effectiveness into permit requests; and continue education of Fleet units to adhere to the maritime protective and mitigation measures and public education outreach efforts.</p> <p>The Navy's authorizations under the MMPA and ESA include an adaptive management approach that includes continually evaluating existing mitigation measures for their potential impacts on training. If impacts on training from mitigation measures are identified and documented, the Navy will raise these impacts with the NMFS for resolution during an annual adaptive management review process. The Navy is currently preparing environmental compliance documentation to renew its MMPA and ESA authorizations by January 2014, which will consider any impacts on training stemming from existing mitigations measures and propose changes as warranted.</p>
	Anti-Submarine (ASW)	●	Same as above.

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Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

China Lake Assessment Details



China Lake Assessment Details

Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	9.88	9.82	9.82	9.82	Encroachment Scores	9.20	8.50	8.13	8.13
1. Capability at the China Lake Range has remained steady since CY2008. Its anticipated capability will remain stable in the future.					1. Encroachment pressures have increased at the China Lake Range since CY2008. However, they have remained constant in CY2011. Frequency spectrum and cultural resources management are the primary drivers for increased encroachment pressures. It is anticipated that encroachment pressures will remain stable in the future.				

China Lake Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Infrastructure	Electronic Combat (EC)	●	There is a lack of improved sites on the Electronic Combat Range for threat emitters. This reduces "time to target" realism achieved with diversity and quick placement of the emitters, a key element of fleet training. The Navy plans to implement MILCON P-513.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Threatened & Endangered Species	Strike Warfare (STW)	●	The presence of threatened and endangered (T&E) species at China Lake has an impact on training. It requires significant mitigation efforts to support training activities. The Navy plans to update its latest INRMP (In progress; estimated completion date: CY2012), continue mitigations, and update EIS (estimated completion date: January 2014).
Spectrum	Strike Warfare (STW)	●	A reduction of available spectrum has been coupled with an increase in spectrum requirements. The Navy has limited ability to schedule certain types of events and many concurrent activities. The Navy recognizes the need for coordination at the local level to deconflict when possible, and will work through the chain of command and the Range Commanders Council to address spectrum requirements at the national level.
	Electronic Combat (EC)	●	Same as above.
	Anti-Air Warfare (AAW)	●	Same as above.
	Naval Special Warfare (NSW)	●	Same as above.
Airspace	Strike Warfare (STW)	●	There is significant competition for the airspace that overlies the China Lake ranges and the R-2508 Complex. Commercial and general aviation is a major concern, particularly with the increasing urbanization of the Mojave Desert region and growth of the Las Vegas metropolitan area. There are three proposals for expansion of existing airports, all of which would potentially have significant impacts. Crowded airspace near China lake and the R-2508 airspace affects ingress/egress and Military Operating and Restricted Areas. The Navy will continue coordination with airport planning agencies and the FAA to mitigate impacts.
	Electronic Combat (EC)	●	Same as above.
	Anti-Air Warfare (AAW)	●	Same as above.
Adjacent Land Use	Strike Warfare (STW)	●	Although China Lake is relatively isolated, urban growth is becoming a concern. In particular, growth in the Indian Wells Valley, if not managed correctly, has the potential to impact the range mission. Growth in other areas further removed from China Lake, but still within the R-2508 Complex, also negatively impacts the mission. In addition, there is significant pressure for renewable energy development in the region, including wind and solar energy. Wind turbines can significantly impact training and reduce access to low-level airspace. Some types of solar energy facilities can reduce access to low-level airspace. Development reduces access to low-level airspace. The Navy will continue its efforts to monitor planned and proposed development, and to provide feedback to community planners and developers.
	Electronic Combat (EC)	●	Same as above.
	Anti-Air Warfare (AAW)	●	Same as above.

Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

China Lake Detailed Comments

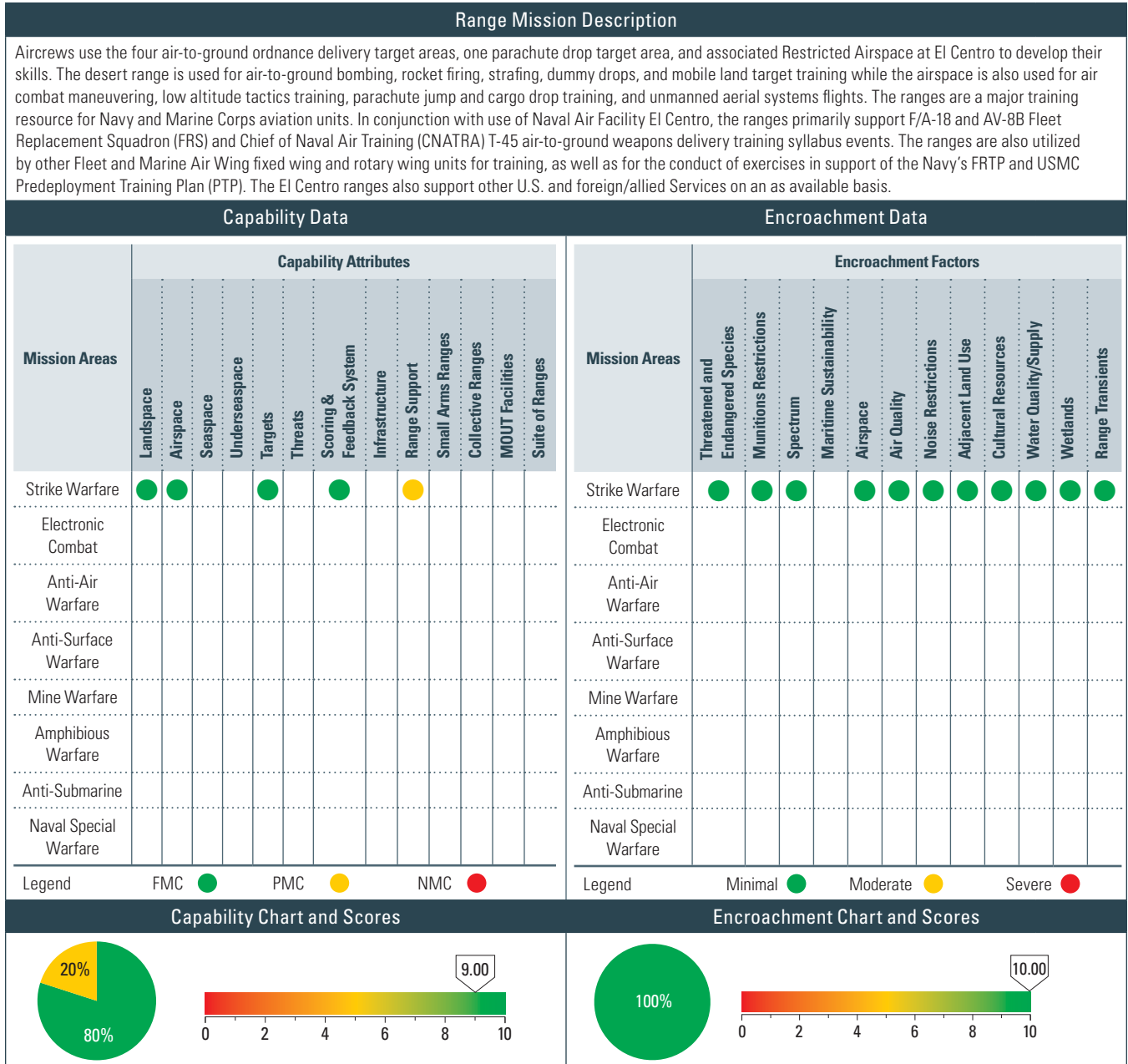
Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Cultural Resources	Strike Warfare (STW)	●	China Lake contains a vast number of archeological sites, significant range areas that have not been surveyed/evaluated for cultural resources, coupled with a lack of a programmatic agreement with the State Historic Preservation Office (SHPO). Local Native American tribes maintain keen interest. This requires significant mitigation and long planning lead time that, in some cases, means the Navy can't meet training schedules. The Navy will perform cultural resource surveys for large portions of the ranges, negotiate a Programmatic Agreement with the SHPO, and update the China Lake EIS.
	Electronic Combat (EC)	●	Same as above.
	Anti-Air Warfare (AAW)	●	Same as above.
	Naval Special Warfare (NSW)	●	Same as above.

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Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

El Centro Assessment Details



El Centro Assessment Details

Summary Observations					Summary Observations				
<ol style="list-style-type: none"> 1. Capability attribute most impacting range mission performance: Range Support. 2. Mission area most severely impacted: Strike Warfare. 3. Projected Status: A new scheduling system, being developed by PACFLT, requires either USMC acceptance for integration into the current Range Facility Management Support System (RFMSS) program, or realignment of scheduling and data collection responsibilities away from MCAS Yuma to a PACFLT organization. 4. Implementation of DCAST at El Centro, with pre-event, real-time, and post-event modules, will facilitate more effective and efficient usage of range assets. It will allow units scheduling the range to maximize training opportunities. Since it will be a fleet-wide system, DCAST will provide comprehensive training and readiness scheduling in support of the Fleet Response Training Plan (FRTP). 5. The establishment of a full-time El Centro Range Manager would ensure more efficient and effective range management, and increased focus on ability to sustain current and plan for future operational capability requirements, while ensuring the safety of personnel and property. 					<ol style="list-style-type: none"> 1. For the El Centro ranges and training areas, there is no encroachment that has a negative impact on training. 				
Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	6.39	6.39	9.00	9.00	Encroachment Scores	9.86	9.80	10.00	10.00
<ol style="list-style-type: none"> 1. In CY2008 and CY2009, this range was also evaluated for AAW and Electronic Combat. In CY2010, mission areas were revised for the range to support only Strike Warfare. 2. El Centro Range is scheduled via MCAS Yuma Range Schedules, which adopted RFMSS as it's scheduling and range data collection and management tool in FY2010. PACFLT deems RFMSS inadequate for PACFLT purposes, and has been developing a web-enabled tool, DCAST, that includes customizable scheduling, event deconfliction, range map graphics generation, schedule notification, and automatic reports generation modules. The tool is a N433 program of record and has an authority to operate within the DISA Cloud. Methods for implementation of DCAST for use in scheduling and data collection of the El Centro Range have yet to be determined 					<ol style="list-style-type: none"> 1. Encroachment assessments for CY2008 were different than for CY2009, CY2010, and CY2011. The algorithm for the overall assessment score for CY2009 through CY2011 was revised from the original algorithm used in CY2008 to provide greater fidelity and consistency across all range complexes. Based on an improved review process and revised algorithms, the assessments for CY2009, CY2010, and CY2011 provide a more accurate assessment of encroachment. The assessments for the latter three years reveal there has been little encroachment change from year to year, with relatively constant overall scores for CY2009, CY2010, and CY2011. 2. The U.S. Fish and Wildlife Service (USFWS), ruled on March 15, 2011 that the listing of the Flat-Tailed Horned Lizard (FTHL) as a threatened species under the Endangered Species Act (ESA) of CY1973, is not warranted. This strengthens the range wide management strategy that aids the conservation of the species habitat. Three of the four air-to-ground target areas are contained within the FTHL Management Area (MA) and has potential impact on further growth of Strike Warfare activities. The potential for expansion of military activities within these areas is limited by the level of potential habitat disturbance those activities could cause. The Navy is in consultation with members of the FTHL Interagency Coordinating Committee to further define metrics for application in determining current and future military training activity habit disturbance levels. 3. Although not yet a significant impact, there are potential encroachment pressures (Adjacent Land Use) from alternative energy initiatives on public lands adjacent to the range areas, recreation activities in the vicinity of range boundaries, and incursion of off-road vehicles into the range areas. The El Centro management is currently addressing these issues using public awareness outreach and enhanced warning and control measures. 4. The proposed location for development of Desert Springs Oasis lies partially under R2510, posing a hazard to personnel in the area. Due to its location, Desert Springs Oasis may potentially require aircraft flight path adjustment when transiting between the restricted airspace and Naval Air Field (NAF) El Centro to comply with OPNAVINST 3710 guidelines regarding avoidance of over-flight of populated areas when carrying external stores or by Unmanned Aerial Systems (UAS). 				

Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

EI Centro Detailed Comments

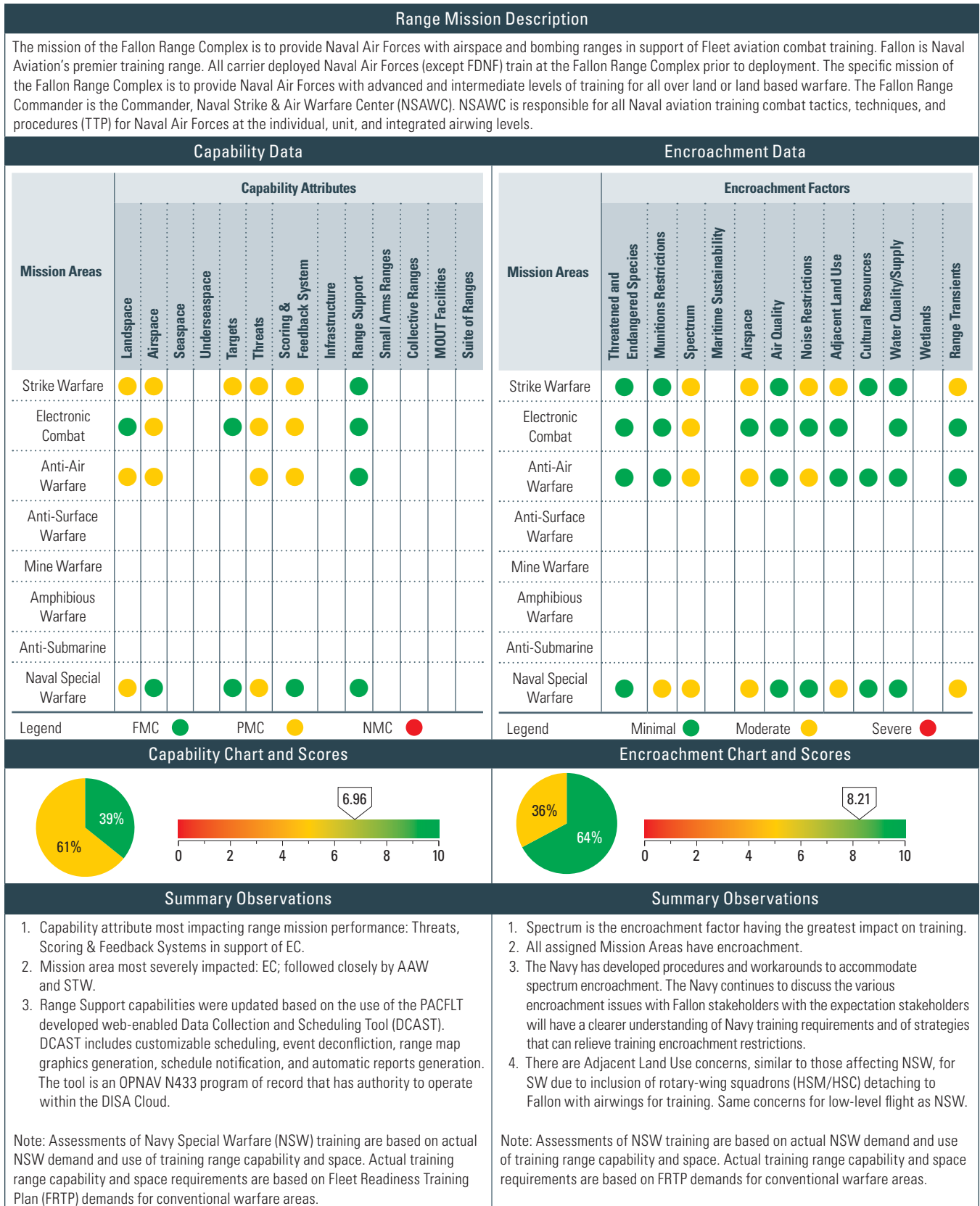
Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Range Support	Strike Warfare (STW)	●	<p>EI Centro ranges are scheduled via the MCAS Yuma Range Scheduling Office. This allows for ease of coordination of concurrent use of contiguous Bob Stump Training Range Complex airspace and training areas for exercises and individual events. MCAS Yuma began using RFMSS for scheduling and data collection in FY2010. RFMSS does not support the PACFLT vision of an integrated fleet wide scheduling and data collection system. PACFLT development and fielding of DCAST for the EI Centro ranges will require coordination with USMC, or realignment of scheduling and control responsibilities for the EI Centro ranges. No completion date has been identified. There is no funded position for a Range Manager for the EI Centro ranges. The duties are currently assigned to the Air Field Manager. The lack of a funded, dedicated position has the potential to comprise sustainment of, or future development of, range capabilities to meet mission requirements, as well as reduces the oversight and development of range operations and safety related programs. Lack of a dedicated Range Manager precludes efficient execution of range management functions. The Navy recommends funding and establishment of a full time Range Manager position for EI Centro. No completion date for this action has been identified.</p>

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Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

Fallon Range Training Complex Assessment Details



Fallon Range Training Complex Assessment Details

Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	5.65	5.65	6.09	6.09	Encroachment Scores	8.96	8.84	8.84	8.33
1. EC threats improved from red to yellow. The improvement in rating from CY2009 to CY2010 justified by investment in IADS and threats. 2. The NSW landspace training requirement was re-evaluated from red to yellow from CY2009 to CY2010.					1. Encroachment assessments for CY2008 were different than for CY2009, CY2010, and CY2011. The algorithm for the overall assessment score for CY2009 through CY2011 was revised from the original algorithm used in CY2008 to provide greater fidelity and consistency across all range complexes. Based on an improved review process and revised algorithms, the assessments for CY2009, CY2010, and CY2011 provide a more accurate assessment of encroachment. The assessments for the latter three years reveal there has been little encroachment change from year to year, with relatively constant overall scores for CY2009, CY2010, and CY2011. The slight decrease in the CY2011 assessment results from green to yellow assessments for NSW in Munitions Restrictions, Spectrum, Airspace, and Adjacent Land Use. 2. CY2012 assessments remain the same with the exception that there are Adjacent Land Use concerns, similar to those affecting NSW, for SW due to inclusion of rotary-wing squadrons (HSM/HSC) detaching to Fallon with airwings for training. 3. There is little indication encroachment pressures will change in the foreseeable future				

Fallon Range Training Complex Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Strike Warfare (STW)	●	Landspace area size does not meet requirements; limits weapons type and employment tactics means use of lasers is not allowed in all directions and N.E.W. restricted in some areas. These restrictions reduce realism; inhibit new tactics development and reduce live fire proficiency. There is currently no investment recommendation and no planned action.
	Anti-Air Warfare (AAW)	●	Flare use is restricted for flights below 2,000 ft, which impacts helicopter training. This restriction reduces realism, inhibits new tactics development, and reduces live fire proficiency. There is no investment recommendation or planned action.
	Naval Special Warfare (NSW)	●	Landspace area size does not meet requirements, limits weapons type and employment tactics means use of lasers is not allowed in all directions, and N.E.W. is restricted in some areas. No MOUT facility is available, nor is there sufficient area for ground fire and maneuver training. These restrictions reduce realism, inhibit new tactics development, and reduce live fire proficiency. Range redesign is in progress to remediate small arms range areas; it is expected resolution will be achieved by CY2017.
Airspace	Strike Warfare (STW)	●	Airspace available and altitude restrictions limit tactics that may be employed. Limited supersonic employment is possible, especially in target areas. These factors reduce realism, inhibit new tactics development, limit application of new weapon technologies, and reduce live fire proficiency. There is currently no investment recommendation and no planned action.
	Electronic Combat (EC)	●	The range is assessed as moderate for encroachment factors for helicopters, due to restricted flare use, though encroachment factors are assessed as minimal for fixed-winged aircraft. This restriction reduces realism, inhibits tactics development, and reduces live fire proficiency. There is no investment recommendation and no planned action.
	Anti-Air Warfare (AAW)	●	Limited airspace is available, limiting supersonic employment. Altitude restrictions limit tactics that may be employed, especially in target areas. These restrictions reduce realism, inhibit new tactics development, limit application of new weapon technologies, and reduce live fire proficiency. There is no investment recommendation and no planned action.
Targets	Strike Warfare (STW)	●	There is a limited number of tactically significant targets; no infrared (IR) augmentation; no moving, structural, or urban targets; and no OPNAV funding for Navy Range targets program. This shortfall reduces realism, inhibits new tactics development, limits application of new weapon technologies, and reduces live fire proficiency. The Navy recommends investing in upgraded scoring options, Time Sensitive Target program targets, tactical targets; fixed and mobile EC sites, and urban complex. No completion date for these actions has been identified.

Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

Fallon Range Training Complex Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Threats	Strike Warfare (STW)	●	The range lacks no live helicopter threat capability; the quantity and variety of threats do not meet requirements; and EC threat above level 2 is not available. These shortfalls reduce realism, inhibit new tactics development, limit application of new weapons technologies, and reduce live fire proficiency. The Navy recommends investing in fully mobile threat systems, simulators with TSPI integration, upgraded Integrated Air Defense System; and EC threat systems through level 4. No completion date has been identified.
	Electronic Combat (EC)	●	EC threat level does not meet requirements; and the quantity and variety of the threats do not meet requirements. EC threat above level 2 is not available. This reduces realism, inhibits new tactics development, limits application of new weapons technologies, and reduce live fire proficiency. The Navy recommends investing in fully mobile threat systems, simulators with TSPI integration, an upgraded Integrated Air Defense System, EC threat systems through level 4. No completion date has been identified.
	Anti-Air Warfare (AAW)	●	There is no live helicopter threat capability, the quantity and variety of threats do not meet requirements, and EC threat above level 2 is not available. These shortfalls reduce realism, inhibit new tactics development, limit application of new weapons technologies, and reduce live fire proficiency. The Navy recommends investing in fully mobile threat systems, simulators with TSPI integration, upgraded Integrated Air defense System, and EC threat systems through level. No completion date has been identified.
	Naval Special Warfare (NSW)	●	Threats are not sufficient for training. This reduces realism, inhibits new tactics development, limits application of new weapons technologies, and reduces live fire proficiency. The Navy recommends investment in sufficient threats for mission. No completion date has been identified.
Scoring & Feedback System	Strike Warfare (STW)	●	The capacity of the current Scoring & Feedback system does not meet requirements; it is not JNTC or TENA compliant; and has no automatic RTKN. This inhibits new tactics development and reduces live fire proficiency. The Navy recommends investing in EC systems, range EC&C architecture, and JNTC and TENA compatible systems. No completion date has been identified.
	Electronic Combat (EC)	●	Same as above.
	Anti-Air Warfare (AAW)	●	Same as above.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Munitions Restrictions	Naval Special Warfare (NSW)	●	Fallon range operations were designed (and are maintained) for aviation air-to-ground missions. All ranges have UXO potential. The introduction of ground training at Fallon ranges increases the risk of a UXO incident. Impacts to training include restricted range access and areas restricted from ground use. No action is planned as no resolution is currently identified.
Spectrum	Strike Warfare (STW)	●	The range maintains radar and frequency band restrictions; E-3 and EA-6B operations restrictions; EC threat emitter bandwidth restrictions; and Link-16 time slot allocations and number of aircraft restrictions, all of which impact FRTC training. Encroachment segments training and reduces realism, limits application of new technologies, and inhibits new tactics development. No resolution is currently identified.
	Electronic Combat (EC)	●	Same as above.
	Anti-Air Warfare (AAW)	●	Same as above.
	Naval Special Warfare (NSW)	●	The range maintains radar and frequency band restrictions, EC threat emitter bandwidth restrictions, and Link-16 time slot allocations, all of which impact NSW training. Encroachment segments training and reduces realism, limits application of new technologies, and inhibits new tactics development. No resolution is currently identified.
Airspace	Strike Warfare (STW)	●	Airspace is encroached upon by FAA altitude caps, supersonic restrictions, VFR corridor interruptions, run-in heading restrictions, and helicopter restrictions. This encroachment prohibits training events, segments training/reduces realism, constrains flight altitudes, inhibits new tactics development, and complicates night/all-weather training. No resolution is currently identified.
	Anti-Air Warfare (AAW)	●	Same as above.
	Naval Special Warfare (NSW)	●	Airspace is used for Fallon’s primary air mission. Ground live fire training conflicts with airspace. Ground training priority at Fallon is #13 after aviation units. Airspace encroachment on NSW ground operations prohibits training events, segments training and reduces realism, constrains flight altitudes, inhibits new tactics development, and complicates night/all-weather training. No resolution is currently identified.

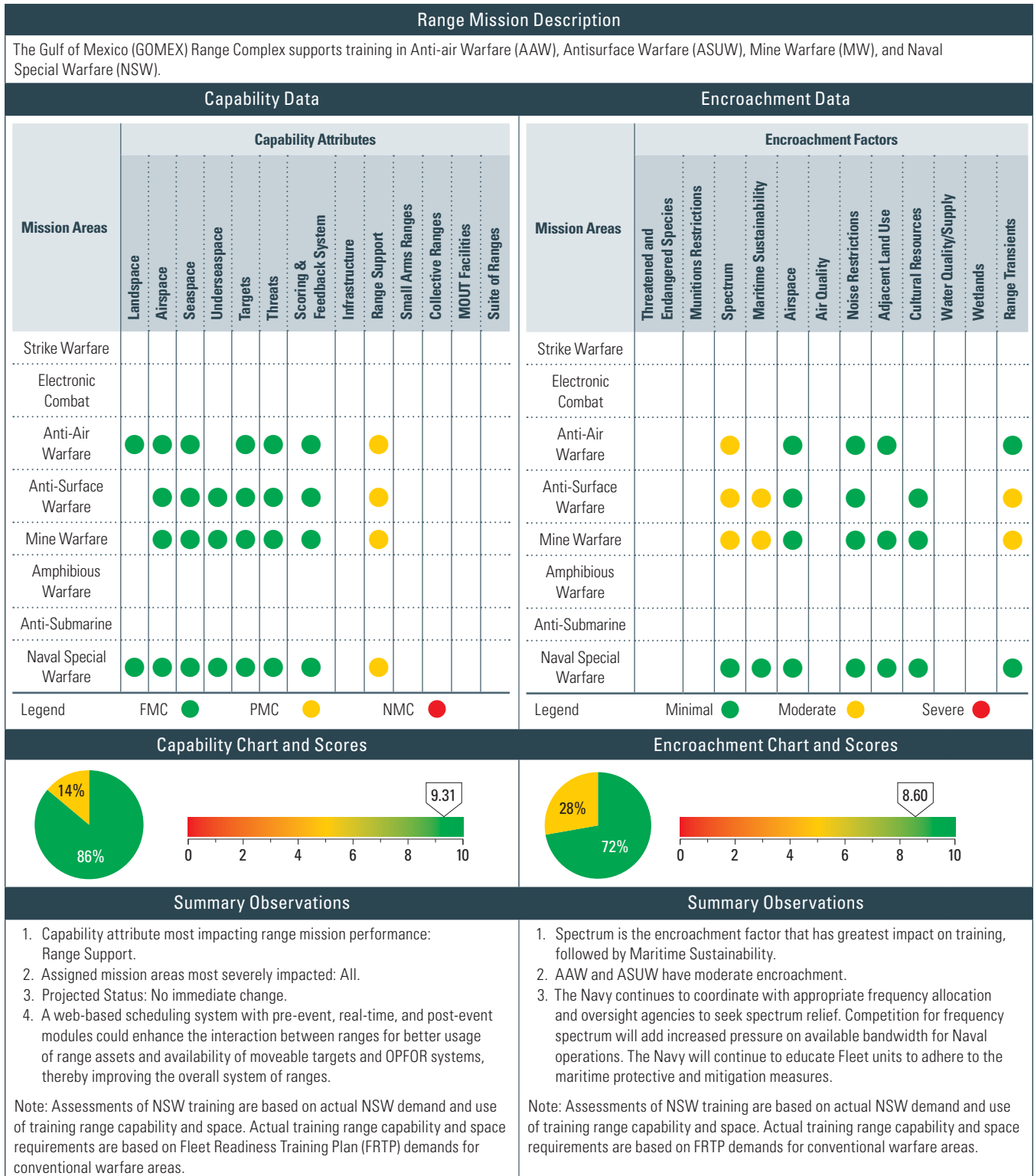
Fallon Range Training Complex Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Noise Restrictions	Strike Warfare (STW)	●	Supersonic flight prohibition below 11,000 ft. above MSL impacts tactical training. These restrictions affect training realism, tactics, and night/all-weather operations. No resolution is currently identified.
	Anti-Air Warfare (AAW)	●	Same as above.
Adjacent Land Use	Strike Warfare (STW)	●	Power lines and telecommunications towers impact low altitude helicopter training and tactics. Encroachment prohibits training events, segments training/reduces realism, constrains flight altitudes, inhibits new tactics development, and complicates night/all-weather training. No resolution is currently identified.
	Naval Special Warfare (NSW)	●	Same as above.
Range Transients	Strike Warfare (STW)	●	Range management must provide range clearance for livestock. This livestock encroachment segments training/reduces realism. No resolution is currently identified.
	Naval Special Warfare (NSW)	●	Same as above.

Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

Gulf of Mexico (GOMEX) Assessment Details



Gulf of Mexico (GOMEX) Assessment Details

Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	9.31	9.31	9.31	9.31	Encroachment Scores	9.27	8.60	8.60	8.60
<p>1. Capability at the GOMEX Range Complex has remained steady since CY2008. Principal mine warfare forces previously homeported in Texas and supported by the range complex have moved to Norfolk, VA, (helicopters) and San Diego, CA (ships).</p>					<p>1. Encroachment assessments for CY2008 were different than for CY2009, CY2010, and CY2011. The algorithm for the overall assessment score for CY2009 through CY2011 was revised from the original algorithm used in CY2008 to provide greater fidelity and consistency across all range complexes. Based on an improved review process and revised algorithms, the assessments for CY2009, CY2010, and CY2011 provide a more accurate assessment of encroachment. The assessments for the latter three years reveal there has been little encroachment change from year to year, with relatively constant overall scores for CY2009, CY2010, and CY2011.</p> <p>2. RCMP is scheduled for update in July 2011; EAP to be developed during FY2013.</p> <p>3. Department of Interior (DOI) and private energy interests in the Outer Continental Shelf (OCS) are increasing as domestic energy demand builds. Naval offshore operating areas and training events may be affected. High priority areas include training ranges and sea space in and adjacent to all Navy OPAREAs. (OASN(E, I&E), as DoD spokesman for military offshore use, continues to work closely with the Fleets and DOI’s Bureau of Ocean Energy Management (BOEM) to resolve issues of combined use of the OCS important to both agencies. Fleet review and analysis of impacts from both oil/gas and wind energy “lease sale” areas (i.e., Mission Critical Areas [MCAs]) have been reviewed and forwarded to OSD. DoD and DOI coordination continues.</p> <p>4. The MW Mission Area priority has been reduced by USFF to a basic level due to principal MW forces being moved to Norfolk and San Diego.</p> <p>5. GOMEX had no emerging encroachment issues during CY2011 that affect its operations. CY2012 encroachment assessment data remain the same as CY2011.</p>				

Gulf of Mexico (GOMEX) Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Range Support	Anti-Air Warfare (AAW)	●	A lack of web-based scheduling system with pre-event, real-time, and post-event modules precludes most efficient scheduling and documenting of range usage. Post-event reporting is particularly critical for ordnance expenditures or active sonar usage in at-sea OPAREAs, since MMPA permits require the Navy to periodically report these values. Non-compliance or inaccurately reporting post-event values to regulators risks range access or prohibitions on training events that involve active sonar or high explosives at-sea. PACFLT is developing a Data Collection and Scheduling Tool (DCAST) that includes a post-event module to mitigate issues outlined above. If successful, the Navy could consider adopting it at all range scheduling facilities.
	Anti-Surface Warfare (ASUW)	●	Same as above.
	Mine Warfare (MW)	●	Same as above.
	Naval Special Warfare (NSW)	●	Same as above.

Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

Gulf of Mexico (GOMEX) Detailed Comments

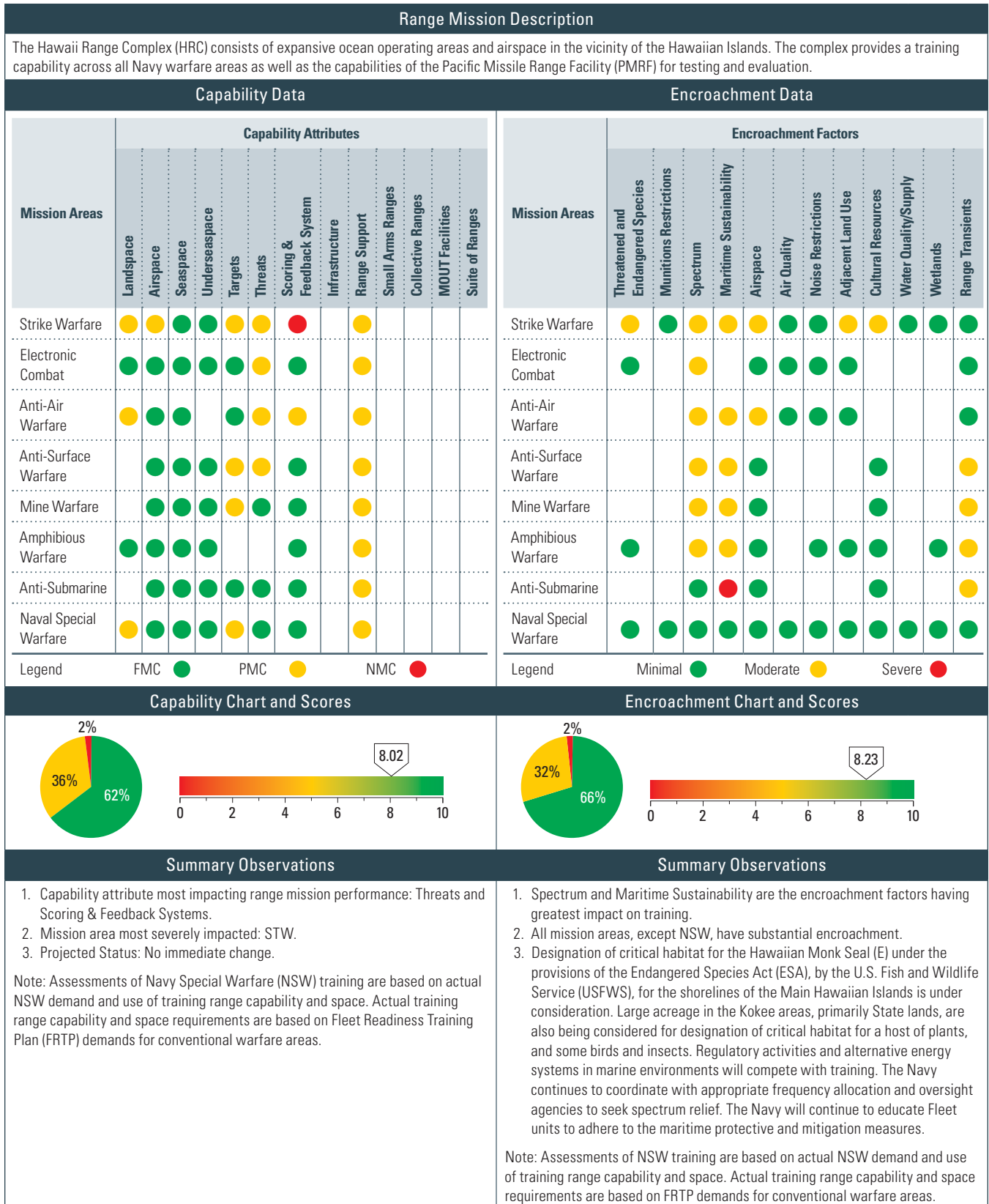
Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Spectrum	Anti-Air Warfare (AAW)	●	Employment of Link 16 is restricted. These restrictions limit spectrum operations and prohibit certain training events, segment training/reduce realism, reduce training days, limit application of new weapons technologies, and inhibit new tactics development. The Navy continues to coordinate with appropriate frequency allocation and oversight agencies to seek spectrum relief, and to develop encroachment strategies that will reduce encroachment, while ensuring pending use of emerging spectrum technologies. Competition for frequency spectrum will add increased pressure on available bandwidth for Naval operations.
	Anti-Surface Warfare (ASUW)	●	Same as above.
	Mine Warfare (MW)	●	Same as above.
Maritime	Anti-Surface Warfare (ASUW)	●	<p>Maritime protective and mitigation measures undertaken in compliance with regulatory requirements have resulted in training restrictions that reduce training flexibility, force segmented training, and ultimately reduce training realism. All at-sea training is impacted to some degree; impacts are most significant to integrated warfare training using active underwater acoustic sources or in-water explosive ordnance.</p> <p>The Navy and National Marine Fisheries Service (NMFS) have developed science based protective and mitigation measures that adequately protect marine species, while accommodating military readiness activities. The Navy continues to develop EISs, and obtain permits and authorizations for its range complexes to ensure military training complies with applicable laws and regulations. Litigation risks remain a concern, entailing the potential to delay or further restrict training, despite the protective and mitigation measures applied by the Navy in compliance with the Marine Mammal Protection Act (MMPA) and the Endangered Species Act (ESA).</p> <p>Endangered species encroachment has created avoidance areas that have resulted in some reduction of training days and prohibits certain training events. This area is relatively small in scope; however, if these types of restrictions were applied to other species/areas, there would be significant impacts to readiness through reduction in range access, segmentation of training/reduction in realism, limits on the application of new technologies, raised flight altitudes, reduced live fire proficiency, increased personnel tempo, and increased O&M costs. The Navy continues to invest in marine mammal research; rely on scientifically valid empirical data results as basis of marine mammal mitigation development; and factor mitigation effectiveness into permit requests. It will continue education of Fleet units to adhere to the maritime protective and mitigation measures and public education outreach efforts.</p> <p>The Navy's authorizations under the MMPA and ESA include an adaptive management approach that includes continually evaluating existing mitigation measures for their potential impacts on training. If impacts on training from mitigation measures are identified and documented, the Navy will raise these impacts with NMFS for resolution during an annual adaptive management review process. The Navy is currently preparing environmental compliance documentation to renew its MMPA and ESA authorizations, which will consider any impacts on training stemming from existing mitigations measures and propose changes as warranted.</p>
	Mine Warfare (MW)	●	Same as above.
Range Transients	Anti-Surface Warfare (ASUW)	●	Range transients, involving commercial shipping, commercial fishing, and private pleasure boating encroach on training, either by delaying events or forcing relocation to less than optimum locations. Commercial vessel and recreational vessel encroachment creates avoidance areas, segments training, and reduces realism. The Navy will continue to pursue opportunities to inform industry and the public of the impact of range transient encroachment on at-sea OPAREAs and Navy readiness.
	Mine Warfare (MW)	●	Same as above.

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Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

Hawaii Assessment Details



Hawaii Assessment Details

Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	7.59	7.76	7.84	7.84	Encroachment Scores	8.96	8.44	8.44	8.36
<p>1. In 2008 Mine Warfare (MIW) Targets and Scoring & Feedback Systems were assessed as red.</p> <p>2. In 2009, MIW Scoring & Feedback and Targets were assessed as yellow.</p> <p>3. In 2010, MIW Scoring & Feedback was assessed as green.</p> <p>4. The above changes were based on range upgrades for MIW identified by PACFLT.</p> <p>5. Scoring & Feedback Systems for ASW is currently green; however, PMRF Barking Sands Tactical Underwater Range (BARSTUR) underwater cables and hydrophones require funding and scheduling for repairs and replacement to sustain capability to support ASW training.</p> <p>6. In 2011, threats for ASUW were assessed as red. In 2012, COMPACFLT changed the assessment to yellow, based on PMRF's ability to support unit level training at a "green" level. This mission support area is in flux as new requirements for Fast Attack Craft Fast Inshore Attack Craft (FAC/FIAC) support are being developed. (The new assessment may revert to "red" when the new requirement levels are finalized. This will impact all USN ranges providing ASUW target support.)</p>					<p>1. Encroachment assessments for CY2008 were different than for CY2009 through CY2011. The algorithm for the overall assessment score for CY2009 through CY2011 was revised from the original algorithm used in CY2008 to provide greater fidelity and consistency across all range complexes. Based on an improved review process and revised algorithms, the assessments for CY2009 through CY2011 provide a more accurate assessment of encroachment. The assessments for the latter three years reveal there has been little encroachment change from year to year, with relatively constant overall scores for CY2009 through CY2011.</p> <p>2. Hawaii RCMP update began in October 2010.</p> <p>3. National Marine Fisheries Service (NMFS) proposal for Hawaiian Monk Seal (E) critical habitat designation has proposed national security exclusions for Hawaiian Range Complex ranges with exception of Kaula, Barbers Point Underwater Range, and Ewa Training Minefield. The Navy continues to request a national security exclusion from critical habitat designation for Kaula, Barbers Point Underwater Range and Ewa Training Minefield. Designation in these areas has the potential to significantly impact the ability of the Pacific Fleet to maintain a high degree of readiness.</p>				

Hawaii Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Strike Warfare (STW)	●	Unable to conduct low-level ingress over land to an air-to-ground range area with a realistic strike package. Reduces realism and inhibits tactics development. No solution, due to unavailability of land and airspace.
	Anti-Air Warfare (AAW)	●	There is no land space beneath any AAW training space. Airspace over land is required for Air Combat Maneuver (ACM) training. Reduces realism by preventing detection and targeting of terrain following aircraft. No land space is available to solve this problem.
	Naval Special Warfare (NSW)	●	Lacks maneuver space with a beachfront, live fire areas, and MOUT. This segments training, thereby reducing realism, inhibiting tactics, and reducing live fire proficiency. There is no solution to this shortfall, due to lack of available land.
Airspace	Strike Warfare (STW)	●	Unable to conduct low-level ingress over land to an air-to-ground range area with a realistic strike package. Reduces realism and inhibits tactics development. No solution, due to unavailability of land and airspace.
Targets	Strike Warfare (STW)	●	No raked, strafe, structural, revetted, or moving targets. No urban or moving targets. This does not meet requirements for live fire and realistic strike missions. Reduces realism and live fire proficiency. Recommend upgrade targets to meet training requirements; no completion date has been identified. Note: Does not include assessment of Army Pohakoloa Training Area Range.
	Anti-Surface Warfare (ASUW)	●	Basic level training target requirements are green, but Intermediate level training target requirements are not available in sufficient quantity or variety. This reduces realism. Recommend acquiring additional surface targets; No completion date has been identified.
	Mine Warfare (MW)	●	Existing mine training field does not realistically portray threat environment. This reduces realism, inhibits tactics, and limits application of new weapons technologies. Situation will get worse when organic mine countermeasure (OMCM) systems are deployed if improvements are not made. Anticipated deployment of new training mine fields are to be determined; No completion date has been identified.
	Naval Special Warfare (NSW)	●	Range targets are not available. Units typically create their own targets without the benefit of realism. Reduces realism; inhibits tactics development; reduces live fire proficiency. Fund portable targets to meet NSW training requirements.

Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

Hawaii Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Threats	Strike Warfare (STW)	●	Adequate quantity and types of threat opposing forces (OPFOR) are not available, including EC threat levels. Reduces realism; inhibits tactics development. Recommend the Navy acquire EC systems that provide a high density, multi-threat axis capability through level. No completion date has been identified.
	Electronic Combat (EC)	●	Same as above.
	Anti-Air Warfare (AAW)	●	No dedicated threat OPFOR. There is a shortage of the required number and variety of threat aircraft, which reduces realism. Recommend investigate availability of Hawaii Air National Guard to serve in an OPFOR role. No completion date has been identified.
	Anti-Surface Warfare (ASUW)	●	Basic level training threat requirements are green, but Intermediate level training threat requirements are not available in sufficient quantity or variety. This reduces realism. Recommend acquiring additional threat OPFOR. No completion date has been identified.
Scoring & Feedback System	Strike Warfare (STW)	●	Instrumented scoring and debriefing capabilities are not available. Performance, scoring, and evaluation of training is required for effective training. This inhibits tactics development and reduces live fire proficiency. Recommend improving Scoring & Feedback capabilities. Recommend adding a scoring capability at Pohakuloa Training Area (PTA) PMRF bombing ranges. No completion date has been identified.
	Anti-Air Warfare (AAW)	●	System lacks required capacity and needs upgrades to prevent obsolescence. Lack of adequate instrumentation reduces the overall effectiveness of flights, due to lower quality debrief information. Recommend investment in additional or new equipment to upgrade current systems. No completion date has been identified.
Range Support	Strike Warfare (STW)	●	Lack of web-based scheduling system with pre-event, real-time, and post-event modules precludes most efficient scheduling and documenting of range usage. Post-event reporting is particularly critical for ordnance expenditures or active sonar usage in at-sea OPAREAs, since the MMPA permits require the Navy to periodically report these values. Non-compliance or inaccurately reporting post-event values to regulators risks range access or prohibitions on training events that involve active sonar or high explosives at-sea. Existing PMRF ground-based and airborne-based air surveillance coverage radars need replacement to maintain safe and effective training. PMRF communications & network systems need to be upgraded to newer capabilities. PACFLT is developing a Data Collection and Scheduling Tool (DCAST) that includes a post-event module to mitigate the issues outlined above. If successful, the Navy could consider adopting it at all range scheduling facilities. Recommend replacing AN/SPS-48E Air Search Radar and airborne radars for PMRF C-26 aircraft. Control and security of the PMRF range complex requires upgrading communications & network systems for mission requirements and Information Assurance (IA) compliance. DCAST has been developed for PACFLT and is being deployed at various ranges; a deployment date not yet scheduled. No completion date has been identified.
	Electronic Combat (EC)	●	Same as above.
	Anti-Air Warfare (AAW)	●	Same as above.
	Anti-Surface Warfare (ASUW)	●	Same as above.
	Mine Warfare (MW)	●	Same as above.
Range Support	Amphibious Warfare (AMW)	●	Same as above.
	Anti-Submarine (ASW)	●	Same as above.
	Naval Special Warfare (NSW)	●	Same as above.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Threatened & Endangered Species	Strike Warfare (STW)	●	Restrictions center around the protection of numerous migratory birds on Kaula Rock. Rather than implement costly mitigation measures, operations have been modified to minimize impacts to protected species. These restrictions have been self-imposed by the Navy and without any direction of the regulators. Restrictions create large avoidance areas, reduce training days, prohibit certain training events, and reduce range access. To comply with the MMPA and the ESA, the Record of Decision (ROD) concluded that the Navy “will limit Kaula Rock targeting for air to surface weapons delivery to the southeast tip of the island” and only seasonally when marine mammals are not present. No remedy anticipated or planned. In addition, since finalization of HRC/PMRF FEIS/OEIS, Federal and State environmental regulators and non-governmental organizations (NGOs) are focusing even more on the populations and habitat, both land and marine, on/around Kaula Rock. Sea bird population surveys by vessel were conducted by Navy contractors and staff the week of July 20, 2009. This is the first such survey in more than 10 years, and was required pursuant to the HRC/PMRF FEIS/OEIS. Future potential impacts based on such studies cannot be predicted. Possible efforts to impose further restrictions on usage are uncertain.
	Strike Warfare (STW)	●	Employment of Link 16 is restricted. Restrictions limit spectrum operations and prohibit certain training events, segment training/reduce realism, reduce training days, limit application of new weapons technologies, and inhibit new tactics development. The Navy continues to coordinate with appropriate frequency allocation and oversight agencies to seek spectrum relief, and to develop encroachment strategies that will reduce encroachment, while ensuring pending use of emerging spectrum technologies. Competition for frequency spectrum will add increased pressure on available bandwidth for Naval operations.
Spectrum	Electronic Combat (EC)	●	Same as above.
	Anti-Air Warfare (AAW)	●	Same as above.
	Anti-Surface Warfare (ASUW)	●	Same as above.
	Mine Warfare (MW)	●	Same as above.
	Amphibious Warfare (AMW)	●	Same as above.
	Strike Warfare (STW)	●	Maritime protective and mitigation measures undertaken in compliance with regulatory requirements have resulted in training restrictions that reduce training flexibility, force segmented training, and ultimately reduce training realism. All at-sea training is impacted to some degree; impacts are most significant to integrated warfare training using active underwater acoustic sources or in-water explosive ordnance. The Navy and National Marine Fisheries Service (NMFS) have developed science based protective and mitigation measures that adequately protect marine species, while accommodating military readiness activities. The Navy continues to develop EISs, and obtain permits and authorizations for its range complexes to ensure military training complies with applicable laws and regulations. Litigation risks remain a concern, entailing the potential to delay or further restrict training, despite the protective and mitigation measures applied by the Navy in compliance with the MMPA and the ESA. Endangered species encroachment has created avoidance areas that have resulted in some reduction of training days and prohibits certain training events. This area is relatively small in scope; however, if these types of restrictions were applied to other species/areas, there would be significant impacts to readiness through reduction in range access, segmentation of training/reduction in realism, limits on the application of new technologies, raised flight altitudes, reduced live fire proficiency, increased personnel tempo, and increased O&M costs. The Navy will continue to invest in marine mammal research, rely on scientifically valid empirical data results as basis of marine mammal mitigation development, and factor mitigation effectiveness into permit requests. It will continue education of Fleet units to adhere to the maritime protective and mitigation measures and public education outreach efforts. The Navy’s authorizations under the MMPA and ESA include an adaptive management approach that includes continually evaluating existing mitigation measures for their potential impacts on training. If impacts on training from mitigation measures are identified and documented, the Navy will raise these impacts with the NMFS for resolution during an annual adaptive management review process. The Navy is currently preparing environmental compliance documentation to renew its MMPA and ESA authorizations, which will consider any impacts on training stemming from existing mitigations measures and propose changes as warranted.
Anti-Air Warfare (AAW)	●	Same as above.	
Anti-Surface Warfare (ASUW)	●	Same as above.	
Mine Warfare (MW)	●	Same as above.	
Amphibious Warfare (AMW)	●	Same as above.	
Anti-Submarine (ASW)	●	Same as above.	

Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

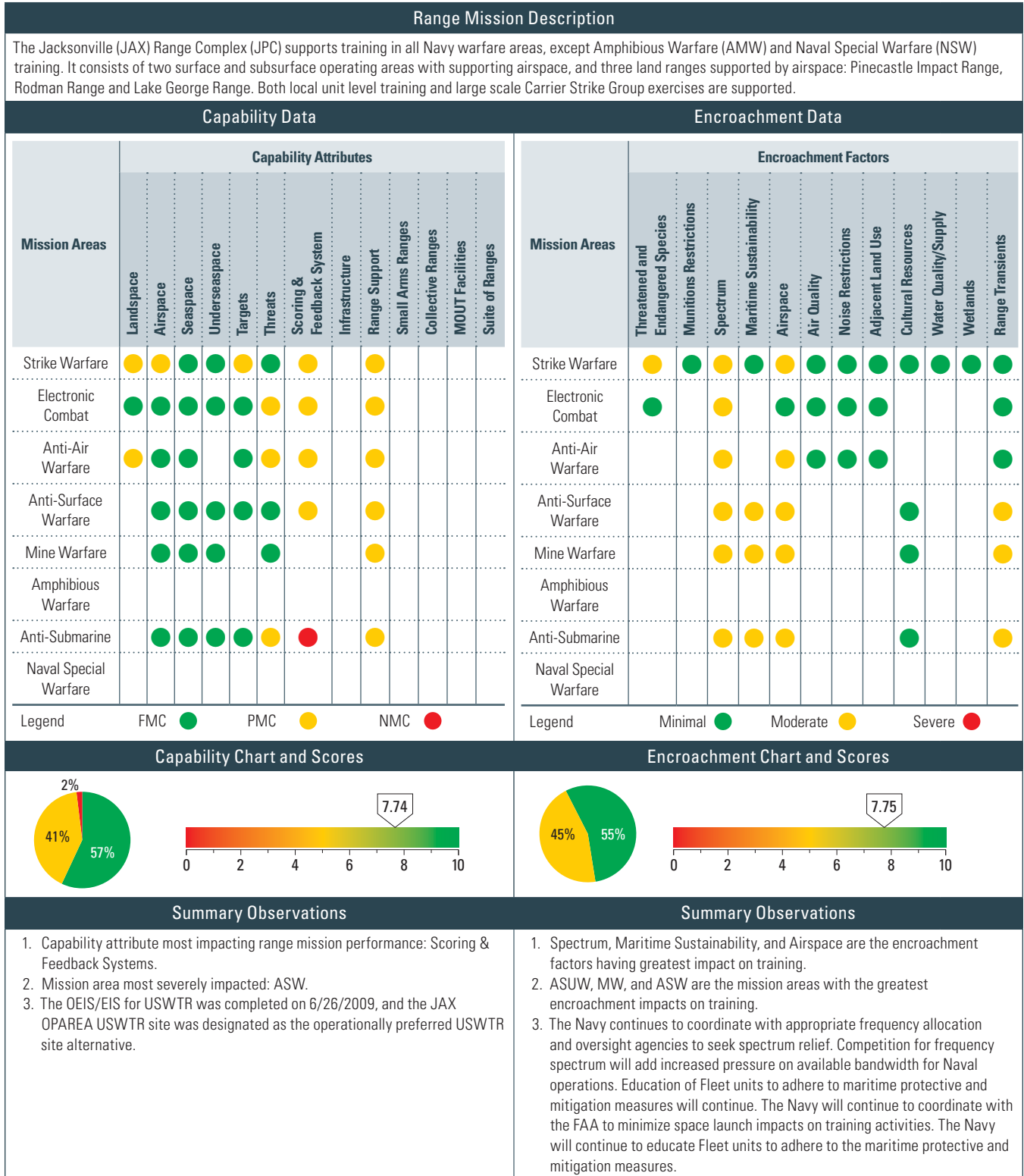
Hawaii Detailed Comments

			Encroachment Observations
Factors	Assigned Training Mission	Score	Comment
Airspace	Strike Warfare (STW)	●	Due to competition for the same airspace and scheduling conflicts, at times, Navy P-3 usage of the airspace is limited and Hawaii Air National Guard (HIANG) flights may be cancelled. In general, commercial and private aviation conflicts with Naval operations throughout the range complex. Conflict encroachment prohibits certain P-3 or HIANG training events in the area. Commercial traffic in the airspace causes delays and segments training. The Navy will coordinate scheduling of airspace with primary range users and the Federal Aviation Administration (FAA).
	Anti-Air Warfare (AAW)	●	Same as above.
Adjacent Land Use	Strike Warfare (STW)	●	The STW range is insufficient in size to support all requirements. Land withdrawal/procurement is problematic, due to development and other factors. The insufficient range size also segments training, reduces realism, prohibits certain training events, and limits use of advanced technologies. These issues are insolvable.
Cultural Resources	Strike Warfare (STW)	●	There are cultural sites and resources throughout the HRC. The presence of cultural resources within the training area creates large avoidance areas, prohibits certain training events, reduces range access, segments training and reduces realism, inhibits new tactics development, and greatly increases O&M costs. The Military Services have implemented training procedures to protect and conserve the cultural resources in the HRC.
Range Transients	Anti-Surface Warfare (ASUW)	●	Range transients, involving commercial shipping, commercial fishing, and private pleasure boating, encroach on training, either by delaying events or forcing relocation to less than optimum locations. Commercial vessel and recreational vessel encroachment creates avoidance areas and segments training/ reduces realism. The Navy will continue to pursue opportunities to inform industry and the public of the impact of range transient encroachment on at-sea OPAREAs and Navy readiness.
	Mine Warfare (MW)	●	Same as above.
	Amphibious Warfare (AMW)	●	Same as above.
	Anti-Submarine (ASW)	●	Same as above.

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Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

Jacksonville Assessment Details



Jacksonville Assessment Details

Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	7.73	7.61	7.61	7.74	Encroachment Scores	8.51	7.50	7.50	7.50
<p>1. STW airspace re-evaluated from green in CY2008 to yellow in CY2009 and beyond. Its score was changed from green to yellow for consistency in impacts for all Atlantic ranges and was based on a review with USFF and a determination that airspace restrictions to and from JAX were not significantly different than access at VACAPES and Cherry Pt.</p> <p>2. MW Targets and Scoring & Feedback Systems changed to white based on USFF evaluation that Time, Space, Position Information (TSPI) Instrumented scoring data and dedicated mine target shapes are not required in the JAX OPAREA.</p>					<p>1. Encroachment assessments for CY2008 were different than for CY2009, CY2010, and CY2011. The algorithm for the overall assessment score for CY2009 through CY2011 was revised from the original algorithm used in CY2008 to provide greater fidelity and consistency across all range complexes. Based on an improved review process and revised algorithms, the assessments for CY2009, CY2010, and CY2011 provide a more accurate assessment of encroachment. The assessments for the latter three years reveal there has been little encroachment change from year to year, with relatively constant overall scores for CY2009, CY2010, and CY2011.</p> <p>2. As population growth continues in the Jacksonville areas, there will be increased competition for spectrum bandwidth as G3 and G4 telecommunications increase. Spectrum competition may add increased pressure on the Navy's ability to use radar, communications, EC, and other military systems.</p> <p>3. JAX RCMP update is underway. The OPAREA EAP was completed in September 2011.</p> <p>4. Department of Interior (DOI) and private energy interests in the Outer Continental Shelf (OCS) are increasing as domestic energy demand builds. Naval offshore operating areas and training events may be affected. High priority areas include training ranges and sea space in and adjacent to all Navy OPAREAs. OASN (E,I&E), as DoD spokesman for military offshore use, continues to work closely with the Fleets and DOI's Bureau of Ocean Energy Management (BOEM) to resolve issues of combined use of the OCS important to both agencies. Fleet review and analysis of impacts from both oil/gas and wind energy "lease sale" areas (Mission Critical Areas [MCAs]) have been reviewed and forwarded to OSD. DoD and DOI coordination continues.</p> <p>5. JAX had no emerging encroachment issues during CY2011 that affect JAX operations. The CY2012 JAX encroachment assessment remains the same as CY2011.</p>				

Jacksonville Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Strike Warfare (STW)	●	Land space does not fully support size or topography requirements for placement of required number of targets. Use of live ordnance is supported only at Pinecastle; use of Joint, high energy (HE) stand-off munitions is not authorized. Use of flares is restricted. No land area supports Naval Surface Fire Support (NSFS) training, nor standoff precision guided munitions (PGM) delivery. This prohibits certain training events, reduces realism, and increases personnel op-tempo. The Navy recommends identifying East Coast land areas of sufficient size to support standoff weapons training. No completion date has been identified.
	Anti-Air Warfare (AAW)	●	Range land space does not fully support size or topography requirements, or support surface combatant detection of aircraft over land. Use of flares is restricted. This prohibits certain training events, reduces realism, and increases personnel op-tempo. Overland ACM training is conducted at Fallon Range Training Complex. No additional land options are available.
Airspace	Strike Warfare (STW)	●	Range land area and its associated restricted airspace areas are adjacent to JAX at-sea airspace, requiring MOA for transition between the seaspace and landspace areas. This transit reduces realism, inhibits new tactics development, and reduces live fire proficiency. OPAREAs lack characteristics for realistic tactical approaches and do not support the area size to meet minimum training requirements. There are no local options for increasing land availability. The Navy recommends coordination and investment in new MOAs and/or restricted airspace to reduce the impact on flight operations by increasing airspace area and altitudes. No completion date has been identified.
Targets	Strike Warfare (STW)	●	Range urban area is too small, there are no LACM or NSFS land area targets, no moving targets, and targets lack infrared signatures. This prohibits certain training events, reduces realism, limits application of new weapon technologies, inhibits tactics development, reduces live fire proficiency, increases personnel op-tempo, and increases O&M costs. The Navy recommends investment in required targets. No completion date has been identified.

Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

Jacksonville Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Threats	Electronic Combat (EC)	●	EC threat representation does not fully support EC threat levels 3 or 4 for required mission areas. The existing instrumentation systems are becoming obsolete and unsupported through the FYDP. This prohibits certain training events; reduces realism; limits application of new weapon technologies; inhibits tactics development; reduces live fire proficiency, increases personnel op-tempo; and increases O&M costs. The Navy recommends updating upgrade schedule to preclude severe degradation of system capability. Completion date has not been identified.
	Anti-Air Warfare (AAW)	●	Range has no helicopter or supersonic threat OPFOR. This reduces realism; increases personnel op-tempo; and increases O&M costs. The Navy recommends increasing the number and type of commercial air services. No completion date has been identified.
	Anti-Submarine (ASW)	●	Range has limited dedicated live submarines, surface ships, or aircraft to serve in the OPFOR role. This prohibits certain training events, reduces realism, inhibits tactics, increases personnel op-tempo, and increases O&M costs. The Navy recommends investing in additional threat OPFOR. It recommends increasing availability of submarines through the Diesel Electric Submarine Initiative (DESI) and aircraft through Close Air Support (CAS). No completion date has been identified.
Scoring & Feedback	Strike Warfare (STW)	●	Range has incomplete TSPI & EC&C OPAREA coverage and is in need of scoring, RTKN and M&S systems. This increases personnel op-tempo and increases O&M costs. The Navy recommends expanding and improving 2-D & 3-D coverage of the op-area, investing in JNTC compliant M&S equipment, and improving debrief capabilities. No completion date has been identified.
	Electronic Combat (EC)	●	Same as above.
	Anti-Air Warfare (AAW)	●	OPAREA coverage is not complete; Modeling & Simulation is inadequate; there is no RTKN. Existing instrumentation systems are not supportable through the FYDP. This reduces realism; inhibits tactics; increases personnel op-tempo, and increases O&M costs. The Navy recommends expanding and improving 2-D & 3-D coverage of the op-area, investing in JNTC compliant M&S equipment, and improving debrief capabilities. No completion date has been identified.
	Anti-Surface Warfare (ASUW)	●	Range has incomplete TSPI & EC&C OPAREA coverage and is in need of scoring, RTKN, and M&S systems. This increases personnel op-tempo and increases O&M costs. The Navy recommends expanding and improving 2-D & 3-D coverage of the op-area, investing in JNTC compliant M&S equipment, and improving debrief capabilities. No completion date has been identified.
	Anti-Submarine (ASW)	●	There is no underwater tracking range, scoring capability, M&S, or post mission feedback. This prohibits certain training events, reduces realism, limits weapon technologies, inhibits tactics, reduces live fire proficiency, increases personnel op-tempo, and increases O&M costs. USWTR EIS was completed in CY2009. The Navy recommends expanding and improving 2-D & 3-D coverage of the OPAREA; investing in JNTC compliant M&S; and improving debrief capabilities.
Range Support	Strike Warfare (STW)	●	Lack of web-based scheduling system with pre-event, real-time, and post-event modules precludes most efficient scheduling and documenting of range usage. Post-event reporting is particularly critical for ordnance expenditures or active sonar usage in at-sea OPAREAs, since the MMPA permits require the Navy to periodically report these values. Non-compliance or inaccurately reporting post-event values to regulators risks range access or prohibitions on training events that involve active sonar or high explosives at-sea. PACFLT is developing a Data Collection and Scheduling Tool (DCAST) that includes a post-event module to mitigate issues outlined above. If successful, the Navy could consider adopting it at all range scheduling facilities.
	Electronic Combat (EC)	●	Same as above.
	Anti-Air Warfare (AAW)	●	Same as above.
	Anti-Surface Warfare (ASUW)	●	Same as above.
	Mine Warfare (MW)	●	Same as above.
	Anti-Submarine (ASW)	●	Same as above.

Jacksonville Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Threatened & Endangered Species	Strike Warfare (STW)	●	Scrub Jays, Indigo Snakes, and Gopher Turtles at Pincastle and Rodman, and Manatees at Lake George contribute to training restrictions in their affiliated range and training areas. Species habitat encroachment creates avoidance areas and reduces range access, and inhibits new tactics development. The Navy observes species mitigation measures at Pincastle, Rodman, and Lake George.
Spectrum	Strike Warfare (STW)	●	Employment of Link 16 is restricted. Restrictions limit spectrum operations and prohibit certain training events, segment training/reduce realism, reduce training days, limit application of new weapons technologies, and inhibit new tactics development. The Navy continues to coordinate with appropriate frequency allocation and oversight agencies to seek spectrum relief, and to develop encroachment strategies that will reduce encroachment, while ensuring pending use of emerging spectrum technologies. Competition for frequency spectrum will add increased pressure on available bandwidth for Naval operations.
Spectrum	Electronic Combat (EC)	●	Restrictions resulting from electromagnetic spectrum encroachment include prohibitions from performing GPS jamming, authorization to radiate the Spoon Rest VHF early warning threat radar system and restricted use of the Track While Scan Simulator (ITWSS). Employment of Link 16 is restricted. Restrictions limit spectrum operations and prohibit certain training events, segment training, reduce realism, reduce training days, limit application of new weapons technologies, and inhibit new tactics development. The Navy continues to coordinate with appropriate frequency allocation and oversight agencies to seek spectrum relief, and to develop encroachment strategies that will reduce encroachment while ensuring pending use of emerging spectrum technologies. Competition for frequency spectrum will add increased pressure on available bandwidth for Naval operations.
	Anti-Air Warfare (AAW)	●	Employment of Link 16 is restricted. Restrictions limit spectrum operations and prohibit certain training events, segment training/reduce realism, reduce training days, limit application of new weapons technologies, and inhibit new tactics development. The Navy continues to coordinate with appropriate frequency allocation and oversight agencies to seek spectrum relief, and to develop encroachment strategies that will reduce encroachment while ensuring pending use of emerging spectrum technologies. Competition for frequency spectrum will add increased pressure on available bandwidth for Naval operations.
	Anti-Surface Warfare (ASUW)	●	Employment of Link 16, SPY-1 radar, SPS 49 radar, and Identification Friend or Foe (IFF) are restricted. Restrictions limit spectrum operations and prohibit certain training events, segment training/reduce realism, reduce training days, limit application of new weapons technologies, and inhibit new tactics development. The Navy continues to coordinate with appropriate frequency allocation and oversight agencies to seek spectrum relief, and to develop encroachment strategies that will reduce encroachment while ensuring pending use of emerging spectrum technologies. Competition for frequency spectrum will add increased pressure on available bandwidth for Naval operations.
	Mine Warfare (MW)	●	Same as above.
	Anti-Submarine (ASW)	●	Same as above.

Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

Jacksonville Detailed Comments

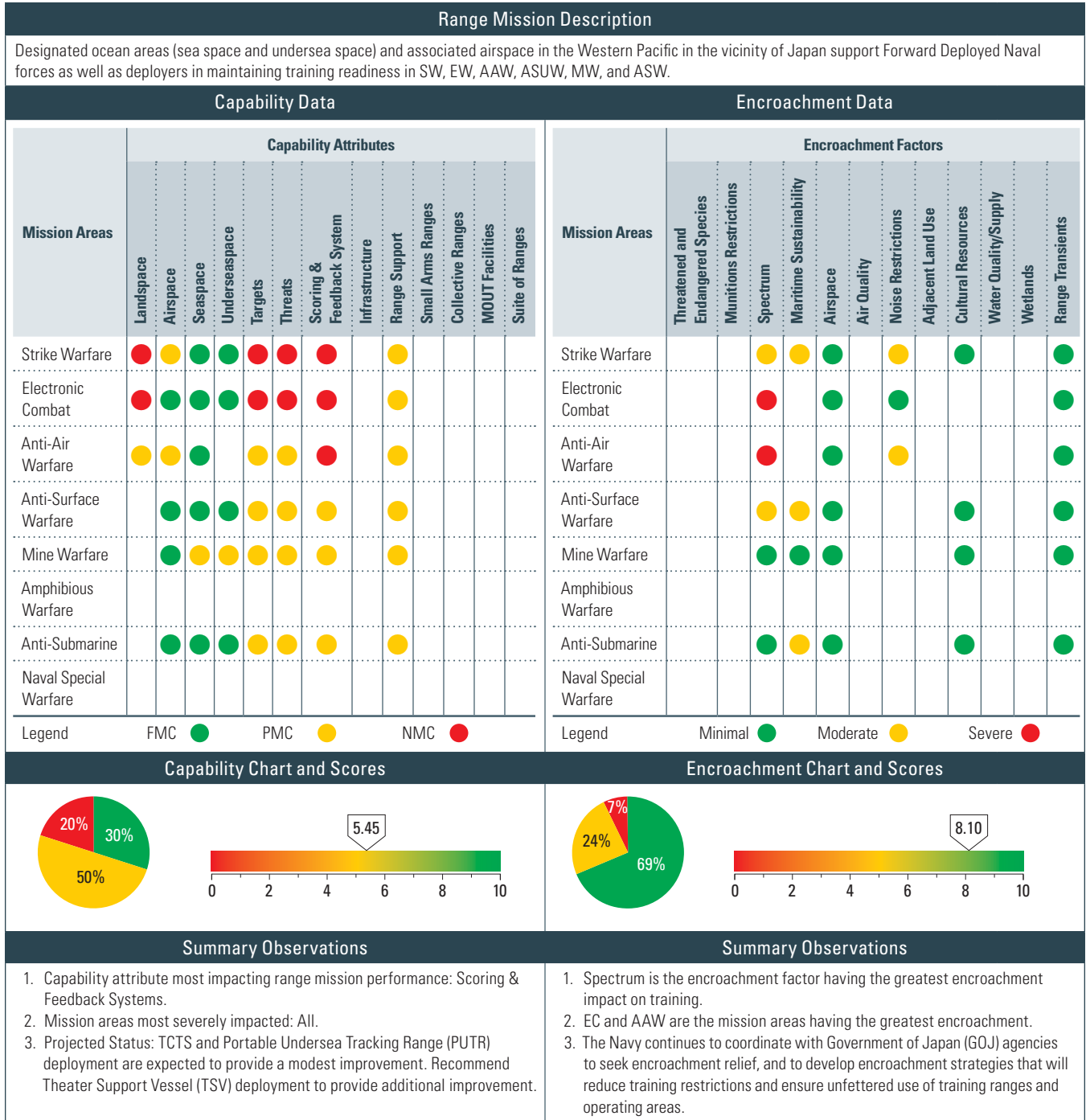
Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Maritime Sustainability	Anti-Surface Warfare (ASUW)	●	<p>Maritime protective and mitigation measures undertaken in compliance with regulatory requirements have resulted in training restrictions that reduce training flexibility, force segmented training, and ultimately reduce training realism. All at-sea training is impacted to some degree; impacts are most significant to integrated warfare training using active underwater acoustic sources or in-water explosive ordnance. The Navy and the National Marine Fisheries Service (NMFS) have developed science-based protective and mitigation measures that adequately protect marine species while accommodating military readiness activities. The Navy continues to develop EISs and obtain permits and authorizations for its range complexes to ensure military training complies with applicable laws and regulations.</p> <p>Litigation risks remain a concern, entailing the potential to delay or further restrict training, despite the protective and mitigation measures applied by the Navy in compliance with the Marine Mammal Protection Act (MMPA) and the Endangered Species Act (ESA). Endangered species encroachment from the North Atlantic Right Whale has created avoidance areas that have resulted in some reduction of training days and prohibit certain training events. This area is relatively small in scope; however, if these types of restrictions were applied to other species/areas, there would be significant impacts to readiness through reduction in range access, segmentation of training/reduction in realism, limits on the application of new technologies, raised flight altitudes, reduced live fire proficiency, increased personnel tempo, and increased O&M costs.</p> <p>The Navy will continue to invest in marine mammal research, rely on scientifically valid empirical data results as basis of marine mammal mitigation development, and factor mitigation effectiveness into permit requests. It will continue education of Fleet units to adhere to the maritime protective and mitigation measures and public education outreach efforts.</p> <p>The Navy's authorizations under the MMPA and ESA include an adaptive management approach that includes continually evaluating existing mitigation measures for their potential impacts on training. If impacts on training from mitigation measures are identified and documented, the Navy will raise these impacts with the NMFS for resolution during an annual adaptive management review process. The Navy is currently preparing environmental compliance documentation to renew the MMPA and ESA authorizations by January 2014, which will consider any impacts on training stemming from existing mitigations measures and propose changes as warranted.</p>
	Mine Warfare (MW)	●	Same as above.
	Anti-Submarine (ASW)	●	Same as above.
Airspace	Strike Warfare (STW)	●	During space launches at Cape Canaveral, the FAA closes southern portions of the JAX OPAREA and associated airspace, depending on launch parameters. Closing portions of the SUA and OPAREA impacts several warfare areas that use the SUA and OPAREAs. Airspace restrictions create avoidance areas, reduce training days, reduce range access, segment training/reduce realism, increase personnel tempo, and increase O&M costs. The Navy will continue to coordinate with the FAA to minimize space launch impacts on training activities.
	Anti-Air Warfare (AAW)	●	Same as above.
	Anti-Surface Warfare (ASUW)	●	Same as above.
	Mine Warfare (MW)	●	Same as above.
	Anti-Submarine (ASW)	●	Same as above.
Range Transients	Anti-Surface Warfare (ASUW)	●	Range transients, involving commercial shipping, commercial fishing, and private pleasure boating, encroach on training, either by delaying events or forcing relocation to less than optimum locations. Commercial vessel and recreational vessel encroachment creates avoidance areas and segments training/reduces realism. The Navy will continue to pursue opportunities to inform industry and the public of the impact of range transient encroachment on at-sea OPAREAs and Navy readiness.
	Mine Warfare (MW)	●	Same as above.
	Anti-Submarine (ASW)	●	Same as above.

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Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

Japan Assessment Details



Japan Assessment Details

Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	5.45	5.45	5.45	5.45	Encroachment Scores	9.40	8.28	8.28	8.10
<p>1. The capability assessment has been stable from year to year, with relatively constant overall scores for CY2010 and 2011.</p> <p>2. A multi-purpose range craft is being constructed for deployment in Seventh Fleet that will support aerial drone, M-30 (ASW target), and mine shape launch and recovery, deployment and recovery of the portable ASW range, and EW training (limited).</p> <p>3. The Navy is evaluating various locations for deployment of the portable ASW range.</p> <p>4. The Navy, in coordination with U.S. Forces Japan, GOJ, and the Japan Civil Aviation Bureau, is pursuing plans for new training airspace to support the United States. The Navy aircraft based in Japan operate primarily from MCAS Iwakuni and NAF Atsugi.</p>					<p>1. Encroachment assessments for CY2008 were different than for CY2009, CY2010, and CY2011. The algorithm for the overall assessment score for CY2009 through CY2011 was revised from the original algorithm used in CY2008 to provide greater fidelity and consistency across all range complexes. Based on an improved review process and revised algorithms, the assessments for CY2009, CY2010, and CY2011 provide a more accurate assessment of encroachment. The assessments for the latter three years reveal there has been little encroachment change from year to year, with relatively constant overall scores for CY2009, CY2010, and CY2011. There is little indication encroachment pressures will change in the foreseeable future.</p> <p>2. There are no emerging encroachment issues that affect Japan operations. The CY2012 assessment remains the same as CY2011.</p>				

Japan Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Strike Warfare (STW)	●	No Navy-controlled range is available, which prohibits certain training events, reduces realism, limits application of new technologies, inhibits tactics development, increases personnel op-tempo, and increases O&M costs. Pursue opportunities with other Services, countries, and in-theater ranges. R130 (inert A-G range) off Misawa is available, but limited supporting airspace is available for new weapons. USAF initiative to create limited use ALTRV Gaicho may alleviate problem and may allow for JDAM training. No completion date has been identified.
	Electronic Combat (EC)	●	No Navy-controlled range is available, which prohibits certain training events, reduces realism, limits application of new technologies, inhibits tactics development, increases personnel op-tempo, and increases O&M costs. Pursue Multi-purpose Range Craft (MPRC) EC capability. No completion date has been identified.
	Anti-Air Warfare (AAW)	●	Minimal access to overland airspace impacts AAW training capabilities, which prohibits certain training events, reduces realism, limits application of new technologies, inhibits tactics development, increases personnel op-tempo, and increases O&M costs. Pursue opportunities with other Services, countries, and in-theater ranges. No completion date has been identified.
Airspace	Strike Warfare (STW)	●	No Navy-controlled range available, but there is some airspace and are ground targets available. Projected airwing move in CY2014 will downgrade training due to limited airspace at the new area. These deficiencies prohibit certain training events, limit application of new technologies, inhibit new tactics development, increase personnel op-tempo, and increase O&M costs. Pursue access to airspace that will support this training. No completion date has been identified.
	Anti-Air Warfare (AAW)	●	No overland airspace supports AAW training. Projected airwing move in CY2014 will downgrade training, due to limited airspace at the new area. Prohibits certain training events, reduces realism, limits application of new technologies, inhibits tactics development, increases personnel op-tempo, and increases O&M costs. Pursue opportunities with other Services, countries, and in-theater ranges. No completion date has been identified.
Seaspace	Mine Warfare (MW)	●	Lack of shallow water training areas and geographic references limit Mine Warfare (MW) training. Prohibits certain training; reduces realism, limits application of new technologies, inhibits tactics development, increases personnel op-tempo, and increases O&M costs. Evaluate feasibility of creating an OPAREA adjacent to land to support shallow water and geographic reference points. Joint Committee is working to identify water area near Iwakuni. No completion date has been identified.
Underseaspace	Mine Warfare (MW)	●	No dedicated undersea space for Shock Wave Action Generator (SWAG) or mine avoidance training. Sea bottom type does not have required variance, and offers insufficient shallow water. Japan has no permanent USWTR. Prohibits certain training, reduces realism; limits application of new technologies, inhibits new tactics development, increases personnel op-tempo, and increases O&M costs. Evaluate feasibility of installing a mine training range with instrumented mine shapes, false targets, bottom mines, and mines for Special Warfare Group (SWAG) training. Evaluate the feasibility of creating an OPAREA with shallow water. No completion date has been identified.

Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

Japan Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Targets	Strike Warfare (STW)	●	No Navy-controlled range is available, which prohibits certain training events, reduces realism, limits application of new technologies, inhibits tactics development, increases personnel op-tempo, and increases O&M costs. Provide A-G targets and establish supporting SUA. No completion date has been identified.
	Electronic Combat (EC)	●	No targets exist. Limited land area. Political and frequency spectrum constraints, which prohibits certain training events, reduces realism, limits application of new technologies, inhibits tactics development, increases personnel op-tempo, and increases O&M costs. Pursue MPRC EC Capability. No completion date has been identified.
	Anti-Air Warfare (AAW)	●	No supersonic targets available. No dedicated targets available. Reduces live fire proficiency, increases personnel op-tempo, and increases O&M costs. Increase availability of commercial air services. Pursue a MPRC with target capabilities. No completion date has been identified.
	Anti-Surface Warfare (ASUW)	●	Quantity and types of targets are limited. Prohibits certain training events; reduces realism; reduces live fire proficiency. Increase availability of targets. Pursue MPRC capability. No completion date has been identified.
	Mine Warfare (MW)	●	No dedicated or instrumented targets available. Units will typically provide their own targets where feasible. Prohibits certain training events, reduces realism, limits application of new technologies, reduces live fire proficiency, and increases O&M costs. Evaluate feasibility of installing a mine range with instrumented shapes, false targets, bottom mines, and mines approved for SWAG training. No completion date has been identified.
	Anti-Submarine (ASW)	●	Live and virtual targets are not available. Expendable targets provided by the unit conducting the training are usually used. Reduces realism, limits application of new technologies, inhibits tactics development, reduces live fire proficiency, and increases O&M costs. Establish an ASW targets unit. No completion date has been identified.
Threats	Strike Warfare (STW)	●	No dedicated, but limited, OPFOR is available. Reduces realism, limits application of new technologies, inhibits tactics development. Improve availability of CAS and EC augmentation. MPRC is scheduled for mid-CY2012 arrival, it will provide rudimentary EW training capabilities. Mission area will remain red until an integrated air defense system (IADS) training capability is provided. No completion date has been identified (and no candidate locations available).
	Electronic Combat (EC)	●	No dedicated, but limited, OPFOR is available. Reduces realism, limits application of new technologies, and inhibits tactics development. Pursue development of joint EC systems. Improve availability of CAS and EC augmentation. The MPRC is scheduled for mid-2012 arrival, it will provide rudimentary EW training capabilities. No completion date has been identified (significant RF limitations/encroachment inhibit live training support).
	Anti-Air Warfare (AAW)	●	No dedicated, but limited, OPFOR is available. Reduces realism, limits application of new technologies, and inhibits tactics development. Improve availability of CAS and EC augmentation. TCTS installation on CVN tentatively scheduled for FY2014. TCTS will significantly enhance AAW training for aviation units. OPFOR will remain limited.
	Anti-Surface Warfare (ASUW)	●	No dedicated, but limited, OPFOR is available. Reduces realism, limits application of new technologies, and inhibits tactics development. Improve availability of CAS and EC augmentation. The MPRC is scheduled for mid-2012 arrival. The MPRC will provide rudimentary EW training capability. No completion date has been identified.
	Mine Warfare (MW)	●	Same as above.
	Anti-Submarine (ASW)	●	Same as above.
Scoring & Feedback	Strike Warfare (STW)	●	No permanent instrumentation exists. Reduces realism, limits application of new technologies, inhibits new tactics, and complicates night and all weather training. Continue planned development of the TCTS and evaluate potential to improve training. Evaluate MPRC potential to support training. TCTS installation on CVN estimated in FY2014. No scored air to ground ranges for instrumentation identified.
	Electronic Combat (EC)	●	Same as above. While the MPRC will provide some training capability, it will not be capable of providing Scoring & Feedback. No completion date has been identified.
	Anti-Air Warfare (AAW)	●	No permanent instrumentation exists. Reduces realism, limits application of new technologies, inhibits new tactics, and complicates night and all weather training. Continue planned development of TCTS and evaluate potential to improve training. Evaluate the MPRC's potential to support training. TCTS installation on CVN is estimated in FY2014. No scored air to ground ranges for instrumentation identified.
	Anti-Surface Warfare (ASUW)	●	No permanent instrumentation exists. Reduces realism, limits application of new technologies, inhibits new tactics, and complicates night and all weather training. MPRC introduction (mid-2012) will improve support capability.

Japan Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Scoring & Feedback	Mine Warfare (MW)	●	No permanent instrumentation exists. Reduces realism, limits application of new technologies, inhibits new tactics, and complicates night and all weather training. Evaluate feasibility of installing a mine range with instrumented shapes, false targets, bottom mines, and mines approved for SWAG training. Evaluate MPRC potential to support training. No completion date has been identified.
	Anti-Submarine (ASW)	●	No permanent instrumentation exists and is not likely in the future. Reduces instrumented range availability. Introduction of MPRC in mid-. should increase availability of Portable Acoustic Range/Portable Undersea Tracking Range (PAR/PUTR) support. Planning underway to support instrumented ASW training in 2102.
Range Support	Strike Warfare (STW)	●	Lack of web-based scheduling system with pre-event, real-time, and post-event modules precludes most efficient scheduling and documenting of range usage. Post-event reporting is particularly critical for ordnance expenditures or active sonar usage in at-sea OPAREAs since MMPA permits require the Navy to periodically report these values. Non-compliance or inaccurately reporting post-event values to regulators risks range access or prohibitions on training events that involve active sonar or high explosives at-sea. PACFLT is developing a Data Collection and Scheduling Tool (DCAST) that includes a post-event module to mitigate issues outlined above. If successful, the Navy could consider adopting it at all range scheduling facilities. DCAST development is in progress and deployment has begun in CONUS. Deployment date for WESTPAC will be completed during FY2012.
	Electronic Combat (EC)	●	Same as above.
	Anti-Air Warfare (AAW)	●	Same as above.
	Anti-Surface Warfare (ASUW)	●	Same as above.
	Mine Warfare (MW)	●	Same as above.
Anti-Submarine (ASW)	●	Same as above.	

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Spectrum	Strike Warfare (STW)	●	Restrictions on RF emissions limit the use of the TCTS. Restrictions limit spectrum operations and prohibit certain training events, segment training/reduce realism, reduce training days, limit application of new weapons technologies, and inhibit new tactics development. The Navy continues to coordinate with GOJ agencies to seek spectrum relief, and to develop encroachment strategies that will reduce encroachment, while ensuring pending use of emerging spectrum technologies.
	Electronic Combat (EC)	●	No EW training ranges due to RF restrictions. RF restrictions limit spectrum operations and prohibit certain training events, segment training/reduce realism, reduce training days, limit application of new weapons technologies, and inhibit new tactics development. The Navy continues to coordinate with GOJ agencies to seek spectrum relief, and to develop encroachment strategies that will reduce encroachment, while ensuring pending use of emerging spectrum technologies.
	Anti-Air Warfare (AAW)	●	Restrictions on RF emissions limit the use of the TCTS. Restrictions limit spectrum operations and prohibit certain training events, segment training/reduce realism, reduce training days, limit application of new weapons technologies, and inhibit new tactics development. The Navy continues to coordinate with GOJ agencies to seek spectrum relief, and to develop encroachment strategies that will reduce encroachment, while ensuring pending use of emerging spectrum technologies.
	Anti-Surface Warfare (ASUW)	●	All units operating throughout the JORC are precluded from activating SPS-49/SPS-48E radar equipment for test or operational purposes within 12 nm of land areas of Japan or Okinawa. Presently insolvable. Restrictions limit spectrum operations and prohibit certain training events, segment training/reduce realism, reduce training days, limit application of new weapons technologies, and inhibit new tactics development. The Navy continues to coordinate with GOJ agencies to seek spectrum relief, and to develop encroachment strategies that will reduce encroachment, while ensuring pending use of emerging spectrum technologies.

Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

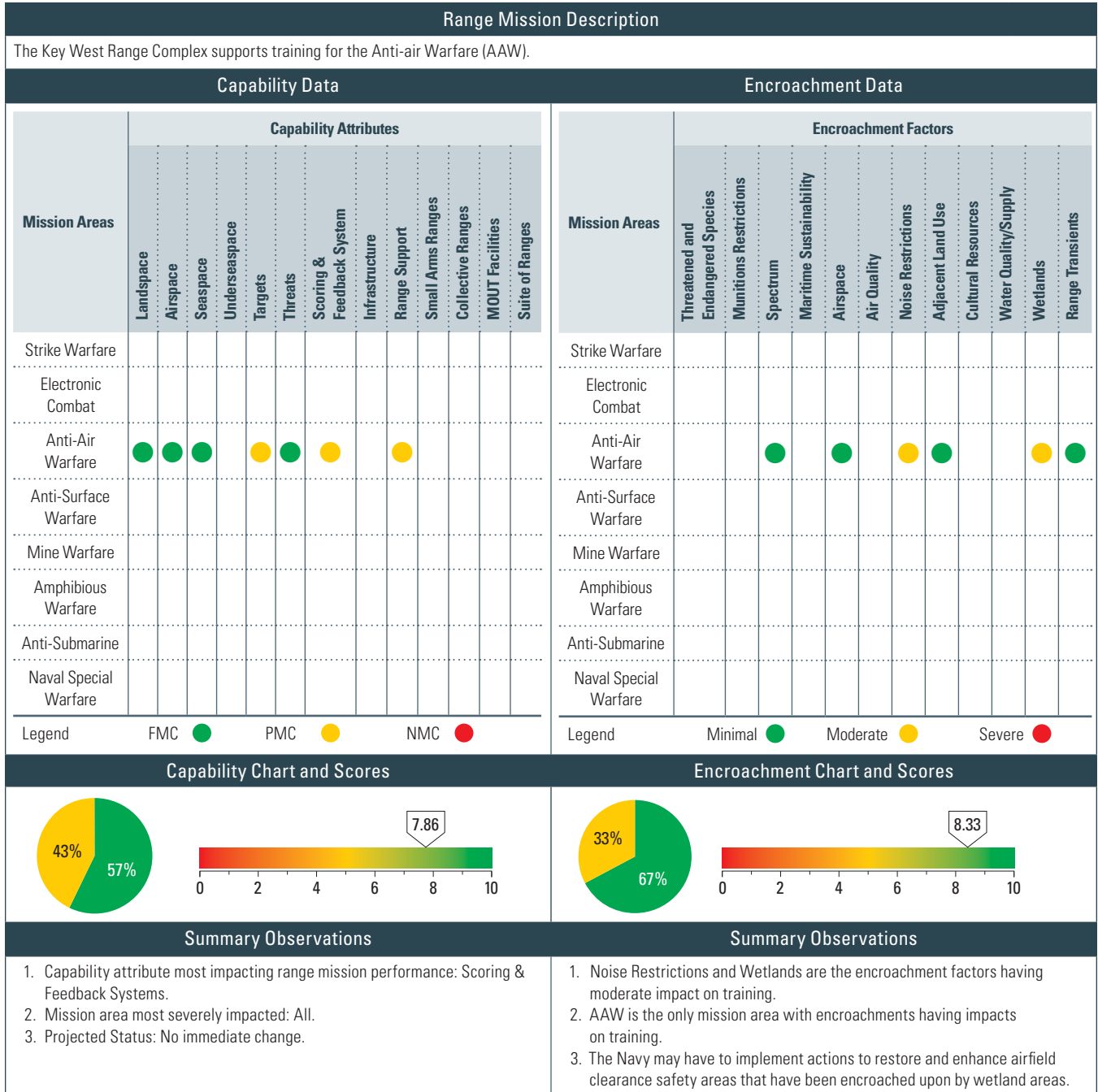
Japan Detailed Comments

Factors	Assigned Training Mission	Score	Comments
Maritime Sustainability	Strike Warfare (STW)	●	The Navy uses the Protective Measures Assessment Protocol (PMAP) to assess range specific marine mammal encroachment issues and to identify specific protection measures. PMAP provides a fleet-wide set of protective measures for particular maritime activities and for designated geographic areas of interest. PMAP procedures have resulted in some training restrictions that reduce training flexibility, force segmented training, and ultimately reduce training realism. All at-sea training is impacted to some degree; impacts are most significant to integrated warfare training using active underwater acoustic sources or in-water explosive ordnance. This existing encroachment is relatively small in scope. Should the encroachment become more pervasive across additional species and locations, there could be other training and readiness impacts through reduced range access, segmented training, reduced realism, limited application of new technologies, raised flight altitudes, reduced live fire proficiency, increased personnel tempo, and increased O&M costs. The Navy continues to invest in marine mammal research; to rely on scientifically valid empirical data results as basis of marine mammal mitigation development; and to factor mitigation effectiveness into maritime operations. All Navy units are expected to adhere to PMAP. The Navy continually evaluates existing PMAP measures for their potential encroachment and impacts on training. If impacts on training from PMAP are identified and documented, the Navy will address impact resolution during management review processes.
	Anti-Surface Warfare (ASUW)	●	Same as above.
	Anti-Submarine (ASW)	●	Same as above.
Noise Restrictions	Strike Warfare (STW)	●	Unable to conduct night carrier landing practice at home base. Aircraft must travel to remote location for training. Inability to conduct training at home base location reduces air-wing readiness and impacts STW and AAW missions. Noise encroachment at Atsugi prohibits certain training events, segments training/reduces realism, reduces training days, limits application of new weapons technologies, and inhibits new tactics development. The CVW-5 move to Iwakuni moves the noise encroachment at Atsugi to Iwakuni.
	Anti-Air Warfare (AAW)	●	Same as above.

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Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

Key West Assessment Details



Key West Assessment Details

Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	7.50	7.50	7.50	7.86	Encroachment Scores	9.86	9.55	9.09	8.33
1. No change between CY2008, CY2009, and CY2010. 2. The ASUW Range mission area was deleted in CY2011; the assessment score increased because of that change.					1. Encroachment assessments for CY2008 were different than for CY2009, CY2010, and CY2011. The algorithm for the overall assessment score for CY2009 through CY2011 was revised from the original algorithm used in CY2008 to provide greater fidelity and consistency across all range complexes. Based on an improved review process and revised algorithms, the assessments for CY2009, CY2010, and CY2011 provide a more accurate assessment of encroachment. The assessments for the latter three years reveal there has been little encroachment change from year to year with the exception of a small decrease in the score from CY2009 to CY2010. 2. The small change in the assessment score from CY2009 to CY2010 is based on increased encroachment from noise regarding AAW activities in the vicinity of the Dry Tortugas and Fort Jefferson. 3. The ASUW mission area for the range complex was deleted for the 2011 assessment; the assessment dropped from 9.09 to 8.33 because the assessment for ASUW was all green. 4. The Key West RCMP update is tentatively scheduled to be completed in FY2013; the Key West EAP is scheduled to be completed in September 2012. 5. Department of Interior (DOI) and private energy interests in the Outer Continental Shelf (OCS) are increasing as domestic energy demand builds. Naval offshore operating areas and training events may be affected. High priority areas include training ranges and sea space in and adjacent to all Navy OPAREAs. OASN (E,I&E), as DoD spokesman for military offshore use, continues to work closely with the Fleets and DOI's Bureau of Ocean Energy Management (BOEM) to resolve issues of combined use of the OCS important to both agencies. Fleet review and analysis of impacts from both oil/ gas and wind energy "lease sale" areas (Mission Critical Areas [MCAs]) have been reviewed and forwarded to OSD. DoD and DOI coordination continues. 6. Key West had no emerging encroachment issues during CY2011 that affect Key West operations. The CY2012 Key West encroachment assessment remains the same as CY2011.				

Key West Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Targets	Anti-Air Warfare (AAW)	●	Ranges have minimal target support. Air targets are not available unless scheduled in advance (with a long lead time). This increases personnel op-tempo and increases O&M costs. The Navy recommends providing targets at the range area. No long term solution date determined. Current workaround solution: if sufficient lead time is available to schedule targets and if the required targets are available, targets may be arranged for training.
Scoring & Feedback System	Anti-Air Warfare (AAW)	●	EC&C are not available over the entire OPAREA, especially for surface ships; M&S is not available; some scoring is available through TCTS; and RTKN is available by voice only. This prohibits certain training events, reduces realism, increases personnel op-tempo, and increases O&M costs. Recommend investing in systems to support EC&C, M&S and scoring, and debriefing. No completion date has been identified.
Range Support	Anti-Air Warfare (AAW)	●	A lack of a web-based scheduling system with pre-event, real-time, and post-event modules precludes most efficient scheduling and documenting of range usage. Post-event reporting is particularly critical for ordnance expenditures or active sonar usage in at-sea OPAREAs since the MMPA permits require the Navy to periodically report these values. Non-compliance or inaccurately reporting post-event values to regulators risks range access or prohibitions on training events that involve active sonar or high explosives at-sea. PACFLT is developing a Data Collection and Scheduling Tool (DCAST) that includes a post-event module to mitigate issues outlined above. If successful, the Navy could consider adopting it at all range scheduling facilities.

Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

Key West Detailed Comments

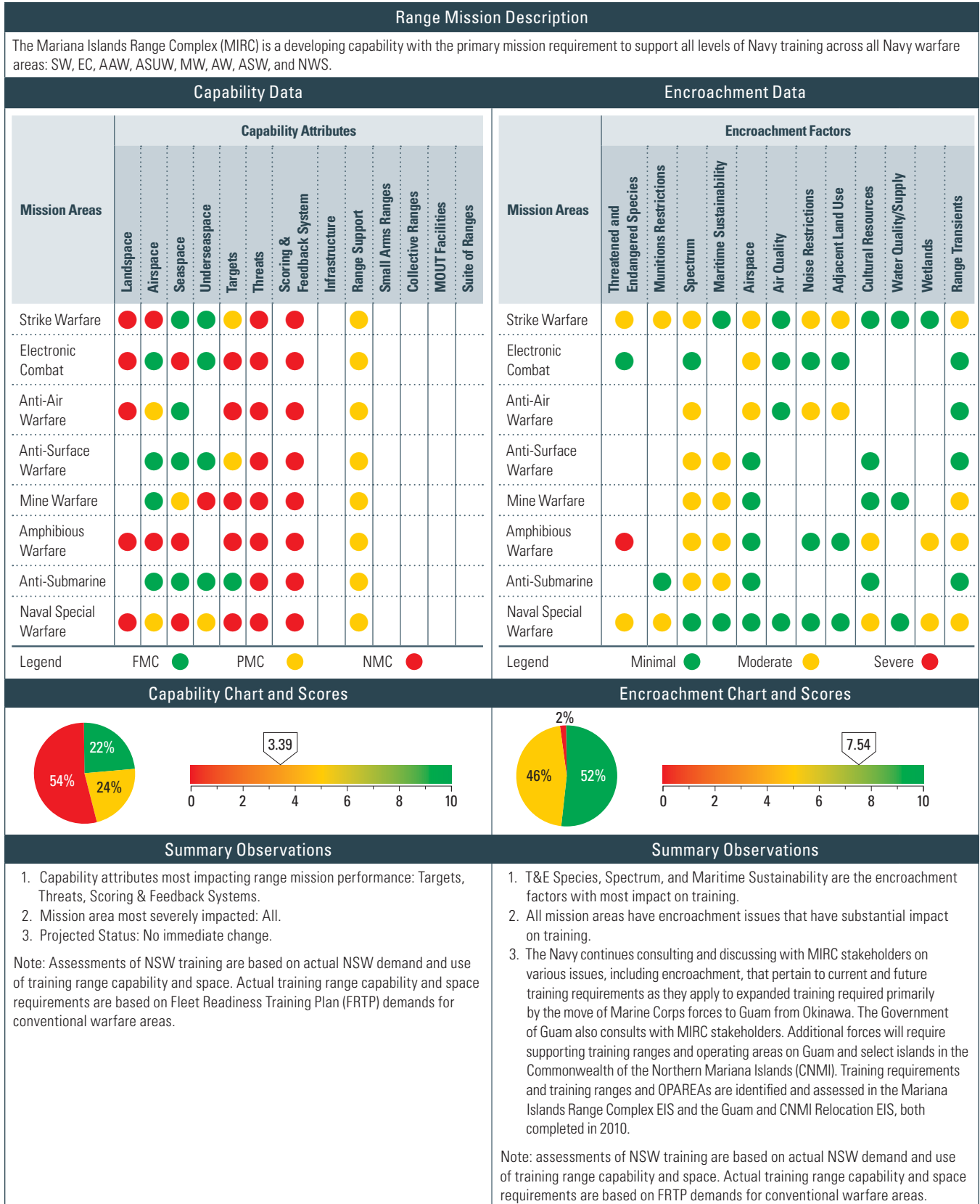
Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Noise Restrictions	Anti-Air Warfare (AAW)	●	Sonic booms generated by VFA aircraft in the vicinity of the Dry Tortugas reportedly startles visitors and may affect physical deterioration of historic Fort Jefferson. Airspeed limits on Key West Complex participating aircraft prohibit certain training events, segment training, reduce realism, and inhibit new tactics development. A noise analysis to determine frequency of sonic booms, potential effects on personnel/property, and minimum distance requirements to preclude future noise complaints was completed. The findings of the resulting Environmental Assessment recommended stipulating the expansion of an existing buffer zone around the Dry Tortugas by 2,000 ft., from 18,000 to 20,000 ft., to ensure natural and historic resources would not be impacted.
Wetlands	Anti-Air Warfare (AAW)	●	Wetlands vegetation encroachment obstructs air traffic controllers' lines of site with aircraft and affects radar performance. Management of wetland vegetation imposes additional natural resource management requirements. This air traffic control obstruction could affect access to portions of the Key West Range Complex airspace. The Navy recommends to implement actions to restore and enhance airfield clearance safety areas. No current action.

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Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

Mariana Islands Assessment Details



Mariana Islands Assessment Details

Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	2.80	2.80	2.80	2.80	Encroachment Scores	8.49	7.58	7.54	7.54
<ol style="list-style-type: none"> In the CY2010 report, the range specific display incorrectly showed 3.04 as the capability score in the graphic. The actual tabulated score was 2.80. There has been no change between CY2008 through CY2011. In support of the Marine Corps Guam relocation, the Marine Corps has proposed new small arms, known distance, and maneuver ranges on Guam and Tinian. A .50 caliber machine gun range has been proposed for construction on Guam. Additional training support facilities have been proposed on Guam and Tinian, and additional training facilities have been proposed on Guam, Tinian, and other Northern Mariana Islands. In support of U.S. Air Force training and operational requirements, a new divert airfield has been proposed for aircraft operating from Andersen Air Force Base on Guam. To more safely and securely accommodate Navy and other Service training requirements, a four phase air space plan is being proposed that would reconfigure existing SUA and create new Warning Areas and Restricted Areas for conduct of military training. A Mariana Islands Test and Training (MITT) EIS/OEIS is being conducted that will propose a site-specific AMW amphibious landing area alternative on Tinian, and expand Restricted Airspace and the Surface Danger Zone around FDM. A multi-purpose range craft is being constructed for deployment in Seventh Fleet that will support aerial drone, Mk-30 (ASW target), and mine shape launch and recovery, deployment/recovery of the portable ASW range, and EW training (limited). 					<ol style="list-style-type: none"> Encroachment assessments for CY2008 were different than for CY2009, CY2010, and CY2011. The algorithm for the overall assessment score for CY2009 through CY2011 was revised from the original algorithm used in CY2008 to provide greater fidelity and consistency across all range complexes. Based on an improved review process and revised algorithms, the assessments for CY2009, CY2010, and CY2011 provide a more accurate assessment of encroachment. The assessments for the latter three years reveal there has been little encroachment change from year to year, with relatively constant overall scores for CY2009, CY2010, and CY2011. The assessment score change from CY2009 to CY2010 is due to a change in EC for airspace of green in CY2009 to yellow in CY2010. The change is attributed to an increased encroachment pressure from commercial aviation regarding the use of chaff and flares in the vicinity of the air routes. Potential growth in military training activity in the Mariana Islands will be subjected to encroachment similar to current training. As training activities spread to the various islands, encroachment will vary depending on each island's environmental and mitigation protocols. The MIRC EIS and the Guam and CNMI Relocation EIS, both completed in 2010, are recent and comprehensive. The National Environmental Policy Act (NEPA) addresses compliance for current and future military training and testing in the Mariana Islands. An EOD emergency open detonation area is needed on Tinian for disposal of UXO, primarily left from WWII actions. CNMI EPA office may require permit for a detonation area. The Mariana Islands Test and Training (MITT) EIS/OEIS is an update to the Mariana Islands Range Complex (MIRC) EIS/OEIS. The MITT EIS/OEIS addresses the changes in testing and training cycles as well as the incorporation of new technology and analyzes the impact of these on the environment. A revised Guam INRMP is due to be completed in 2011. 				

Mariana Islands Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Strike Warfare (STW)	●	Land area is too small, all required ordnance is not cleared for use. Size of land area detracts from all levels of training. Conduct feasibility study for establishing a high-fidelity and urban target, inert, A-G range, and training area with an associated Warning Area. No completion date identified
	Electronic Combat (EC)	●	Land area does not meet requirements for EC training. Prevents conduct of EC training. Acquire appropriate land area to support EC assets. No completion date has been identified.
	Anti-Air Warfare (AAW)	●	No suitable land area is available under the training airspace. Prevents realistic overland detection and tracking scenarios. A four phase air space plan and planned NEPA assessment has been proposed with a phased conversion of Air Traffic Control Assigned Airspaces (ATCAAs) to Warning Areas, and creation of new overland special use airspace. No completion date has been identified.
	Amphibious Warfare (AMW)	●	Minimal land area available for AMW training. Live fire not permitted; maneuver is restricted to use of roads; helicopters must land on designated airfields. Propose a site-specific Tinian amphibious landing area in the Mariana Islands Training and Testing (MITT) EIS/OEIS. A four phase air space plan and planned NEPA assessment has been proposed with a phased conversion of ATCAAs to Warning Areas, and creation of new overland special use airspace (SUA). No completion date has been identified.
	Naval Special Warfare (NSW)	●	Insufficient maneuver area that supports live fire training; NSW MOUT is too small; laser designators are not allowed. Limits NSW realistic training. Conduct study to locate land area and propose facilities that will support NSW training. No completion date has been identified.

Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

Mariana Islands Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Airspace	Strike Warfare (STW)	●	Size and altitudes of airspace too small. Cannot accommodate multiple strike packages. A four phase air space plan and planned NEPA has been proposed with the first phase being a conversion of ATCAAs to Warning Areas and Restricted Airspace. No completion date has been identified.
	Anti-Air Warfare (AAW)	●	No suitable land area is available under the training airspace. Prevents realistic overland detection and tracking scenarios. A four phase air space plan and planned NEPA assessment has been proposed with the first phase being a conversion of ATCAAs to Warning Areas and Restricted Airspace. No completion date has been identified.
	Amphibious Warfare (AMW)	●	Minimal airspace exists over beaches that support AMW training. Prevents air support training for AMW. A four phase air space plan and planned NEPA assessment has been proposed with the first phase being a conversion of ATCAAs to Warning Areas and Restricted Airspace. No completion date has been identified.
	Naval Special Warfare (NSW)	●	No special use airspace adjacent to land that supports High Altitude Low Opening (HALO) or High Altitude High Opening (HAHO) parachute training. Prevents complete range of required parachute training. Establish SUA in required area. No completion date has been identified.
Seaspace	Electronic Combat (EC)	●	No EC threat stimulation assets, special use airspace and associated at-sea OPAREA supporting EC training. Prevents realistic EC training. Establish SUA with associated OPAREA to support EC training, and obtain EC threat emitter assets. A four phase air space plan and planned NEPA has been proposed with a phased conversion of ATCAAs to Warning Areas, and creation of new overland SUA. The proposal needs to be reviewed with inclusion of a plan for EC SUA, associated OPAREA, and threat emitter and jamming requirements. No completion date has been identified.
	Mine Warfare (MW)	●	Insufficient geographic references for aerial mine laying; no designated operating area for mine laying. Prevents training to proper procedures for aerial mining. Designate geographic reference point and OPAREA for aerial mining. No completion date has been identified.
	Amphibious Warfare (AMW)	●	A site-specific designated sea space supported by required beach front is not available, which prevents conduct of AMW beach assault training. Propose a site-specific Tinian amphibious landing area in the MITT EIS/OEIS. No completion date has been identified.
	Naval Special Warfare (NSW)	●	Insufficient beachfront contiguous with sea area; coral heads prevent access to beaches from sea. NSW training is limited. Conduct study to locate area to support required training. No completion date has been identified.
Underseaspace	Mine Warfare (MW)	●	No dedicated area for SWAG or mine avoidance training. The extreme water depth and lack of variance in sea bottom is problematic, and limits mine countermeasures training. Study feasibility of installing a mine training range with instrumented shapes, false targets, and mines for SWAG training. No completion date has been identified.
	Naval Special Warfare (NSW)	●	Insufficient beachfront contiguous with sea area; coral heads prevent access to beaches from sea. NSW training limited. Conduct study to locate area to support required training. No completion date has been identified.
Targets	Strike Warfare (STW)	●	There are no raked, strafe, structural, revetted, or moving targets; no urban terrain or targets; targets do not support cluster munitions; targets do not support multiple strike packages; targets do not have spectral signatures. These conditions limit live fire and realistic training. Conduct feasibility study to establish high fidelity, inert, A-G range and training area with associated Warning Area. No completion date has been identified.
	Electronic Combat (EC)	●	No targets are available at the Mariana Islands Range. Full range of EC training that requires target support is not available. Study feasibility of establishing target unit at the range complex. A multi-purpose range craft is being constructed for deployment in Seventh Fleet that will support aerial drone, M-30 (ASW target), and mine shape launch and recovery, deployment/recovery of the portable ASW range, and EW training (limited). No completion date has been identified.
	Anti-Air Warfare (AAW)	●	No targets or contract opposing air are available at the Mariana Islands Range. Full range of AAW training that requires target support is not available. Study feasibility of establishing target unit at the range complex. A multi-purpose range craft is being constructed for deployment in the Seventh Fleet that will support aerial drone, M-30 (ASW target), and mine shape launch and recovery, deployment/recovery of the portable ASW range, and EW training (limited). No completion date has been identified.
	Anti-Surface Warfare (ASUW)	●	There is limited surface target support available for training at the Mariana Islands Range Complex. Full range of ASUW training that requires target support is not available. Study feasibility of establishing target unit at the range complex. No completion date has been identified.

Mariana Islands Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Targets	Mine Warfare (MW)	●	No targets available from range; users sometimes supply their own targets. This condition will degrade training capability for organic mine countermeasures systems (OMCM) units. Study feasibility of installing a mine range with instrumented mines, false targets, and mines for SWAG training. A multi-purpose range craft is being constructed for deployment in Seventh Fleet that will support aerial drone, M-30 (ASW target), and mine shape launch and recovery, deployment/recovery of the portable ASW range, and EW training (limited). No completion date has been identified.
	Amphibious Warfare (AMW)	●	No targets exist for AMW Firing Exercise (FIREX) training. No co-located live fire area and amphibious landing area exists. Prevents live fire training associated with AMW training. Integrate Navy AMW target requirements into Marine Corps amphibious feasibility study. No completion date has been identified.
	Naval Special Warfare (NSW)	●	No targets exist for NSW training. MOUT facility is limited. Reduces live fire proficiency; inhibits new tactics. Study feasibility of establishing a targets division at range complex. No completion date has been identified.
Threats	Strike Warfare (STW)	●	No OPFOR or EC threat stimulation is available at the range. Full range of STW training that requires OPFOR support is not available. Study feasibility of establishing OPFOR resources at the range complex. No completion date has been identified.
	Electronic Combat (EC)	●	Same as above.
	Anti-Air Warfare (AAW)	●	Same as above.
	Anti-Surface Warfare (ASUW)	●	Same as above.
	Mine Warfare (MW)	●	Same as above.
	Amphibious Warfare (AMW)	●	Same as above.
	Anti-Submarine (ASW)	●	Same as above.
Scoring & Feedback	Strike Warfare (STW)	●	No instrumentation exists at the range. Full range of training that requires instrumentation is not available. Study feasibility of providing instrumentation to the range complex. No completion date has been identified.
	Electronic Combat (EC)	●	Same as above.
	Anti-Air Warfare (AAW)	●	Same as above.
	Anti-Surface Warfare (ASUW)	●	Same as above.
	Mine Warfare (MW)	●	Same as above.
	Amphibious Warfare (AMW)	●	Same as above.
	Anti-Submarine (ASW)	●	Same as above.
Range Support	Strike Warfare (STW)	●	Lack of a web-based scheduling system with pre-event, real-time, and post-event modules precludes most efficient scheduling and documenting of range usage. Post-event reporting is particularly critical for ordnance expenditures or active sonar usage in at-sea OPAREAs, since the MMPA permits require the Navy to periodically report these values. Non-compliance or inaccurately reporting post-event values to regulators risks range access or prohibitions on training events that involve active sonar or high explosives at-sea. PACFLT is developing a Data Collection and Scheduling Tool (DCAST) that includes a post-event module to mitigate issues outlined above. DCAST development is in progress and deployment has begun in CONUS. Deployment date for WESTPAC will be completed during FY2012.
	Electronic Combat (EC)	●	Same as above.
	Anti-Air Warfare (AAW)	●	Same as above.
	Anti-Surface Warfare (ASUW)	●	Same as above.
	Mine Warfare (MW)	●	Same as above.
	Amphibious Warfare (AMW)	●	Same as above.
	Anti-Submarine (ASW)	●	Same as above.

Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

Mariana Islands Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Threatened & Endangered Species	Strike Warfare (STW)	●	Threatened species and migratory bird habitat restricts area available for training on Farallon de Medinilla (FDM). Restrictions create avoidance areas, prohibit certain training events, reduce range access, segment training/reduce realism, complicate night and all-weather training, and raise flight altitudes. The Navy complies with current regulations, attempts to negotiate a reduction in the number of restrictions throughout the complex, and designates alternate locations for STW that do not have such restrictions.
	Amphibious Warfare (AMW)	●	The MMPA, ESA, the EIS for Military Training in the Marianas, and the U.S. Department of Agriculture (USDA) Brown Tree Snake (BTS) protocol place restrictions on military training throughout the Marianas. Regulatory controls documented in the INRMPs have placed restrictions on military operations. Coral and essential fish habitat (EFH) conservation, marine mammal protection, munitions in the water, turtle nesting, and BTS protocols are some of the encroachment issues that influence training activities. Landing Craft Air Cushion (LCAC) and Amphibious Assault Vehicle (AAV) landings on the beaches in the Marianas are problematic. Amphibious landings require compensatory coral reef mitigation efforts. Species restrictions create avoidance areas, prohibit certain training events, reduce range access, segment training/reduce realism, raise flight altitudes, complicate night and all-weather training, and raise flight altitudes. All military Services are subject to and conform to training restrictions. The Navy should attempt to negotiate a reduction in the number of restrictions throughout the complex.
	Naval Special Warfare (NSW)	●	The MMPA, ESA, the EIS for Military Training in the Marianas, and the USDA BTS protocol place restrictions on military training throughout the Marianas. Regulatory controls documented in the INRMPs have placed restrictions on military training. Restrictions create avoidance areas, prohibit certain training events, reduce range access, segment training/reduce realism. The Navy continues to pursue regulatory relief while adhering to compliance provisions.
Munitions Restrictions	Strike Warfare (STW)	●	De-vegetation and erosion on FDM caused by explosive munitions has restricted and prohibited certain munitions expenditures. FDM restrictions create avoidance areas, prohibit certain training events. FDM users are continually reminded to use only authorized munitions and to keep munitions on island. All military Services are subject to and conform to training restrictions.
	Naval Special Warfare (NSW)	●	EOD permitting in the Ordnance Annex and UXO on the inactive mortar range, and live coral beds on Tinian are issues that restrict EOD and training activity. Restrictions prohibit certain training events. The Navy is evaluating alternatives that will allow EOD and appropriate training activity.
Spectrum	Strike Warfare (STW)	●	Employment of Link 16 is restricted. Restrictions limit spectrum operations and prohibit certain training events, segment training/reduce realism, reduce training days, limit application of new weapons technologies, and inhibit new tactics development. The Navy continues to coordinate with appropriate frequency allocation and oversight agencies to seek spectrum relief, and to develop encroachment strategies that will reduce encroachment, while ensuring pending use of emerging spectrum technologies. Competition for frequency spectrum will add increased pressure on available bandwidth for Naval operations.
	Anti-Air Warfare (AAW)	●	Same as above.
	Anti-Surface Warfare (ASUW)	●	Employment of Link 16, SPY-1 radar, SPS 49 radar, and IFF are restricted. Restrictions limit spectrum operations and prohibit certain training events, segment training/reduce realism, reduce training days, limit application of new weapons technologies, and inhibit new tactics development. The Navy continues to coordinate with appropriate frequency allocation and oversight agencies to seek spectrum relief and to develop encroachment strategies that will reduce encroachment while ensuring pending use of emerging spectrum technologies. Competition for frequency spectrum will add increased pressure on available bandwidth for Naval operations.
	Mine Warfare (MW)	●	Same as above.
	Amphibious Warfare (AMW)	●	Same as above.
	Anti-Submarine (ASW)	●	Same as above.

Mariana Islands Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Maritime Sustainability	Anti-Surface Warfare (ASUW)	●	<p>Maritime protective and mitigation measures undertaken in compliance with regulatory requirements have resulted in training restrictions that reduce training flexibility, force segmented training, and ultimately reduce training realism. All at-sea training is impacted to some degree; impacts are most significant to integrated warfare training using active underwater acoustic sources or in-water explosive ordnance.</p> <p>The Navy and National Marine Fisheries Service (NMFS) have developed science based protective and mitigation measures that adequately protect marine species while accommodating military readiness activities. The Navy continues to develop EISs, and obtain permits and authorizations for its range complexes to ensure military training complies with applicable laws and regulations.</p> <p>Litigation risks remain a concern, entailing the potential to delay or further restrict training, despite the protective and mitigation measures applied by the Navy in compliance with the MMPA and the ESA. Endangered species encroachment has created avoidance areas that have resulted in some reduction of training days and prohibits certain training events. This area is relatively small in scope; however, if these types of restrictions were applied to other species/areas, there would be significant impacts to readiness through reduction in range access, segmentation of training/reduction in realism, limits on the application of new technologies, raised flight altitudes, reduced live fire proficiency, increased personnel tempo, and increased O&M costs. The Navy will continue to invest in marine mammal research, rely on scientifically valid empirical data results as basis of marine mammal mitigation development, and factor mitigation effectiveness into permit requests. It will continue education of Fleet units to adhere to the maritime protective and mitigation measures, and sponsor public education outreach efforts.</p> <p>The Navy's authorizations under the MMPA and ESA include an adaptive management approach that includes continually evaluating existing mitigation measures for their potential impacts on training. If impacts on training from mitigation measures are identified and documented, the Navy will raise these impacts with the NMFS for resolution during an annual adaptive management review process. The Navy is currently preparing environmental compliance documentation to renew its MMPA and ESA authorizations, which will consider any impacts on training stemming from existing mitigations measures and propose changes as warranted.</p>
	Mine Warfare (MW)	●	Same as above.
	Amphibious Warfare (AMW)	●	Same as above.
	Anti-Submarine (ASW)	●	Same as above.
Airspace	Strike Warfare (STW)	●	Marianas airspace is adequate when the ATCAAs are available; however, scheduling can be problematic as FAA is not always flexible to short notice requests. The FAA in the Marianas has tremendous pressure from the airlines. Warfare areas participating in combined arms training are impacted by the current lack of SUA over land areas in the Marianas. Encroachment from airspace restrictions creates avoidance areas, prohibits certain training events, reduces range access, segments training/reduces realism, inhibits new tactics development. The Navy is considering establishing Warning Areas to replace the ATCAAs. For possible range complex upgrades with live fire ranges, there will be a requirement for additional SUA, including Restricted Airspace, over the live fire ranges.
	Electronic Combat (EC)	●	FAA restrictions on EC/chaff operations in proximity to air routes is problematic. EC/chaff restrictions creates avoidance areas, prohibits certain training events, segments training/reduces realism, inhibits new tactics development, and limits application of new technologies. The Navy is negotiating with the FAA for relief; but there is no pending resolution date.
	Anti-Air Warfare (AAW)	●	Marianas airspace is adequate when the ATCAAs are available; however, scheduling can be problematic as the FAA is not always flexible to short notice requests. The FAA in the Marianas has tremendous pressure from the airlines. Warfare areas participating in combined arms training are impacted by the current lack of SUA over land areas in the Marianas. Encroachment from airspace restrictions creates avoidance areas, prohibits certain training events, reduces range access, segments training/reduces realism, and inhibits new tactics development. The Navy is considering establishing Warning Areas to replace the ATCAAs. For possible range complex upgrades with live fire ranges, there will be a requirement for additional SUA, including Restricted Airspace, over the live fire ranges.
Noise Restrictions	Strike Warfare (STW)	●	There is a continuing concern with noise at Andersen Northwest Field, due to residential areas adjoining the property. Nighttime flying activities are restricted and flight tracks are routed to avoid populated areas. Only mission essential aircraft arrivals and departures are scheduled between 2200 and 0600 hours. Noise-related restrictions prohibit certain training events and complicate night training. The Air Force continues close coordination with local stakeholders to ensure military operations can proceed normally.
	Anti-Air Warfare (AAW)	●	Same as above.

Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

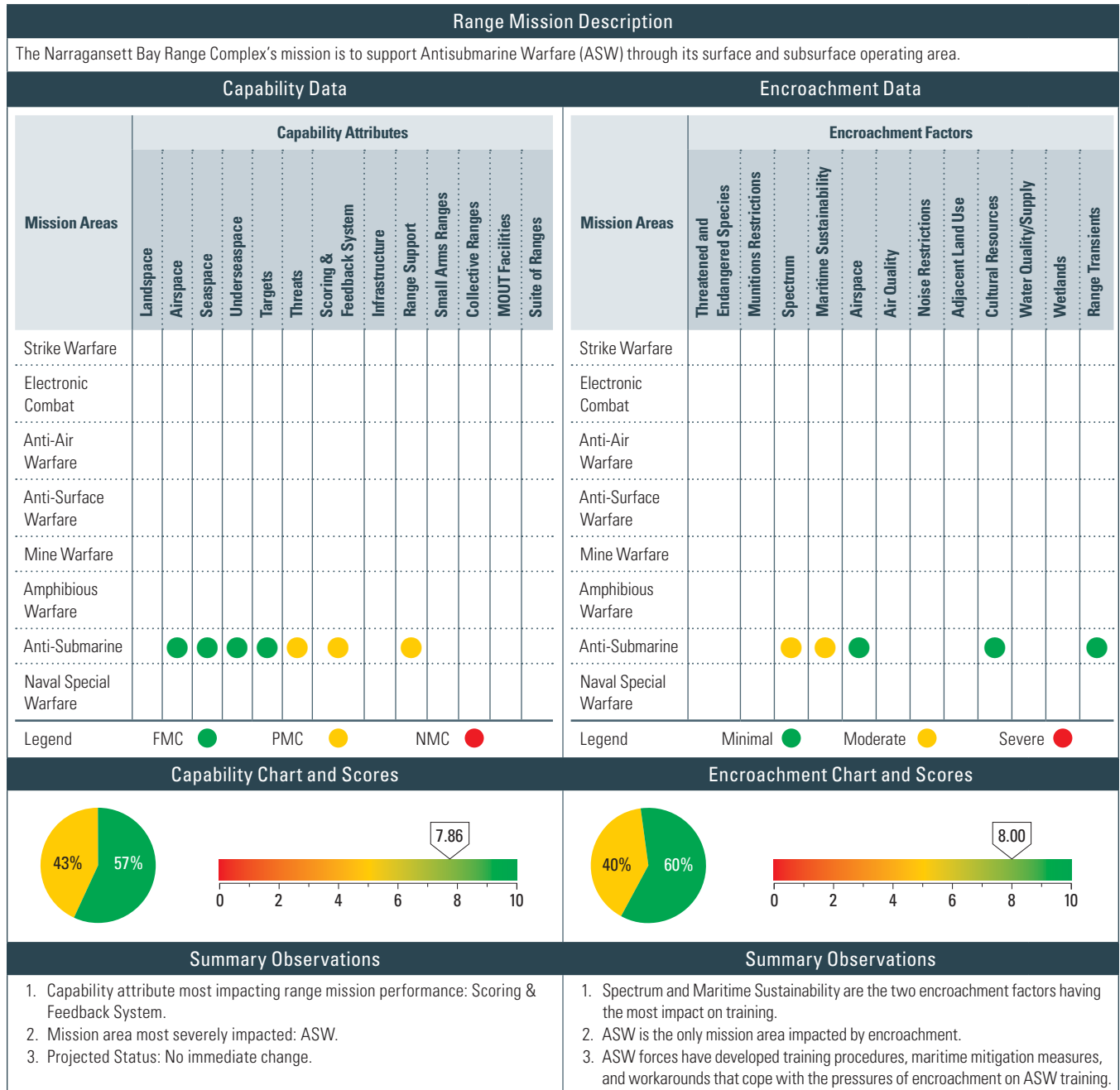
Mariana Islands Detailed Comments

			Encroachment Observations
Factors	Assigned Training Mission	Score	Comments
Adjacent Land Use	Strike Warfare (STW)	●	Privately owned land near the runway at Andersen Air Field Northwest falls within the clear zones for aircraft operations. Nighttime flying activities are restricted and flight tracks are routed to avoid populated areas. Only mission essential aircraft arrivals and departures are scheduled between 2200 and 0600 hours. Private owners are a source for noise complaints. Noise-related restrictions prohibit certain training events and complicate night training. The Air Force continues close coordination with local stakeholders to ensure military operations can proceed normally.
	Anti-Air Warfare (AAW)	●	Same as above.
Cultural Resources	Amphibious Warfare (AMW)	●	When an LCAC lands at Chulu Beach, Tinian, it must remain on full air cushion until the entire craft is on the beach. LCAC full cushion operations on Chulu Beach are problematic as the beachfront is narrow and shallow. LCAC training restrictions create avoidance areas and prohibit certain training events. This condition is currently insolvable. The Navy is evaluating a site-specific analysis for amphibious landings on Tinian in the MITT EIS/OEIS.
	Naval Special Warfare (NSW)	●	The pervasiveness of cultural resources in the Marianas limits locations for NSW ranges and training areas where special operations forces would logically train. Restrictions create avoidance areas, prohibit certain training events, reduce range access, and segment training/reduce realism. Insolvable.
Wetlands	Amphibious Warfare (AMW)	●	There are sensitive wetlands areas in the vicinity of the Reserve Craft Beach (RCB), which GovGuam has declared a conservation area. The Navy owns the RCB, but GovGuam has restricted its use. Restrictions over wetlands reduce range access, create avoidance areas, segment training and/or reduce realism, and raise flight altitudes. The Navy may try to negotiate with GovGuam to lessen the impacts of RCB restrictions.
	Naval Special Warfare (NSW)	●	There are sensitive wetlands areas in the vicinity of the RCB, which GovGuam has declared a conservation area. The Navy owns the RCB, but GovGuam has restricted its use. Restrictions create avoidance areas, prohibit certain training events, reduce range access, and segment training/reduce realism. The Navy may try to negotiate with GovGuam to lessen the impacts of RCB restrictions.
Range Transients	Strike Warfare (STW)	●	Commercial and private fishing boats and dive boats frequent near-shore areas throughout the Marianas. Transient boat traffic interrupts or stops military training activity. Training interruptions reduce range access, create avoidance areas, segment training and/or reduce realism, and prohibit certain training events. The Navy pursues outreach to local mayors, fishermen, and tour operators to ensure better understanding of military training. The Navy is pursuing an exclusion zone around FDM for safety reasons.
	Mine Warfare (MW)	●	Commercial and private fishing boats and dive boats frequent near-shore areas throughout the Marianas. There are no enforced surface danger zones (SDZs) over the water. Transient boat traffic interrupts or stops military training activity. Transient boat activity reduces range access, creates avoidance areas, segments training and/or reduces realism, and prohibits certain training events. Active patrolling of near-shore areas may need to be implemented to avoid civilian encroachment onto hot ranges and training areas. The Navy pursues outreach to local mayors, fishermen, and tour operators to ensure better understanding of military training. The Navy is pursuing an exclusion zone around FDM for safety reasons.
	Amphibious Warfare (AMW)	●	Same as above.
	Naval Special Warfare (NSW)	●	Commercial and private fishing boats and dive boats frequent near-shore areas throughout the Marianas. There are no enforced SDZs over the water. Transient boat traffic interrupts or stops military training activity. Transient boat activity reduces range access, creates avoidance areas, segments training and/or reduces realism, and prohibits certain training events. Active patrolling of near-shore areas may need to be implemented to avoid civilian encroachment onto hot ranges and training areas. The Navy is pursuing outreach to local mayors, fishermen, and tour operators to ensure better understanding of military training.

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Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

Narragansett Bay Assessment Details



Narragansett Bay Assessment Details

Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	7.14	7.86	7.86	7.86	Encroachment Scores	8.75	8.00	8.00	8.00
1. ASW Scoring & Feedback was red in CY2008 and re-evaluated to yellow in CY2009.					1. Encroachment assessments for CY2008 were different than for CY2009, CY2010, CY2011, and CY2012. The algorithm for the overall assessment score for 2009–2012 was revised from the original algorithm used in CY2008 to provide greater fidelity and consistency across all range complexes. Based on an improved review process and revised algorithms, the assessments for CY2009, CY2010, and CY2011 provide a more accurate assessment of encroachment. The assessments for the latter three years reveal there has been little encroachment change from year to year, with relatively constant overall scores for CY2009, CY2010, and CY2011. 2. The VACAPES-Northeast RCMP update is currently in progress. 3. Department of Interior (DOI) and private energy interests in the Outer Continental Shelf (OCS) are increasing as domestic energy demand builds. Naval offshore operating areas and training events may be affected. High priority areas include training ranges and sea-space in and adjacent to all Navy OPAREAs. OASN (E,I&E), as DoD spokesman for military offshore use, continues to work closely with the Fleets and DOI’s Bureau of Ocean Energy Management (BOEM) to resolve issues of combined use of the OCS important to both agencies. Fleet review and analysis of impacts from both oil/gas and wind energy “lease sale” areas (Mission Critical Areas [MCAs]) have been reviewed and forwarded to OSD, DoD, and DOI coordination continues. 4. Narragansett Bay had no emerging encroachment issues during CY2011 that affect Narragansett Bay operations. CY2012 encroachment assessment data remain the same as CY2011.				

Narragansett Bay Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Threats	Anti-Submarine (ASW)	●	There are limited dedicated live submarines, surface ships, or aircraft to serve in the OPFOR role. This shortfall prohibits certain training events, reduces realism, inhibits tactics, increases personnel op-tempo, and increases O&M costs. The Navy will invest in additional threat OPFOR and increase availability of submarines through the Diesel Electric Submarine Initiative (DESI) and aircraft through the Contract Air Support (CAS) programs. No completion date has been identified.
Scoring & Feedback Systems	Anti-Submarine (ASW)	●	There is no underwater tracking range, scoring capability, M&S, or post-mission feedback. This prohibits certain training events, reduces realism, limits weapon technologies, inhibits tactics, reduces live fire proficiency, increases personnel op-tempo, and increases O&M costs. The Navy plans to expand and improve 2-D & 3-D coverage of the OPAREA; invest in JNTC compliant M&S; and improve debrief capabilities. An East Coast USWTR is planned for the Jacksonville Range Complex—IOC is planned for FY2017. No completion date has been identified for other plans.
Range Support	Anti-Submarine (ASW)	●	The lack of a web-based scheduling system with pre-event, real-time, and post-event modules precludes most efficient scheduling and documenting of range usage. Post-event reporting is particularly critical for ordnance expenditures or active sonar usage in at-sea OPAREAs, since MMPA permits require the Navy to periodically report these values. Non-compliance or inaccurately reporting post-event values to regulators risks range access or prohibitions on training events that involve active sonar or high explosives at-sea. PACFLT is developing a Data Collection and Scheduling Tool (DCAST) that includes a post-event module to mitigate issues outlined above. If successful, the Navy could consider adopting it at all range scheduling facilities.

Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

Narragansett Bay Detailed Comments

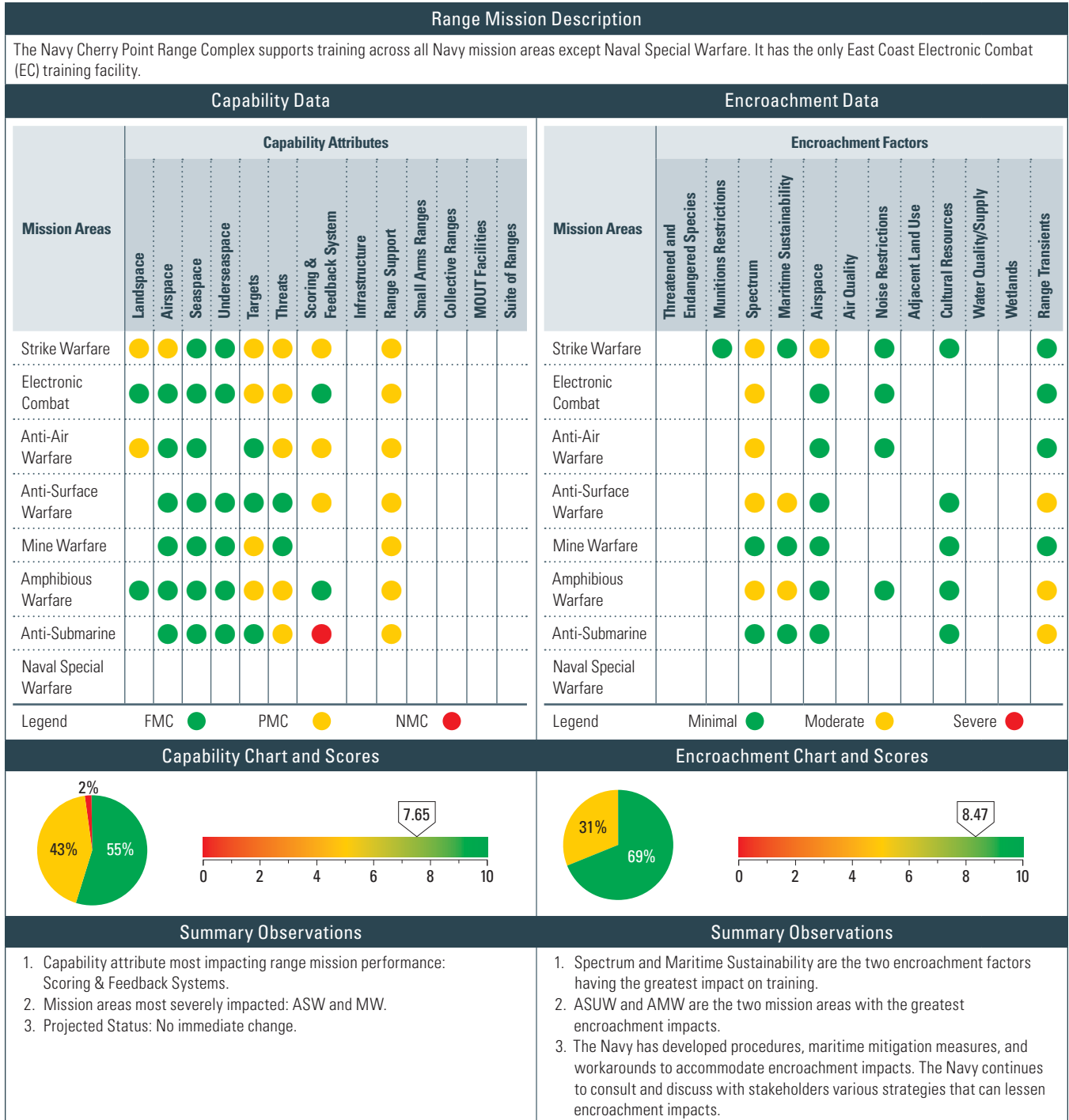
Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Spectrum	Anti-Submarine (ASW)	●	Employment of Link 16, SPY-1 radar, and IFF are restricted. Restrictions limit spectrum operations and prohibit certain training events, segment training/reduce realism, reduce training days, limit application of new weapons technologies, and inhibit new tactics development. The Navy continues to coordinate with appropriate frequency allocation and oversight agencies to seek spectrum relief, and to develop encroachment strategies that will reduce encroachment, while ensuring pending use of emerging spectrum technologies. Competition for frequency spectrum will add increased pressure on available bandwidth for Naval operations.
Maritime Sustainability	Anti-Submarine (ASW)	●	<p>Maritime protective and mitigation measures undertaken in compliance with regulatory requirements have resulted in training restrictions that reduce training flexibility, force segmented training, and ultimately reduce training realism. All at-sea training is impacted to some degree; impacts are most significant to integrated warfare training using active underwater acoustic sources or in-water explosive ordnance.</p> <p>The Navy and National Marine Fisheries Service (NMFS) have developed science based protective and mitigation measures that adequately protect marine species while accommodating military readiness activities. The Navy continues to develop EISs and obtain permits and authorizations for its range complexes to ensure military training complies with applicable laws and regulations. Litigation risks remain a concern, entailing the potential to delay or further restrict training, despite the protective and mitigation measures applied by the Navy in compliance with the Marine Mammal Protection Act (MMPA) and the Endangered Species Act (ESA). Endangered species encroachment from the North Atlantic Right Whale has created avoidance areas that have resulted in some reduction of training days and prohibits certain training events. This area is relatively small in scope; however, if these types of restrictions were applied to other species/areas, there would be significant impacts to readiness through reduction in range access, segmentation of training/reduction in realism, limits on the application of new technologies, raised flight altitudes, reduced live fire proficiency, increased personnel tempo, and increased O&M costs. The Navy will continue to invest in marine mammal research, rely on scientifically valid empirical data results as basis of marine mammal mitigation development, factor mitigation effectiveness into permit requests, and continue education of Fleet units to adhere to the maritime protective and mitigation measures. It will also sponsor public education outreach efforts.</p> <p>The Navy’s authorizations under the MMPA and ESA include an adaptive management approach that includes continually evaluating existing mitigation measures for their potential impacts on training. If impacts on training from mitigation measures are identified and documented, the Navy will raise these impacts with NMFS for resolution during an annual adaptive management review process. The Navy is currently preparing environmental compliance documentation to renew its MMPA and ESA authorizations by January 2014, which will consider any impacts on training stemming from existing mitigations measures and propose changes as warranted.</p>

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Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

Navy Cherry Point Assessment Details



Navy Cherry Point Assessment Details

Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	7.40	7.50	7.50	7.65	Encroachment Scores	9.29	8.33	8.33	8.47
<p>1. The airspace training requirement for STW was re-evaluated between the CY2008 report and CY2009. The impact assessment from red to yellow based on review of similar impacts at Jacksonville and VACAPES range complexes in order to achieve a consistent evaluation between ranges.</p> <p>2. MW Scoring & Feedback Systems changed from red to white based on USFF evaluation that TSPI Scoring data is not required.</p>					<p>1. Encroachment assessments for CY2008 were different than for CY2009, CY2010, and CY2011. The algorithm for the overall assessment score for CY2009 through CY2011 was revised from the original algorithm used in CY2008 to provide greater fidelity and consistency across all range complexes. Based on an improved review process and revised algorithms, the assessments for CY2009, CY2010, and CY2011 provide more accurate assessments of encroachment. The assessments for the latter three years reveal there has been little encroachment change from year to year, with relatively constant overall scores for CY2009, CY2010, and CY2011, except EC Spectrum prohibits use of some threat simulation equipment. ASUW and AMW maritime Sustainability re-evaluated from red to yellow based on affect on range capabilities.</p> <p>2. The Cherry Point RCMP update is tentatively scheduled to begin in early 2012 and to be completed during FY2013. The Cherry Point OPAREA EAP is scheduled to be completed in December 2011.</p> <p>3. Department of Interior (DOI) and private energy interests in the Outer Continental Shelf (OCS) are increasing as domestic energy demand builds. Naval offshore operating areas and training events may be affected. High priority areas include training ranges and sea space in and adjacent to all Navy OPAREAs. OASN (E,I&E), as DoD spokesman for military offshore use, continues to work closely with the Fleets and DOI's Bureau of Ocean Energy Management (BOEM) to resolve issues of combined use of the OCS important to both agencies. Fleet review & analysis of impacts from both oil/gas and wind energy "lease sale" areas (Mission Critical Areas [MCAs]) have been reviewed and forwarded to OSD. DoD and DOI coordination continues.</p> <p>4. Cherry Point had no emerging encroachment issues during CY2011 that affect Cherry Point operations. The CY2012 Cherry Point encroachment assessment remains the same as CY2011.</p>				

Navy Cherry Point Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Strike Warfare (STW)	●	There is no land in the Navy Cherry Point range. Land area in contiguous Marine Corps ranges provides some land space and contains two targets, but the land size does not meet minimum requirements. Additional land space is only available at Dare County Bombing Range. The land area does not fully support size or topography requirements for placement of required number of targets. Use of live ordnance is not supported. The area is too small to support standoff PGM weapons. These shortfalls prohibit certain training events, reduce realism, reduce live fire proficiency. There are no local options for increasing land availability.
	Anti-Air Warfare (AAW)	●	Land space is only available at adjacent Marine Corps ranges and at the Dare County Bombing Range, which does not fully support size or topography requirements, or support surface combatant detection of aircraft over land. Use of flares is restricted. This prohibits certain training events, reduces realism, and increases personnel op-tempo. Overland ACM training is conducted at Fallon Range Training Complex. No additional land options are available.
Airspace	Strike Warfare (STW)	●	There is no land in the Navy Cherry Point range. Land area in contiguous Marine Corps ranges provides some land space, but the airspace configuration lacks characteristics for realistic tactical approaches and does not support the area size to meet minimum training requirements. Altitudes are limited to 17,999 ft.; and the area is not cleared for supersonic operations. This reduces realism, inhibits new tactics development, and reduces live fire proficiency. There are no local options for increasing land availability, but coordination and investment in new MOAs could reduce the impact on flight operations by increasing airspace area and altitudes.

Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

Navy Cherry Point Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Targets	Strike Warfare (STW)	●	No targets are available in the range. Two targets are moderately supported by contiguous USMC ranges, but do not allow live ordnance. This reduces realism, prohibits certain events, increases personnel op-tempo, and increases O&M costs. Improvements are expected due to recent investment planning for targets, but additional investment in moving and urban targets located in a land area that will support STW is required. No completion date has been identified.
	Electronic Combat (EC)	●	There is no EC support above level 2 for aircraft and no support for surface units. Contiguous USMC ranges provide some support, but lack mobile targets, and lack sufficient threat emitters to cover range of threats. This prohibits certain training events, and reduces realism. The Navy plans to invest in upgrades to MAEWR to cover range of required threats and targets. No completion date has been identified.
	Mine Warfare (MW)	●	There are insufficient training mines to support increased MW training requirements from MH-60 and MH-53 helicopter squadrons. This prohibits certain training events, reduces realism, inhibits tactics, increases personnel op-tempo, and increases O&M costs. The Navy will procure appropriate mix of recoverable and expendable inert bottom and moored mine shapes and instrumented bottom training mines to populate a temporary mine training area for major exercises. No completion date has been identified.
	Amphibious Warfare (AMW)	●	Portable beach obstacles are available, but are not cleared for engagement/destruction. This reduces realism for assault training, and prohibits certain training events, such as obstacle clearance. The Navy recommends investing in beach obstacles that will fully support training requirements. No completion date has been identified.
Threats	Strike Warfare (STW)	●	An additional amount of live or virtual fixed winged or helicopter OPFOR is required for realistic threat representation. This reduces realism; and prohibits certain events. The Navy plans to invest in additional Commercial Air Services (CAS) to serve as OPFOR. No completion date has been identified.
	Electronic Combat (EC)	●	EC threat representation does not fully support EC threat levels 3 or 4 for required mission areas. Existing instrumentation systems are becoming obsolete and unsupported through the FYDP. This reduces realism, inhibits tactics development, and greatly increases O&M costs. The Navy plans to maintain current upgrade schedule to preclude severe degradation of system capability. No completion date has been identified.
	Anti-Air Warfare (AAW)	●	Helicopter and supersonic threat OPFOR and required quantity of threat OPFOR is not available. This shortfall reduces realism, inhibits new tactics development, increases personnel op-tempo, and increases O&M costs. The Navy plans to invest in additional CAS to serve as OPFOR. No completion date has been identified.
	Amphibious Warfare (AMW)	●	There is no dedicated OPFOR consisting of minefields, submarines, small high-speed boats, a battalion-sized ground force, a company-sized mechanized force and anti-ship cruise missiles available. This reduces realism and inhibits new tactics development. The Navy will provide funding to develop a dedicated threat of live, virtual, and constructive OPFOR. No completion date has been identified.
	Anti-Submarine (ASW)	●	There are limited dedicated live submarines, surface ships, or aircraft to serve in the OPFOR role. This prohibits certain training events, reduces realism, inhibits tactics, increases personnel op-tempo, and increases O&M costs. The Navy plans to invest in additional threat OPFOR and increase availability of submarines through the DESI and aircraft through CAS. No completion date has been identified.
Scoring & Feedback System	Strike Warfare (STW)	●	OPAREA lacks full TSPI and EC&C coverage. It has no M&S capabilities and lacks real-time kill notification. This reduces realism; prohibits certain events, increases personnel op-tempo, and increases O&M costs. The Navy plans to expand and improve 2-D & 3-D coverage of OPAREA, invest in JNTC compliant M&S, and improve debrief and data collection capabilities. No completion date has been identified.
	Anti-Air Warfare (AAW)	●	OPAREA coverage is not complete. M&S is inadequate and there is no RTKN. Existing instrumentation systems are not supportable through the FYDP. This reduces realism, inhibits tactics, increases personnel op-tempo, and increases O&M costs. The Navy plans to expand and improve 2-D & 3-D coverage of the OPAREA, invest in JNTC compliant M&S, and improve debrief capabilities. No completion date has been identified.
	Anti-Surface Warfare (ASUW)	●	Range lacks full TSPI coverage. There is no M&S capabilities and it lacks automatic scoring. This reduces realism, inhibits tactics, increases personnel op-tempo, and increases O&M costs. The Navy plans to expand and improve 2-D & 3-D coverage of the OPAREA, invest in JNTC compliant M&S, and improve debrief capabilities. No completion date has been identified.
	Anti-Submarine (ASW)	●	There is no underwater tracking range, scoring capability, M&S, or post mission feedback. This prohibits certain training events; reduces realism, limits weapon technologies, inhibits tactics, reduces live fire proficiency, increases personnel op-tempo, and increases O&M costs. The Navy plans to develop and fund an East Coast USWTR, expand and improve 2-D & 3-D coverage of the OPAREA, invest in JNTC compliant M&S, and improve debrief capabilities. The East Coast USWTR IOC is planned for FY2017; no completion date has been identified for other plans.

Navy Cherry Point Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Range Support	Strike Warfare (STW)	●	The lack of a web-based scheduling system with pre-event, real-time, and post-event modules precludes most efficient scheduling and documenting of range usage. Post-event reporting is particularly critical for ordnance expenditures or active sonar usage in at-sea OPAREAs, since MMPA permits require the Navy to periodically report these values. Non-compliance or inaccurately reporting post-event values to regulators risks range access or prohibitions on training events that involve active sonar or high explosives at-sea. PACFLT is developing a Data Collection and Scheduling Tool (DCAST) that includes a post-event module to mitigate issues outlined above. If successful, the Navy could consider adopting it at all range scheduling facilities.
	Electronic Combat (EC)	●	Same as above.
	Anti-Air Warfare (AAW)	●	Same as above.
	Anti-Surface Warfare (ASUW)	●	Same as above.
	Mine Warfare (MW)	●	Same as above.
	Amphibious Warfare (AMW)	●	Same as above.
Anti-Submarine (ASW)	●	Same as above.	

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Spectrum	Strike Warfare (STW)	●	Employment of Link 16, SPY-1 radar, SPS 49 radar, and IFF are restricted. Restrictions limit spectrum operations and prohibit certain training events, segment training/reduce realism, reduce training days, limit application of new weapons technologies, and inhibit new tactics development. The Navy continues to coordinate with appropriate frequency allocation and oversight agencies to seek spectrum relief, and to develop encroachment strategies that will reduce encroachment, while ensuring pending use of emerging spectrum technologies. Competition for frequency spectrum will add increased pressure on available bandwidth for Naval operations.
	Electronic Combat (EC)	●	Restrictions resulting from electromagnetic spectrum encroachment include prohibitions from performing GPS jamming, authorization to radiate the Spoon Rest VHF early warning threat radar system, and restricted use of the Track While Scan Simulator (TWSS). Employment of Link 16, SPY-1 radar, SPS 49 radar, and IFF are restricted. Restrictions limit spectrum operations and prohibit certain training events, segment training/reduce realism, reduce training days, limit application of new weapons technologies, and inhibit new tactics development. The Navy continues to coordinate with appropriate frequency allocation and oversight agencies to seek spectrum relief, and to develop encroachment strategies that will reduce encroachment, while ensuring pending use of emerging spectrum technologies. Competition for frequency spectrum will add increased pressure on available bandwidth for Naval operations.
	Anti-Air Warfare (AAW)	●	Employment of Link 16, SPY-1 radar, SPS 49 radar, and IFF are restricted. Restrictions limit spectrum operations and prohibit certain training events, segment training/reduce realism, reduce training days, limit application of new weapons technologies, and inhibit new tactics development. The Navy continues to coordinate with appropriate frequency allocation and oversight agencies to seek spectrum relief, and to develop encroachment strategies that will reduce encroachment, while ensuring pending use of emerging spectrum technologies. Competition for frequency spectrum will add increased pressure on available bandwidth for Naval operations.
	Anti-Surface Warfare (ASUW)	●	Same as above.
	Amphibious Warfare (AMW)	●	Same as above.

Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

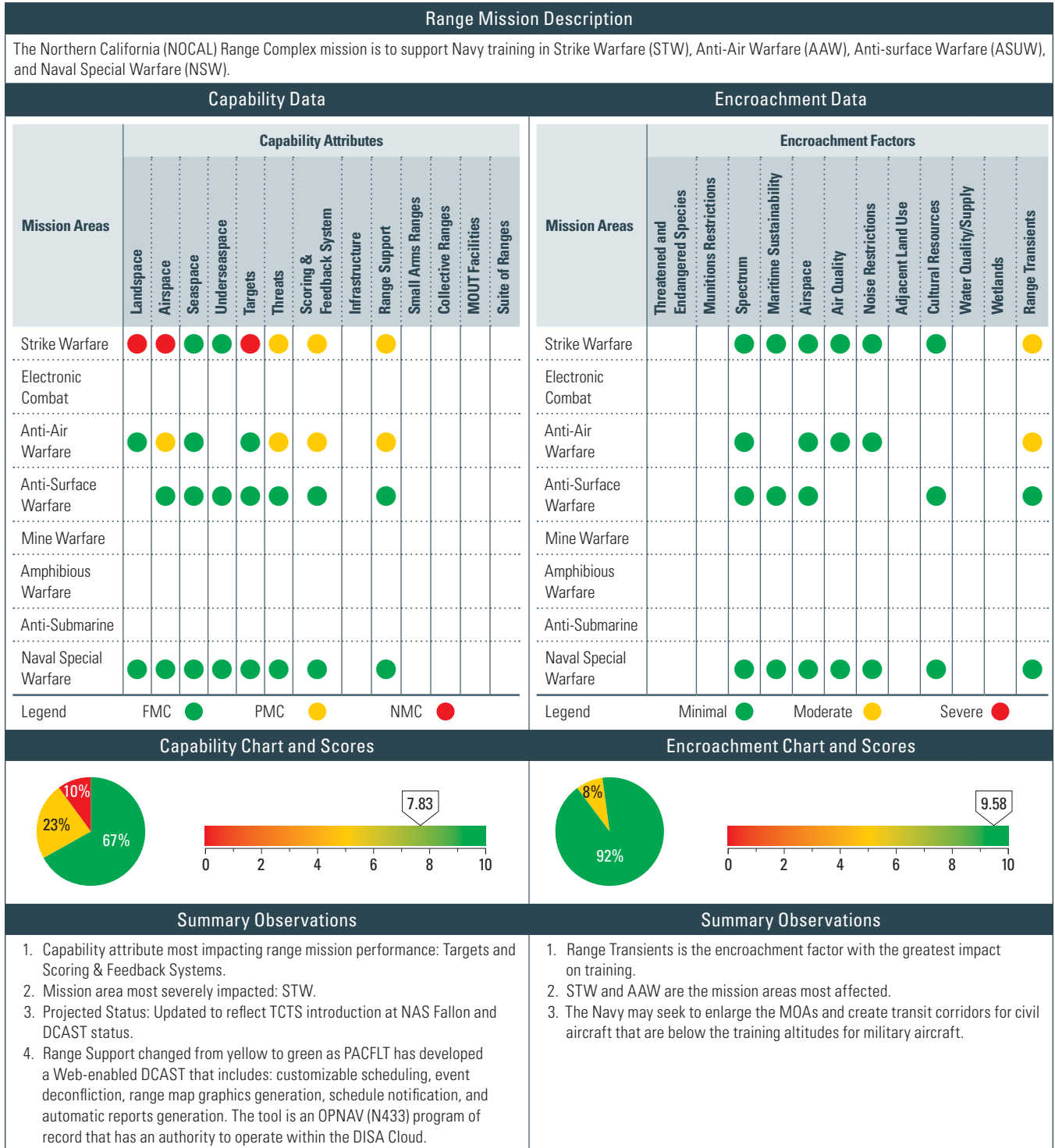
Navy Cherry Point Detailed Comments

			Encroachment Observations
Factors	Assigned Training Mission	Score	Comments
Maritime Sustainability	Anti-Surface Warfare (ASUW)	●	<p>Maritime protective and mitigation measures undertaken in compliance with regulatory requirements have resulted in training restrictions that reduce training flexibility, force segmented training, and ultimately reduce training realism. All at-sea training is impacted to some degree; impacts are most significant to integrated warfare training using active underwater acoustic sources or in-water explosive ordnance. The Navy and National Marine Fisheries Service (NMFS) have developed science based protective and mitigation measures that adequately protect marine species while accommodating military readiness activities. The Navy continues to develop EISs and obtain permits and authorizations for its range complexes to ensure military training complies with applicable laws and regulations.</p> <p>Litigation risks remain a concern, entailing the potential to delay or further restrict training, despite the protective and mitigation measures applied by the Navy in compliance with the MMPA and the Endangered Species Act (ESA). Endangered species encroachment from the North Atlantic Right Whale has created avoidance areas that have resulted in some reduction of training days and prohibits certain training events. This area is relatively small in scope; however, if these types of restrictions were applied to other species/areas, there would be significant impacts to readiness through reduction in range access, segmentation of training/reduction in realism, limits on the application of new technologies, raised flight altitudes, reduced live fire proficiency, increased personnel tempo, and increased O&M costs. The Navy will continue to invest in marine mammal research, rely on scientifically valid empirical data results as basis of marine mammal mitigation development, factor mitigation effectiveness into permit requests, continue education of Fleet units to adhere to the maritime protective and mitigation measures, and sponsor public education outreach efforts.</p> <p>The Navy's authorizations under the MMPA and ESA include an adaptive management approach that includes continually evaluating existing mitigation measures for their potential impacts on training. If impacts on training from mitigation measures are identified and documented, the Navy will raise these impacts with NMFS for resolution during an annual adaptive management review process. The Navy is currently preparing environmental compliance documentation to renew its MMPA and ESA authorizations by January 2014, which will consider any impacts on training stemming from existing mitigations measures and propose changes as warranted.</p>
	Amphibious Warfare (AMW)	●	Same as above.
Airspace	Strike Warfare (STW)	●	FACSFAC and FAA communications and flight procedures in controlled airspace between W-122 and R-5306A/C/D/E (the Navy Cherry Point Range Complex to BT-9, BT-11 and G-10 impact areas) interrupt the flow of tactical flight operations from W-122 to the R-5306 airspace. Airspace restrictions encroachment segments training and reduces realism. FACSFAC VACAPES, Marine Corps Air Station Cherry Point (MCAS CP), Marine Corps Base Camp Lejeune (MCB CL) continue to coordinate with each other and the FAA Washington Center to refine airspace procedures and alleviate airspace flight restrictions that provide better tactical aircraft movement from W-122 to the R-5306.
Range Transients	Anti-Surface Warfare (ASUW)	●	Range transients, involving commercial shipping, commercial fishing, and private pleasure boating, encroach on training, either by delaying events or forcing relocation to less than optimum locations. Commercial vessel and recreational vessel encroachment creates avoidance areas and segments training/reduces realism. The Navy will continue to pursue opportunities to inform industry and the public of the impact of range transient encroachment on at-sea OPAREAs and Navy readiness.
	Amphibious Warfare (AMW)	●	Same as above.
	Anti-Submarine (ASW)	●	Same as above.

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Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

Northern California (NOCAL) Assessment Details



Northern California (NOCAL) Assessment Details

Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	7.33	7.33	7.33	7.83	Encroachment Scores	9.58	9.58	9.58	9.58
1. The capability assessment has been stable from year to year, with relatively constant overall scores for CY2010 and CY2011 and a slight improvement for CY2012.					1. Encroachment assessments for CY2008 were different than for CY2009, CY2010, and CY2011. The algorithm for the overall assessment score for CY2009 through CY2011 was revised from the original algorithm used in CY2008 to provide greater fidelity and consistency across all range complexes. Based on an improved review process and revised algorithms, the assessments for CY2009, CY2010, and CY2011 provide more accurate assessments of encroachment. The assessments for the latter three years reveal there has been little encroachment change from year to year, with relatively constant overall scores for CY2009, CY2010, and CY2011. 2. There is little indication encroachment pressures will change in the foreseeable future.				

Northern California (NOCAL) Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Strike Warfare (STW)	●	There is no Navy owned land space. Army Fort Hunter Liggett provides support for limited helicopter training, but its support for FRS and Fleet F/A-18 squadron strike training capability is severely limited. These units must rely on out-of-area training to fulfill basic level requirements. This prohibits training events, complicates night and all-weather training, reduces realism, limits tactics, reduces live fire proficiency, increases personnel op-tempo, and increases O&M costs. The Navy recommends development of an instrumented air-to-ground range in the NOCAL Training Area and investigating other feasible range areas. No completion date has been identified.
	Strike Warfare (STW)	●	Same as above, as airspace must be associated with land space requirements.
Airspace	Anti-Air Warfare (AAW)	●	Operations over water in the NOCAL Warning Areas are significantly limited due to the persistent, extreme coldwater conditions, coupled with the lack of a dedicated Search and Rescue (SAR) capability. Transit time from NAS Lemoore to the Warning Areas is significant. Supersonic flight is restricted to greater than 30nm from land and above 30K ft. Limited training time due to transit time and lack of required SAR inhibits employment of tactics, and decreases realism. The Navy is working on establishing an approved ready SAR capability and with the FAA to reduce limitations on SUA. No completion date has been identified.
	Strike Warfare (STW)	●	Only one target site exists and there are no DMPIs or raked targets. There is an unmet requirement for a target within the Superior Valley Range Complex (R-2524) that GPS Weapons (specifically JDAM in either Pre Planned or Target of Opportunity modes) can be dropped on. This prohibits certain training; reduces realism, limits application of new technologies, inhibits some tactics, reduces live fire proficiency, increases personnel op-tempo, and increases O&M costs. The Navy recommends investigation of other feasible range areas to support this training. No completion date has been identified.
Threats	Strike Warfare (STW)	●	There is no Helicopter OPFOR available. Commercial OPFOR is extremely limited, there is no supersonic OPFOR; and EC OPFOR extremely limited. These shortfalls reduce realism; inhibits tactics; increase personnel op-tempo; and increase O&M costs. The Navy recommends increasing funding for commercial OPFORs and providing additional target vessel services to support air and EC OPFOR. No completion date has been identified.
	Anti-Air Warfare (AAW)	●	Same as above.
Scoring & Feedback System	Strike Warfare (STW)	●	Link-16 and the introduction of TCTS at NAS Lemoore provide a basic-level of TSPI coverage of NOCAL MOAs, with some debriefing and mission reconstruction capability. There is currently no M&S capability and limited scoring system. The maturing of TCTS will provide the needed upgrade. There is an unmet requirement for a Range Training Officer/Range Safety Officer (RTO/RSO) capability. RTO/RSO capability would improve overall training and would enable training operators to evaluate training evolutions in real-time and provide a safety aspect. NAS Lemoore is one of the only installations without RTO/RSO capability. Funding would need to include both installation facilities and range infrastructure. The current debriefing system has a lag time of about 1 ½ hours. These shortfalls increase O&M costs, and personnel op-tempo, reduce realism, and inhibit tactics. The Navy needs to invest in JNTC compliant M&S and expand TCTS coverage to link with other feasible range areas. The Navy needs to invest in RTO/RSO capabilities at NAS Lemoore. No completion date has been identified.
	Anti-Air Warfare (AAW)	●	Same as above.

Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

Northern California (NOCAL) Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Range Support	Strike Warfare (STW)	●	There is an unmet requirement for a RTO/RSO capability. RTO/RSO capability would improve overall training and would enable training operators to evaluate training evolutions in real-time and provide a safety aspect. NAS Lemoore is one of the only installations without RTO/RSO capability. Funding would need to include both installation facilities and range infrastructure. The current debriefing system has a lag time of about 1 ½ hours. Lack of RTO/RSO capability decreases safety and training realism because training operators cannot confirm kill shots or remove training participants from the training exercise. The Navy needs to invest in RTO/RSO capabilities at NAS Lemoore. The set up would need to be similar to Fallon or Key West, to include radios, tracking/controlling, and record/playback capability for real time safety and debrief. No completion date has been identified.
	Anti-Air Warfare (AAW)	●	Same as above.

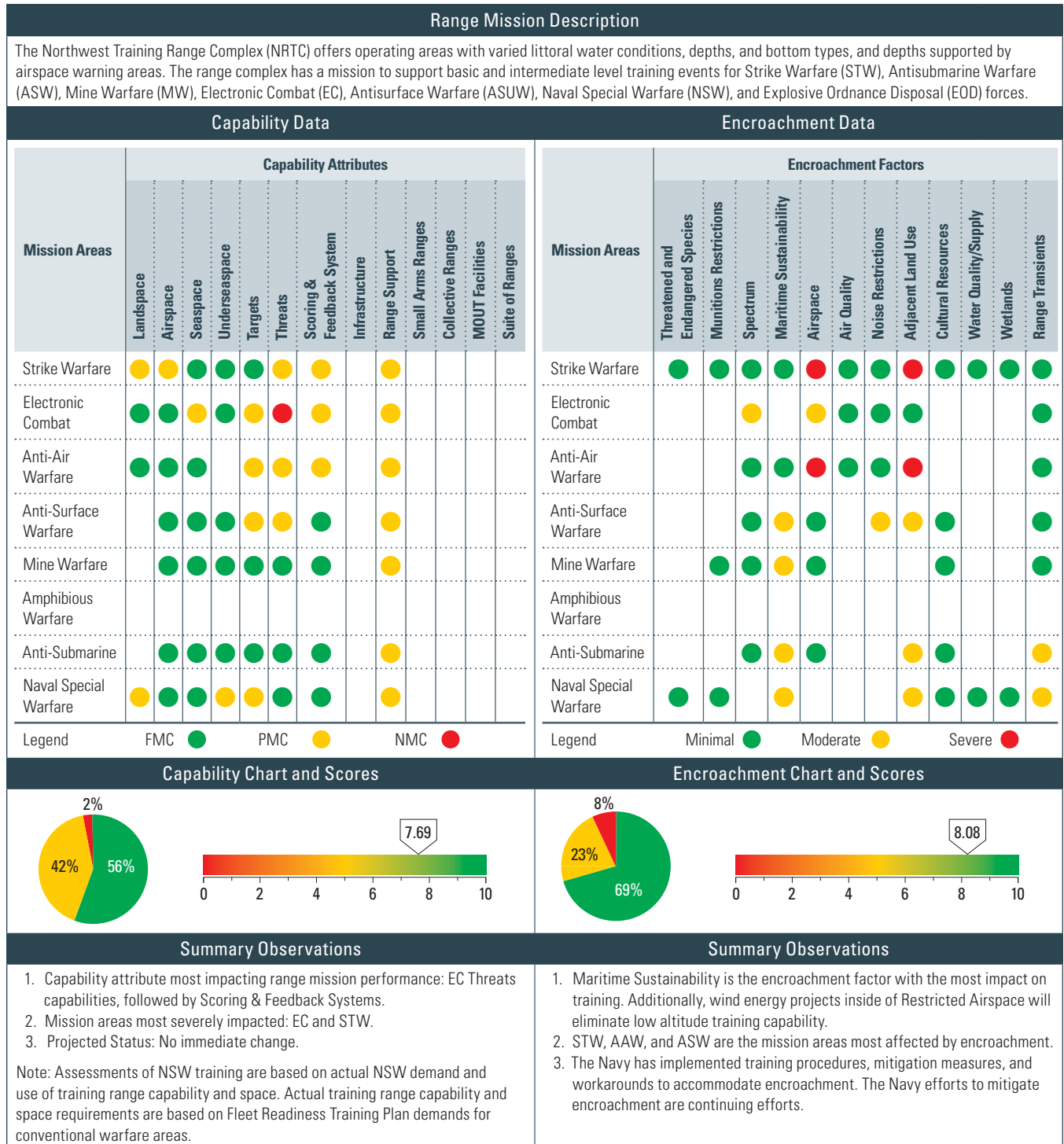
Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Range Transients	Strike Warfare (STW)	●	Civil aircraft fly through the Hunter, Roberts, and Foothills MOAs when the MOAs are activated. Military aircrews must be vigilant to see and avoid small civil aircraft. This encroachment requires aircrews to direct their attention away from the mission at-hand to avoid collisions or near misses with civil aircraft. Restrictions prohibit certain training events, segment training/reduce realism, and inhibit new tactics development. The Navy and the Army may seek to enlarge the MOAs and create transit corridors for civil aircraft that are below the training altitudes for military aircraft.
	Anti-Air Warfare (AAW)	●	Same as above.

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Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

Northwest Training Range Complex Assessment Details



Northwest Training Range Complex Assessment Details

Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	7.98	7.88	7.88	7.79	Encroachment Scores	9.40	9.04	8.77	8.58
<ol style="list-style-type: none"> ASUW Threats were green in CY2008 and re-evaluated to yellow in CY2009 and beyond based on review of range capability and impacts with PACFLT. EC Threats were green in CY2009; re-evaluated to yellow in 2010; and re-evaluated to red in CY2012 due to the introduction of EA-18G within the range complex area. Mobile EW equipment has been requested to provide required EC threats, but the signal variations do not meet the EA-18G training requirements. NTRC had no emerging capability issues during CY2011 that affect NTRC operations. The CY2012 capability assessment data remain the same as CY2011. 					<ol style="list-style-type: none"> Encroachment assessments for CY2008 were different than for CY2009, CY2010, and CY2011. The algorithm for the overall assessment score for CY2009 through CY2011 was revised from the original algorithm used in CY2008 to provide greater fidelity and consistency across all range complexes. Based on an improved review process and revised algorithms, the assessments for CY2009, CY2010, and CY2011 provide more accurate assessments of encroachment. The assessments for the latter three years reveal there has been little encroachment change from year to year, with relatively constant overall scores for CY2009, CY2010, and CY2011. NWSTF Boardman is in process of losing low altitude training capability below 1000 ft. above ground level due to vertical encroachment from 102 wind energy projects (7 constructed, 6 more under construction) that place wind turbines within the Boardman Restricted Airspace. The wind turbines range from 400-450 ft. in height. There is a 500 ft. vertical and lateral clearance criterion in the vicinity of each wind turbine for aircraft activity. Combined with the approximate 450 ft. height of a wind turbine, the 500 ft. clearance criterion mandates that low altitude flying in the vicinity of a wind turbine must remain at roughly 1000 ft. or greater above ground level. Additionally, a dairy farm has been established in the WSTF Boardman Arlington easement. This structure has caused the loss of approximately 1 mile of run-in arming area for aircraft into the main target area. Due to NWTRC EIS ROD of October 2010 and Letter of Authorization of November 2010, there are new restrictions on training events. 				

Northwest Training Range Complex Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landscape	Strike Warfare (STW)	●	Size does not meet requirements, live ordnance not allowed, and use of inert ordnance at Basic and Intermediate level is authorized. This inhibits tactics development, limits application of new weapon technologies, increases personnel op-tempo, and increases O&M costs. The Navy plans to redevelop the bombing range area, and establish second target complex per range required capabilities document. No completion date has been identified.
	Naval Special Warfare (NSW)	●	There is limited maneuver area, no live fire area, and no MOUT. This shortfall inhibits tactics development, limits application of new weapon technologies, increases personnel op-tempo, and increases O&M costs. The Navy plans to pursue development of live fire small arms training capabilities near Puget Sound. No completion date has been identified.
Airspace	Strike Warfare (STW)	●	Size and altitudes do not meet requirements, and supersonic operations are not allowed over land. This inhibits tactics development, limits application of new weapon technologies, increases personnel op-tempo, and increases O&M costs. The Navy plans to coordinate larger areas and higher altitudes to meet requirements. No completion date has been identified.
Seaspace	Electronic Combat (EC)	●	Land area where EC emitter is located cannot support seaspace EC. This inhibits tactics development; limits application of new weapon technologies, increases personnel op-tempo, and increases O&M costs. The Navy development of a mobile EW range for Okanogan, Roosevelt, and Olympic MOAS is in conceptual planning.
Underseaspace	Naval Special Warfare (NSW)	●	Net Explosive Weight (NEW) is limited by the ROD dated 10/25/10 to a NEW of no more than 2.5 lbs at Crescent Harbor and 1.5 lbs at Floral Point. This restriction inhibits tactics development, limits application of new weapon technologies, increases personnel op-tempo, and increases O&M costs. Environmental studies to determine the impact of explosive operations in Crescent Harbor are under way.

Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

Northwest Training Range Complex Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Targets	Electronic Combat (EC)	●	Limited threat representative fixed and mobile targets are available. This shortfall inhibits tactics development, limits application of new weapon technologies, increases personnel op-tempo, and increases O&M costs. Acquisition of re-locatable EC threat emitters is under way. Acquisition of "smart targets" (visually representative of threats) needs to be initiated. No completion date has been identified.
	Anti-Air Warfare (AAW)	●	There is no towed target or subscale target capability in the range complex. This reduces live fire proficiency, limits application of new weapon technologies, increases personnel op-tempo, and increases O&M costs. The Navy plans to invest in Commercial Air Services (CAS) with target towing and other target capabilities. No completion date has been identified.
	Anti-Surface Warfare (ASUW)	●	There are no targets available or targets provided by range users. This reduces realism, inhibits tactics, limits application of new weapon technologies, reduces live fire proficiency, increases personnel op-tempo, and increases O&M costs. The Navy plans to invest in required self-propelled, towed, programmed, or remote controlled targets. No completion date has been identified.
	Naval Special Warfare (NSW)	●	There are no local live firing areas with realistic targets. This inhibits tactics development, limits application of new weapon technologies, increases personnel op-tempo, and increases O&M costs. The Navy will pursue development of live fire capabilities near Puget Sound.
Threats	Strike Warfare (STW)	●	The full required EC threat level does not exist at bombing range. No live or virtual rotary or fixed wing threat exists at the bombing range. The acquisition of re-locatable EC threat simulators has been initiated. The Navy will coordinate with other range users (USAF, Oregon Air, Army Guard) to provide threat support or use CAS. No completion date has been identified.
	Electronic Combat (EC)	●	Realistic OPFOR variety and responses are not available, and EC threats are not available above level 2. This reduces realism, inhibits new tactics development, limits application of new weapon technologies, reduces live fire proficiency, increases personnel op-tempo, and increases O&M costs. The Navy plans to invest in enhanced EC threat capabilities. No completion date has been identified.
	Anti-Air Warfare (AAW)	●	There is no dedicated OPFOR. This reduces realism, inhibits tactics development, increases personnel op-tempo, and increases O&M costs. The Navy plans to invest in commercial air services equipped with required threat augmentation. No completion date has been identified.
	Anti-Surface Warfare (ASUW)	●	There is no dedicated OPFOR. This reduces realism, inhibits tactics development, increases personnel op-tempo, and increases O&M costs. The Navy plans to investigate potential to use range craft for OPFOR presentation. No completion date has been identified.
Scoring & Feedback System	Strike Warfare (STW)	●	Range lacks instrumentation, and there is no real-time or debrief capability. This increases personnel op-tempo, reduces realism, increases O&M costs, and inhibits tactics development. The Navy plans to invest in instrumentation that will meet requirements for an instrumented range. No completion date has been identified.
	Electronic Combat (EC)	●	Same as above.
	Anti-Air Warfare (AAW)	●	Same as above.
Range Support	Strike Warfare (STW)	●	The lack of web-based scheduling system with pre-event, real-time, and post-event modules precludes most efficient scheduling and documenting of range usage. Post-event reporting is particularly critical for ordnance expenditures or active sonar usage in at-sea OPAREAs since Marine Mammal Protection Act permits require the Navy to periodically report these values. Non-compliance or inaccurately reporting post-event values to regulators risks range access or prohibitions on training events that involve active sonar or high explosives at-sea. Scheduling issues reduce range access, prohibit certain training events, reduce realism, and segment training. PACFLT is developing a Data Collection and Scheduling Tool (DCAST) that includes a post-event module to mitigate issues outlined above. It is expected that this system will be available in the Spring of CY2012.
	Electronic Combat (EC)	●	Same as above.
	Anti-Air Warfare (AAW)	●	Same as above.
	Anti-Surface Warfare (ASUW)	●	Same as above.
	Mine Warfare (MW)	●	Same as above.
	Anti-Submarine (ASW)	●	Same as above.
	Naval Special Warfare (NSW)	●	Same as above.

Northwest Training Range Complex Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Spectrum	Electronic Combat (EC)	●	Jamming is severely restricted east of the Cascade Mountains due to satellite communications stations, etc. Jamming is restricted off-shore in that aircraft must face out to sea, not shoreward, due to Seattle urbanized area and interference with FAA radars. Additional jamming target sets have developed in current combat theaters that cannot be jammed for training in inhabited areas. Restrictions from the JRFLEAF and FAA create avoidance areas, prohibit certain training events, segment training and reduce realism, limit application of new weapons technologies, and inhibits new tactics development. Aircrews travel to NAS Fallon and Mountain Home AFB to complete EC training requirements. Restrictions on Surface Combatant radar (SPS-49) limit its use within 100 NM of land. Workarounds currently permit completion of training. EC range placement is underway for the Olympic MOA area with possible future expansion into the Okanogan and Roosevelt MOAs. However, for now these EC ranges are passive only with no jamming. However, even with passive EW range in place all training requirements will not be met will still have to travel to NAS Fallon to complete.
Maritime Sustainability	Electronic Combat (EC)	●	<p>Maritime protective and mitigation measures undertaken in compliance with regulatory requirements have resulted in training restrictions that reduce training flexibility, force segmented training, and ultimately reduce training realism. All at-sea training is impacted to some degree; impacts are most significant to integrated warfare training using active underwater acoustic sources or in-water explosive ordnance. The Navy and National Marine Fisheries Service (NMFS) have developed science based protective and mitigation measures that adequately protect marine species while accommodating military readiness activities. The Navy continues to develop Environmental Impact Statements (EISs) and obtain permits and authorizations for its range complexes to ensure military training complies with applicable laws and regulations.</p> <p>Litigation risks remain a concern, entailing the potential to delay or further restrict training, despite the protective and mitigation measures applied by the Navy in compliance with the MMPA and the Endangered Species Act (ESA). Endangered species encroachment has created avoidance areas that have resulted in some reduction of training days and prohibits certain training events. This area is relatively small in scope; however, if these types of restrictions were applied to other species, there would be significant impacts to readiness through reduction in range access, segmentation of training/reduction in realism, limits on the application of new technologies, raised flight altitudes, reduced live fire proficiency, increased personnel tempo, and increased O&M costs. The Navy will continue to invest in marine mammal research, rely on scientifically valid empirical data results as basis of marine mammal mitigation development, and factor mitigation effectiveness into permit requests. It will continue education of Fleet units to adhere to the maritime protective and mitigation measures and sponsor public education outreach efforts.</p> <p>The Navy's authorizations under the MMPA and ESA include an adaptive management approach that includes continually evaluating existing mitigation measures for their potential impacts on training. If impacts on training from mitigation measures are identified and documented, the Navy will raise these impacts with the NMFS for resolution during an annual adaptive management review process. The Navy is currently preparing environmental compliance documentation to renew its MMPA and ESA authorizations, which will consider any impacts on training stemming from existing mitigations measures and propose changes as warranted.</p>
	Anti-Surface Warfare (ASUW)	●	Same as above.
	Mine Warfare (MW)	●	Same as above.
	Anti-Submarine (ASW)	●	Same as above.
	Naval Special Warfare (NSW)	●	Same as above.

Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

Northwest Training Range Complex Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Airspace	Strike Warfare (STW)	●	Wind energy projects in Restricted Airspace and FAA determination of no hazard will lead to loss of low altitude tactical training in NWSTF Boardman. The presence of 450 ft. tall wind turbines in Restricted Airspace and a 500 ft vertical and lateral clearance requirement in the vicinity of each wind turbine mandate that low altitude training in the Boardman airspace must be at least 1,000 ft. above ground level. The FAA determination allows wind turbine construction inside Restricted Airspace. Additionally, a dairy farm has been established in the WSTF Boardman Arlington easement. This structure has caused the loss of approximately 1 mile of run-in arming area for aircraft into the main target area. Wind energy projects can reduce access, prohibit certain training events, segment training/reduce realism, and raise flight altitudes. The Navy recommends purchase of aviation easements from land owners or it must accept loss of training capability on an existing range. It also recommends pursuing the addition of a MOA joining current airspace in order to maintain training capability. If the Navy is unable to maintain training capability at NWSTF Boardman, it recommends pursuing additional airspace elsewhere.
	Electronic Combat (EC)	●	VQ Aircrews based at NAS Whidbey Island train in Electronic Reconnaissance in Darrington OPAREA. They routinely experience difficulty getting clearance from Seattle ARTCC (FAA) to climb above FL 250. The aircraft are routinely vectored around by Seattle ARTCC causing delays, wasting airborne training time. These restrictions result in reduced range access. The Navy recommends developing a mobile EW training emitter system to work in the Military OPAREAs such as Okanogan, Roosevelt and Olympic MOAs. Additionally, the Navy will work on establishment of additional training airspace.
	Anti-Air Warfare (AAW)	●	Wind energy projects in Restricted Airspace and FAA determination of no hazard will lead to loss of low altitude tactical training in NWSTF Boardman. The presence of 450 ft. tall wind turbines in Restricted Airspace and a 500 ft. vertical and lateral clearance requirement in the vicinity of each wind turbine mandate that low altitude training in the Boardman airspace must be at least 1,000 ft. above ground level. The FAA determination allows wind turbine construction inside Restricted Airspace. Wind energy projects can reduce access, prohibit certain training events, segment training/reduce realism, and raise flight altitudes. The Navy recommends purchase of aviation easements from land owners or it must accept loss of training capability on an existing range. The Navy is pursuing the addition of a MOA joining current airspace in order to maintain training capability. If it is unable to maintain training capability at NWSTF Boardman, the Navy recommends pursuing additional airspace elsewhere.
Noise Restriction	Anti-Surface Warfare (ASUW)	●	MSRON 9 is unable to perform required training within the Crescent Harbor Naval OPAREA due to noise from shooting blanks. It is not covered in the current EIS and LOA. Shooting blanks (M16,M4,9mm, 50 cal,240, shotgun) on water training has no NEPA coverage. The next Northwest Testing and Training EIS will ensure coverage for noise of from shooting blanks inside of Crescent Harbor in the Crescent Harbor Naval OPAREA.
Adjacent Land Use	Strike Warfare (STW)	●	Wind energy projects in Restricted Airspace and FAA determination of no hazard will lead to loss of low altitude tactical training in NWSTF Boardman. The presence of 450 ft. tall wind turbines in Restricted Airspace and a 500 ft. vertical and lateral clearance requirement in the vicinity of each wind turbine mandate that low altitude training in the Boardman airspace must be at least 1,000 ft. above ground level. The FAA determination allows wind turbine construction inside Restricted Airspace. Additionally, a dairy farm has been established in the WSTF Boardman Arlington easement. This structure has caused the loss of approximately 1 mile of run-in arming area for aircraft into the main target area. Wind energy projects can reduce access, prohibit certain training events, segment training/reduce realism, and raise flight altitudes. The Navy recommends purchase of aviation easements from land owners or it must accept loss of training capability on an existing range. The Navy is pursuing the addition of a MOA joining current airspace in order to maintain training capability. If it is unable to maintain training capability at NWSTF Boardman, the Navy recommends pursuing additional airspace elsewhere.

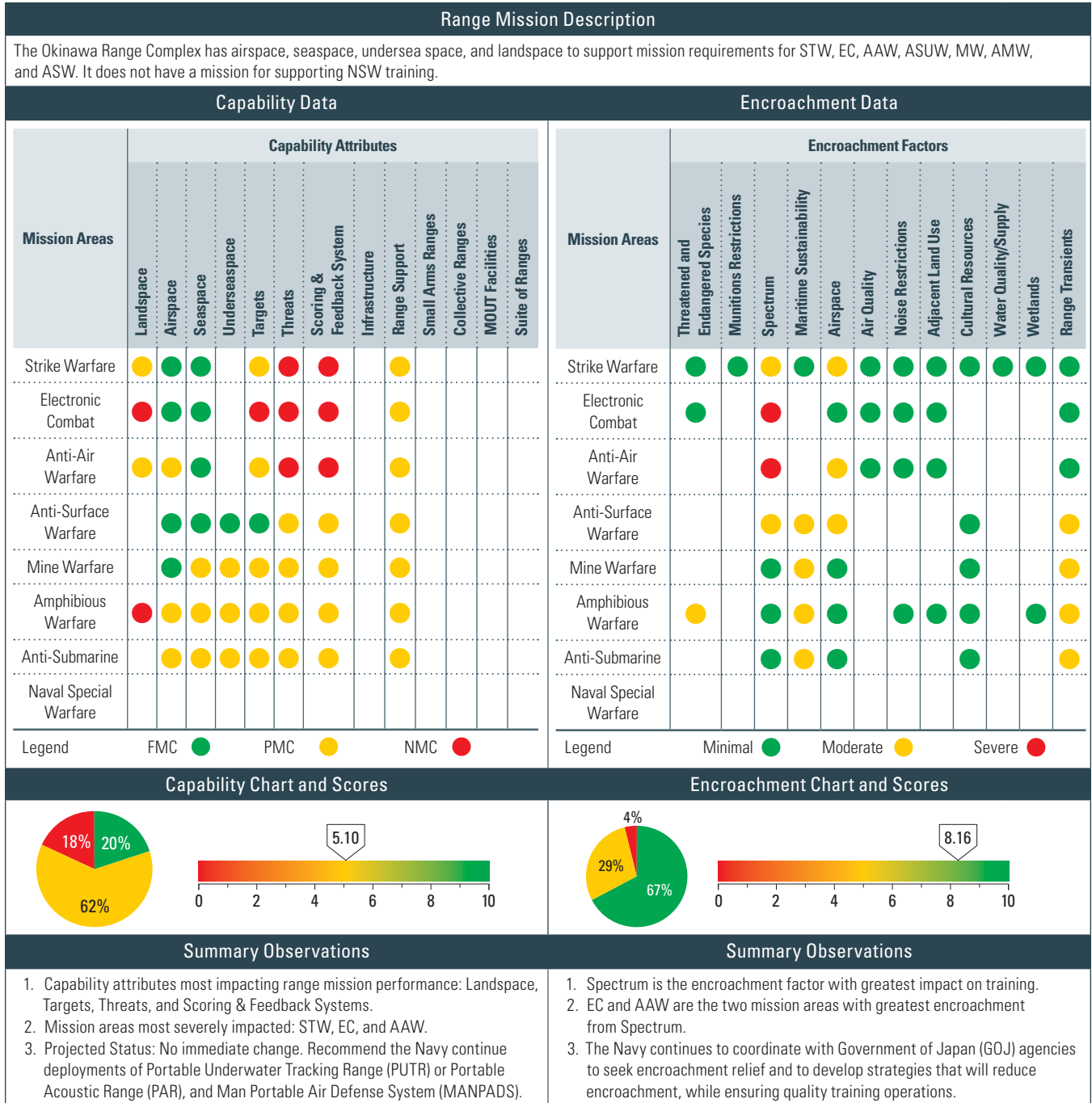
Northwest Training Range Complex Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Adjacent Land Use	Anti-Air Warfare (AAW)	●	Wind energy projects in Restricted Airspace and FAA determination of no hazard will lead to loss of low altitude tactical training in NWSTF Boardman. Presence of 450 foot tall wind turbines in Restricted Airspace and a 500 ft. vertical and lateral clearance requirement in the vicinity of each wind turbine mandate that low altitude training in the Boardman airspace must be at least 1,000 ft. above ground level. The FAA determination allows wind turbine construction inside Restricted Airspace. Wind energy projects can reduce access; prohibit certain training events, segment training/reduce realism, raise flight altitudes. The Navy recommends purchase of aviation easements from land owners or it must accept loss of training capability on an existing range. The Navy is pursuing the addition of a MOA joining current airspace in order to maintain training capability. If the Navy is unable to maintain training capability at NWSTF Boardman, it will recommend pursuing additional airspace elsewhere.
	Anti-Surface Warfare (ASUW)	●	MSRON 9/EOD training in Crescent Harbor Naval OPAREA suffers occasional presence of recreational and small commercial fishing boats and scuba diving as the training areas are not restricted areas. Transient activity creates avoidance areas, prohibits certain training events, and segments training/reduces realism. NAS Whidbey Island attempted to pursue establishing a restricted area within Crescent Harbor to restrict access to the range during training operations. However, establishing this restricted area proved to be unattainable due to cost and the movement of EOD MU 11 to California. With placement of MSRON 9 at NAS Whidbey Island, this issue of establishment of a restricted area should be reviewed for resubmission.
	Anti-Submarine (ASW)	●	Instruments to monitor seismic activity on the floor of the ocean have been deployed by civilian scientists, in the northwestern portion of the PACNORWEST OPAREA. Because of the presence of these measuring instruments, Navy submarine crews are directed to remain clear of this area. The exact size and location of this area is classified. Restrictions on training in the vicinity of seismic instrument create avoidance areas, prohibit certain training events, and segment training/reduce realism. This remains insolvable.
	Naval Special Warfare (NSW)	●	EOD training in Crescent Harbor and Indian Island areas suffer occasional presence of recreational and small commercial fishing boats and scuba diving as the underwater detonation training areas are not restricted areas. Transient activity creates avoidance areas, prohibits certain training events, and segments training/reduces realism. NAS Whidbey Island attempted to pursue establishing a restricted area within Crescent Harbor to restrict access to the underwater detonation range during training operations. However, establishing this restricted area proved to be unattainable due to cost and the movement of EOD MU 11 to California.
Range Transients	Anti-Submarine (ASW)	●	Commercial and private shrimp fishing boats congregate in Dabob Bay for several weeks in late April to mid-June. Additionally, Native Americans fishing for clams and shrimp traverse across NUWC RDT&E ranges without contacting NUWC Operations, thereby interfering with ongoing events. Commercial vessel and recreational vessel encroachment creates avoidance areas and segments training/reduces realism. The Navy will continue to pursue opportunities to inform industry and the public of the impact of range transient encroachment on at-sea OPAREAs and Navy readiness.
	Naval Special Warfare (NSW)	●	Commercial and private shrimp fishing boats congregate in Dabob Bay for several weeks in late April to mid-June. Additionally, Native Americans fishing for clams and shrimp traverse across NUWC RDT&E ranges without contacting NUWC Operations, thereby interfering with ongoing events. Native American and civilian fishing boats occasionally inhibit EODMU-11 underwater detonation training in Crescent Harbor. Native American and fishing activities create avoidance areas, prohibit certain training events, and segment training/reduce realism. The Navy continues to work with law enforcement agencies to enforce the Dabob Bay Restricted area during RDT&E and occasional NSW training activities. NAS Whidbey Island is pursuing a surface/subsurface restricted area designation in Crescent Harbor to deter range transients.

Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

Okinawa Assessment Details



Okinawa Assessment Details

Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	4.90	5.00	5.10	5.10	Encroachment Scores	9.23	8.16	8.16	8.16
<p>1. ASW in CY2008 Tracking & Scoring was red, but re-evaluated to yellow in CY2009 and forward, based on the availability of the PAR/PUTR, which provides a partial capability for ASW training.</p> <p>2. In CY2009, STW Targets were evaluated as red (no targets), but were re-evaluated to yellow in CY2010 and forward, based on "limited" target availability.</p> <p>3. TCTS is currently not available in Okinawa/7th Fleet due to RF restrictions.</p> <p>4. A Multi-Purpose Range Craft is being constructed for deployment in Seventh Fleet that will support aerial drone, M-30 (ASW target), and mine shape launch and recovery, deployment/recovery of the portable ASW range, and electronic warfare training (limited).</p>					<p>1. Encroachment assessments for CY2008 were different than for CY2009, CY2010, and CY2011. The algorithm for the overall assessment score for CY2009 through CY2011 was revised from the original algorithm used in CY2008 to provide greater fidelity and consistency across all range complexes. Based on an improved review process and revised algorithms, the assessments for CY2009, CY2010, and CY2011 provide a more accurate assessment of encroachment. The assessments for the latter three years reveal there has been little encroachment change from year to year, with relatively constant overall scores for CY2009, CY2010, and CY2011.</p> <p>2. There is little indication encroachment pressures will change in the foreseeable future.</p>				

Okinawa Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Strike Warfare (STW)	●	Range land area is too small and prohibits certain training events, reduces realism, limits application of new technologies, inhibits new tactics development, reduces live fire proficiency, increases personnel op-tempo, and increases O&M costs. The Navy will pursue opportunities with other Services. No completion date has been identified.
	Electronic Combat (EC)	●	The range has no land area that supports EC training. There are political and frequency spectrum constraints that prohibit certain training events, reduce realism, limit application of new technologies, inhibit new tactics development, increase personnel op-tempo, and increase O&M costs. The Navy recommends conducting feasibility study for EC assets to be incorporated into a high fidelity, inert, and A-G training range and pursuing MPRC with EC assets. No completion date has been identified.
	Anti-Air Warfare (AAW)	●	There is no overland airspace that supports AAW training. This prohibits certain training events, reduces realism, limits application of new technologies, inhibits new tactics development, increases personnel op-tempo, and increases O&M costs. The Navy recommends pursuing opportunities with other Services. No completion date has been identified.
	Amphibious Warfare (AMW)	●	Range is not contiguous with required size of beachfront area. The beach area is very limited; and the area does not support NSFS. This prohibits certain training events; reduces realism, limits application of new technologies, inhibits new tactics development, increases personnel op-tempo, and increases O&M costs. The Navy recommends it pursue opportunities with other Services. No completion date has been identified.
Airspace	Anti-Air Warfare (AAW)	●	Range has no overland airspace supporting AAW training. This prohibits certain training events, reduces realism, limits application of new technologies, inhibits new tactics development, increases personnel op-tempo, and increases O&M costs. The Navy recommends it pursue opportunities with other Services. No completion date has been identified.
	Amphibious Warfare (AMW)	●	Range has no airspace over beaches that meet training requirements. This prohibits certain training events, reduces realism, limits application of new technologies, inhibits new tactics development, increases personnel op-tempo, and increases O&M costs. The Navy recommends it pursue opportunities with other Services. No completion date has been identified.
	Anti-Submarine (ASW)	●	Airspace is not supported by an Underwater Training Range. This prohibits certain training events; reduces realism, limits application of new technologies, inhibits new tactics development, increases personnel op-tempo, and increases O&M costs. The Navy recommends it pursue MPRC, and continue deployment of PUTR. No completion date has been identified.
Seaspace	Mine Warfare (MW)	●	Range has insufficient geographic references and water is too deep. This prohibits certain training events, reduces realism, limits application of new technologies, inhibits new tactics development, increases personnel op-tempo, and increases O&M costs. The Navy recommends it pursue opportunities with other Services. No completion date has been identified.
	Amphibious Warfare (AMW)	●	Range is not contiguous with required size of beachfront area. This prohibits certain training events, reduces realism, limits application of new technologies, inhibits new tactics development, increases personnel op-tempo, and increases O&M costs. The Navy recommends it pursue opportunities with other Services. No completion date has been identified.
	Anti-Submarine (ASW)	●	Seaspace is not supported by an Undersea Warfare Training Range. This prohibits certain training events, reduces realism, limits application of new technologies, inhibits new tactics development, increases personnel op-tempo, and increases O&M costs. The Navy recommends it pursue MPRC; continuing deployment of its PAR/PUTR. No completion date has been identified.

Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

Okinawa Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Undersea Space	Mine Warfare (MW)	●	Sufficient space exists, but bottom type does not have required characteristics, water depth is too deep, no underwater training range, no dedicated Shock Wave Action Generator (SWAG) training area, no mine avoidance area. This prohibits certain training events, reduces realism, limits application of new technologies, inhibits new tactics development, increases personnel op-tempo, and increases O&M costs. The Navy recommends it pursue opportunities with other Services. It will evaluate feasibility of installing a mine range with instrumented shapes, false targets, bottom mines, and mines approved for SWAG training. The Navy will evaluate feasibility of creating a shallow water OPAREA. No completion date has been identified.
	Amphibious Warfare (AMW)	●	Range is not contiguous with required size of beachfront area. This prohibits certain training events, reduces realism, limits application of new technologies, inhibits new tactics development, increases personnel op-tempo, and increases O&M costs. The Navy recommends it pursue opportunities with other Services. No completion date has been identified.
	Anti-Submarine (ASW)	●	Undersea space does not have significant areas with water less than 600 ft. deep and is not supported by an Undersea Warfare Training Range. This prohibits certain training events, reduces realism, limits application of new technologies, inhibits new tactics development, increases personnel op-tempo, and increases O&M costs. The Navy recommends pursuing a, MPRC; continuing deployment of PAR/PUTR. No completion date has been identified.
Targets	Strike Warfare (STW)	●	Range has limited targets available (they were replaced early 2009). This prohibits certain training events, reduces realism, limits application of new technologies, inhibits new tactics development, reduces live fire proficiency, increases personnel op-tempo, and increases O&M costs. The Navy recommends it pursue opportunities with other Services and to procure high fidelity targets. No completion date has been identified.
	Electronic Combat (EC)	●	Range has no dedicated EC targets available. This prohibits certain training events; reduces realism; limits application of new technologies; inhibits new tactics development; increases personnel op-tempo; and increases O&M costs. The Navy recommends to conduct feasibility study for EC assets to be incorporated into a high fidelity, inert, A-G training range; also to pursue MPRC with EC assets. No completion date has been identified.
	Anti-Air Warfare (AAW)	●	Range has no supersonic targets available and no dedicated targets available. This reduces live fire proficiency, increases personnel op-tempo, and increases O&M costs. The Navy recommends increasing availability of CAS and pursuing MPRC options. No completion date has been identified.
	Mine Warfare (MW)	●	While limited targets are available, there are no dedicated targets that meet full training requirements. This prohibits certain training events; reduces realism; limits application of new technologies, inhibits new tactics development, increases personnel op-tempo, and increases O&M costs. The Navy recommends it pursue opportunities with other Services; evaluate feasibility of installing a mine range with instrumented shapes, false targets, bottom mines, mines approved for SWAG training; and evaluate feasibility of creating a shallow water OPAREA. No completion date has been identified.
	Amphibious Warfare (AMW)	●	Range has no targets available to support AMW. This prohibits certain training events; reduces realism; limits application of new technologies, inhibits new tactics development, increases personnel op-tempo, and increases O&M costs. The Navy recommends it pursue opportunities with other Services. No completion date has been identified.
	Anti-Submarine (ASW)	●	Range has no dedicated ASW targets available. Units typically supply their own expendable targets. Reduces realism, limits application of new technologies, inhibits new tactics development, reduces live fire proficiency, and increases O&M costs. A MK-30 ASW Target facility is being considered on Okinawa. The Navy additionally recommends increasing the availability of ASW targets by pursuing MPRC support. No completion date has been identified.
Threats	Strike Warfare (STW)	●	Range has no dedicated OPFOR available. This reduces realism; limits application of new technologies; and inhibits new tactics development. The Navy recommends it improve availability of CAS, and the number and variety of threats; and pursue an MPRC with EC capability. No completion date has been identified.
	Electronic Combat (EC)	●	Same as above.
	Anti-Air Warfare (AAW)	●	Same as above.
	Anti-Surface Warfare (ASUW)	●	Same as above.
	Mine Warfare (MW)	●	Same as above.
	Amphibious Warfare (AMW)	●	Same as above.
	Anti-Submarine (ASW)	●	Same as above.

Okinawa Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Scoring & Feedback System	Strike Warfare (STW)	●	No permanent instrumentation exists for this range. This reduces realism, limits application of new technologies, and complicates night and all weather training. The Navy recommends continuing planned deployment of TCTS and evaluating potential to accelerate its deployment. No completion date has been identified.
	Electronic Combat (EC)	●	Same as above.
	Anti-Air Warfare (AAW)	●	Same as above.
	Anti-Surface Warfare (ASUW)	●	Same as above.
	Mine Warfare (MW)	●	Same as above.
	Amphibious Warfare (AMW)	●	Same as above.
	Anti-Submarine (ASW)	●	Same as above.
Range Support	Strike Warfare (STW)	●	The lack of a web-based scheduling system with pre-event, real-time, and post-event modules precludes most efficient scheduling and documenting of range usage. Post-event reporting is particularly critical for ordnance expenditures or active sonar usage in at-sea OPAREAs since the MMPA permits require the Navy to periodically report these values. Non-compliance or inaccurately reporting post-event values to regulators risks range access or prohibitions on training events that involve active sonar or high explosives at-sea. PACFLT is developing a Data Collection and Scheduling Tool (DCAST) that includes a post-event module to mitigate issues outlined above. DCAST development is in progress and deployment has begun in CONUS. Deployment date for WESTPAC will be completed during FY2012; it should be ready for Okinawa by January 2012.
	Electronic Combat (EC)	●	Same as above.
	Anti-Air Warfare (AAW)	●	Same as above.
	Mine Warfare (MW)	●	Same as above.
	Amphibious Warfare (AMW)	●	Same as above.
	Anti-Submarine (ASW)	●	Same as above.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Threatened & Endangered Species	Amphibious Warfare (AMW)	●	When the native Dugong species is spotted, the Marines change tactics to avoid interacting with the Dugong. The Dugong live in the near-shore waters; thus, their presence can interrupt amphibious operations. Dugong protective measures create avoidance areas, prohibit certain training events, reduce range access, and segment training. Both the Navy and Marine Corps seek to avoid operating in the near vicinity of the Dugong.
Spectrum	Strike Warfare (STW)	●	Restrictions on RF emissions limit the use of the TCTS. These restrictions limit spectrum operations and prohibit certain training events, segment training and reduce realism, reduce training days, limit application of new weapons technologies, and inhibit new tactics development. The Navy continues to coordinate with GOJ agencies to seek spectrum relief and to develop encroachment strategies that will reduce encroachment, while ensuring pending use of emerging spectrum technologies.
	Electronic Combat (EC)	●	There are no EW training ranges due to RF restrictions. RF restrictions limit spectrum operations and prohibit certain training events, segment training and reduce realism, reduce training days, limit application of new weapons technologies, and inhibit new tactics development. The Navy continues to coordinate with GOJ agencies to seek spectrum relief and to develop encroachment strategies that will reduce encroachment, while ensuring pending use of emerging spectrum technologies.
	Anti-Air Warfare (AAW)	●	Same as above.

Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

Okinawa Detailed Comments

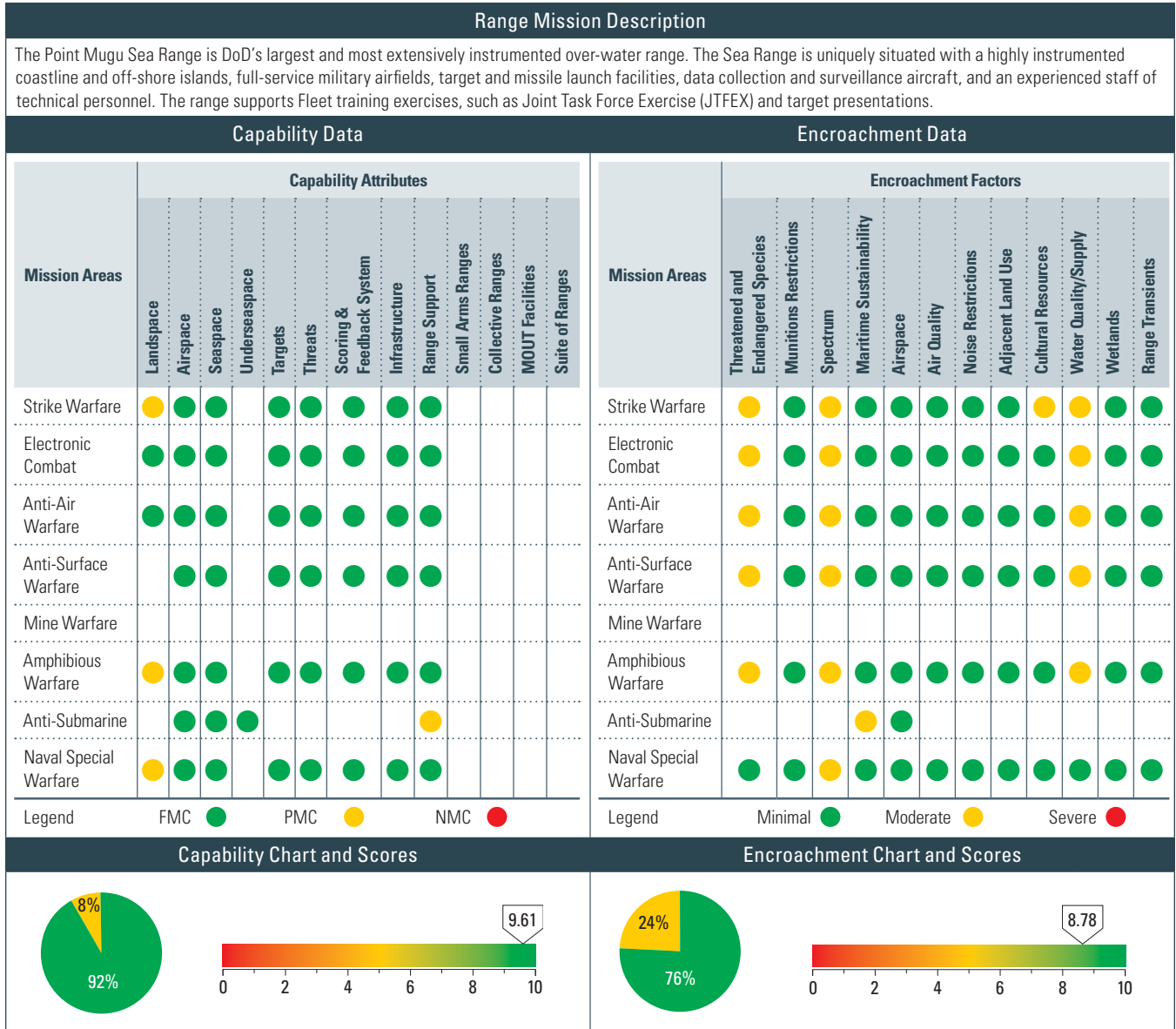
Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Spectrum	Anti-Surface Warfare (ASUW)	●	Restrictions on RF emissions limit the use of the TCTS. These restrictions limit spectrum operations and prohibit certain training events, segment training and reduce realism, reduce training days, limit application of new weapons technologies, and inhibit new tactics development. The Navy continues to coordinate with GOJ agencies to seek spectrum relief and to develop encroachment strategies that will reduce encroachment, while ensuring pending use of emerging spectrum technologies.
	Anti-Surface Warfare (ASUW)	●	The Navy uses the Protective Measures Assessment Protocol (PMAP) to assess range specific marine mammal encroachment issues and to identify specific protection measures. PMAP provides a fleet-wide set of protective measures for particular maritime activities and for designated geographic areas of interest. PMAP procedures have resulted in some training restrictions that reduce training flexibility, force segmented training, and ultimately reduce training realism. All at-sea training is impacted to some degree; impacts are most significant to integrated warfare training using active underwater acoustic sources or in-water explosive ordnance. This existing encroachment is relatively small in scope. Should the encroachment become more pervasive across additional species and locations, there could be other training and readiness impacts through reduced range access, segmented training, reduced realism, limited application of new technologies, raised flight altitudes, reduced live fire proficiency, increased personnel tempo, and increased O&M costs. The Navy continues to invest in marine mammal research; to rely on scientifically valid empirical data results as basis of marine mammal mitigation development; and to factor mitigation effectiveness into maritime operations. All Navy units are expected to adhere to PMAP. The Navy continually evaluates existing PMAP measures for their potential encroachment and impacts on training. If impacts on training from PMAP are identified and documented, the Navy will address impact resolution during management review processes.
Maritime Sustainability	Mine Warfare (MW)	●	Same as above.
	Amphibious Warfare (AMW)	●	Same as above.
	Anti-Submarine (ASW)	●	Same as above.
Airspace	Strike Warfare (STW)	●	When civil or commercial air traffic is routed through or strays into SUA, the SUA is partially or fully shut down. Okinawa air operations must cease or be delayed until the range is cleared, surface to unlimited. These restrictions create avoidance areas, segment training, reduce realism, prohibit certain training events, reduce range access, reduce live fire proficiency, and delay operations until range clears. The Navy continues close coordination with Okinawa aviation controllers, which helps to ameliorate the impacts of SUA incursion by non-military aircraft. Air operations in the vicinity of Area India are impacted because overflight of any nearby islands with ordnance (live or inert) is prohibited.
	Anti-Air Warfare (AAW)	●	Same as above.
	Anti-Surface Warfare (ASUW)	●	Same as above.
Range Transients	Anti-Surface Warfare (ASUW)	●	Okinawa families may claim that scheduled U.S. military training prohibits their use of their historical fishing grounds. Illegal fishing and seaweed harvesting in exclusive use areas can prohibit certain training events, reduce range access, create avoidance areas, and reduce training days. Operations are delayed until the fishermen depart the area. Utilizing established USFJ procedures, the Navy will continue to have the USFJ work through the GOJ. The GOJ notifies the Japanese Maritime Safety Agency, which then coordinates with the local fishermen's associations.
	Mine Warfare (MW)	●	Same as above.
	Amphibious Warfare (AMW)	●	Same as above.
	Anti-Submarine (ASW)	●	Same as above.

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Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

Point Mugu Sea Range Complex Assessment Details



Point Mugu Sea Range Complex Assessment Details

Summary Observations					Summary Observations				
1. Landspace is the capability attribute that impacts the range's ability to perform its assigned mission the most. 2. There is no single mission area that is impacted the most. STW, AMW, ASW and NSW all have a single capability with a moderate impact. 3. No change in capability is anticipated for the future. Note: Assessments of NSW training are based on actual NSW demand and use of training range capability and space. Actual training range capability and space requirements are based on Fleet Readiness Training Plan (F RTP) demands for conventional warfare areas.					1. Frequency spectrum is the encroachment factor that impacts the range's ability to perform its assigned mission the most. 2. STW is mission area that is impacted the most. 3. Increased desire for additional spectrum for commercial use will lead to additional encroachment pressures. The impacts of frequency spectrum encroachment will improve only with continued national attention to increase spectrum for military use and more efficiently use the available spectrum. As a direct result of California air quality regulations that went into effect on 1 July 2009, ship traffic through the Sea Range has increased from an average of 2 ships per day (1 in each direction) to 14 ships per day (7 in each direction) and continues to grow. Significant coordination effort is required to mitigate impacts on Sea Range activities and there have been several near cancellations. To date, one major missile exercise was delayed because a ship only partially complied with requests to avoid the hazard pattern. The Navy is working with the various stakeholders on potential solutions. Note: Assessments of NSW training are based on actual NSW demand and use of training range capability and space. Actual Training range capability and space requirements are based on F RTP demands for conventional warfare areas.				
Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	9.68	9.32	9.61	9.61	Encroachment Scores	9.51	8.78	8.78	8.78
1. Capability at the Point Mugu Sea Range has remained steady since CY2008. Its anticipated capability will remain stable in the future.					1. The encroachment assessment has been stable from year to year, with relatively constant overall scores for CY2010 and CY2011.				

Point Mugu Sea Range Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Strike Warfare (STW)	●	San Nicolas Island is the only land impact area within the Sea Range. Impacts are limited to inert weapons only and in just one location. This impacts training with limited realistic training. There is no planned remedy at this time.
	Amphibious Warfare (AMW)	●	There are limited areas on San Nicolas Island and Point Mugu where this type of training can be conducted. This leads to limited realistic training. There is no planned remedy at this time.
	Naval Special Warfare (NSW)	●	There are limited areas on San Nicolas Island where this type of training can be conducted and underwater detonations are not possible. This limits realistic training. There is no planned remedy available.
Range Support	Anti-Submarine (ASW)	●	There are limited areas on San Nicolas Island and Point Mugu where this type of training can be conducted and underwater detonations are not possible. This leads to limited realistic training. There is no planned remedy at this time.

Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

Point Mugu Sea Range Complex Detailed Comments

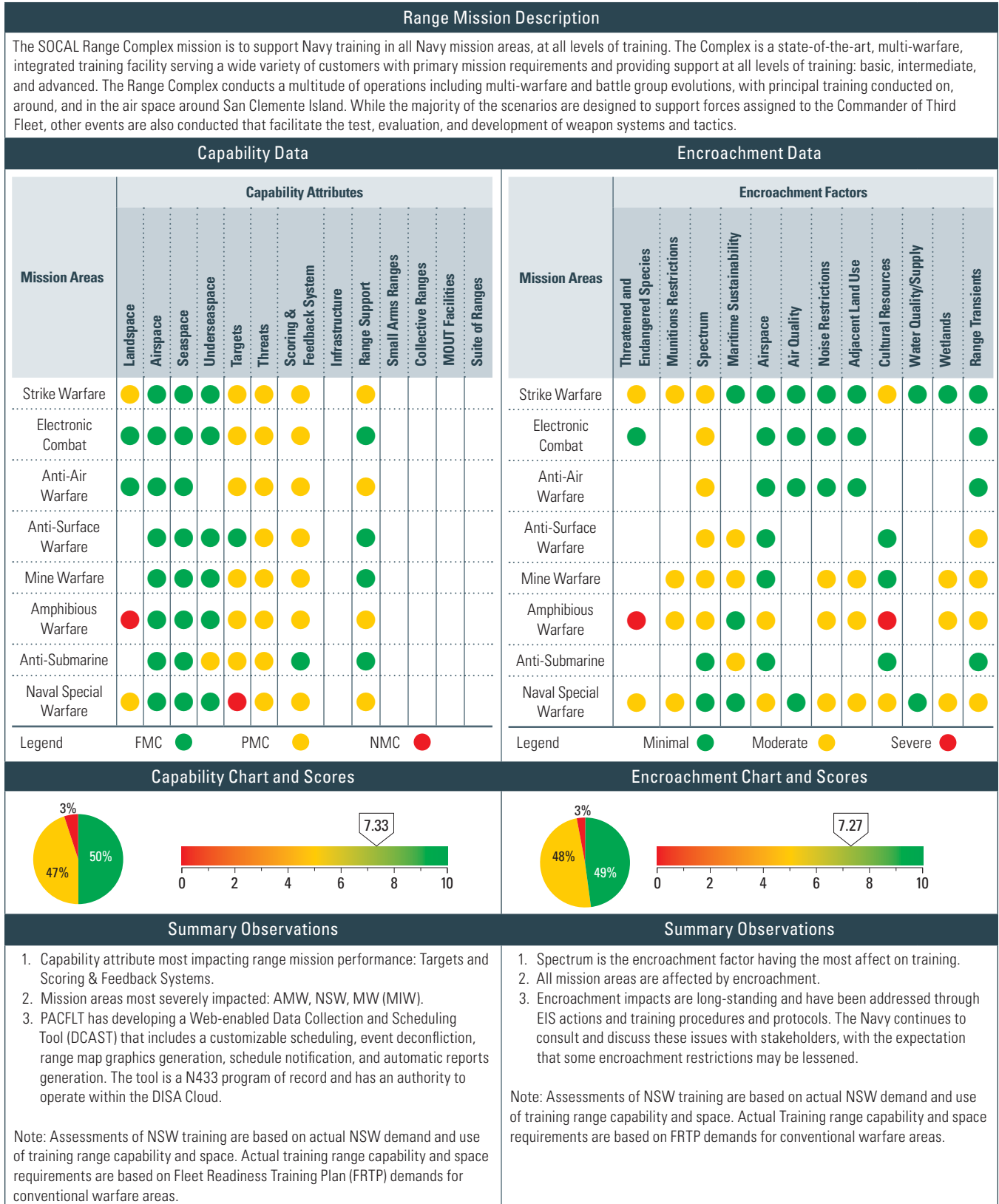
Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Threatened & Endangered Species	Strike Warfare (STW)	●	The presence of T&E species at Point Mugu and San Nicolas Island requires significant mitigation effort to support training activities. The Navy updated the San Nicolas Island INRMP in 2010 and will continue mitigations as needed.
	Electronic Combat (EC)	●	Same as above.
	Anti-Air Warfare (AAW)	●	Same as above.
	Anti-Surface Warfare (ASUW)	●	Same as above.
	Amphibious Warfare (AMW)	●	Same as above.
Spectrum	Strike Warfare (STW)	●	The reduction of available spectrum coupled with the increase in spectrum requirements limits the ability to schedule certain types of events and many concurrent activities. The Navy will continue coordination at the local level to deconflict when possible and work through the chain of command and Range Commanders Council to address spectrum requirements at the national level.
	Electronic Combat (EC)	●	Same as above.
	Anti-Air Warfare (AAW)	●	Same as above.
	Anti-Surface Warfare (ASUW)	●	Same as above.
	Amphibious Warfare (AMW)	●	Same as above.
	Naval Special Warfare (NSW)	●	Same as above.
Maritime Sustainability	Anti-Submarine (ASW)	●	Marine mammals are present on the Sea Range and there is no environmental coverage for ASW on the Sea Range, except for the limited coverage of exercises included in the SOCAL EIS. As a result, ASW training can only be conducted in a small portion of the Sea Range. There is no planned remedy at this time.
Cultural Resources	Strike Warfare (STW)	●	There are hundreds of archeological sites on San Nicolas Island. They do not significantly impact the sea range's mission, but do require substantial management effort and financial support, primarily for surveys. Any expansion of existing target areas requires a detailed survey to identify, evaluate, and treat cultural resources. This limits realistic training. The Navy plans to continue mitigation efforts.
Water Quality/ Water Supply	Strike Warfare (STW)	●	There are restrictions on discharge from the reverse osmosis water purification system that provides potable water to San Nicolas Island. The number of people that can be on San Nicolas Island to support training is limited by the water supply. The Navy plans to continue to work with regulators to modify the discharge permit.
	Electronic Combat (EC)	●	Same as above.
	Anti-Air Warfare (AAW)	●	Same as above.
	Anti-Surface Warfare (ASUW)	●	Same as above.
	Amphibious Warfare (AMW)	●	Same as above.

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Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

Southern California (SOCAL) Assessment Details



Southern California (SOCAL) Assessment Details

Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	6.67	6.75	6.75	6.92	Encroachment Scores	9.06	8.57	8.15	7.27
<ol style="list-style-type: none"> ASW Underseaspace in CY2008 was reassessed from red to yellow in CY2009 and forward. Assessment of the impact was revised to more consistently reflect similar impacts in other range complexes. MW Targets and Scoring & Feedback Systems changed from red to yellow for CY2012. Installation of fixed targets at Imperial Beach and Tanner Bank will provide rudimentary target support to MIW forces, and Instrumentation equipment has been procured for the planned MIW training range. Range support changed from yellow to green for all warfare areas to reflect deployment and use of DCAST. AMW landspace and targets changed from red to yellow to reflect ability for amphibious forces to conduct battalion-level operations on SCI, to include all phases of MEU employment, with the exception of overcoming beach obstacles and defenses. 					<ol style="list-style-type: none"> Encroachment assessments for CY2008 were different than for CY2009, CY2010, and CY2011. The algorithm for the overall assessment score for CY2009 through CY2011 was revised from the original algorithm used in CY2008 to provide greater fidelity and consistency across all range complexes. Based on an improved review process and revised algorithms, the assessments for CY2009, CY2010, and CY2011 provide a more accurate assessment of encroachment. Since the CY2009 assessment, MW assessment for Noise Restrictions was increased from green to red; and Adjacent Land Use was changed from green to yellow, due to MW and public use concerns. In addition, SHPO has restricted placement of targets on SHOBA impact areas, changing the rating for Cultural Resources/STW from green to yellow. Vernal Pool Fairy Shrimp habitat restricts use of portions of SSTC South, changing the rating for wetlands/MW and AMW from green to yellow. These assessment changes resulted in an assessment score change from CY2009 to CY2010 to CY2011. Should the proposed Federal Listing of the Rossem’s Gull-Billed Tern (GBTE) pass, there is potential of increased GBTE predation on the California Least Tern (LETE) and the Western Snowy Plover (SNPL). The increased predation could hinder the recovery of the LETE and the SNPL on Naval Base Coronado beaches and could adversely affect take permits from the USFWS. There is little indication encroachment pressures will change substantially in the foreseeable future. 				

Southern California (SOCAL) Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Strike Warfare (STW)	●	The range cannot support two separate concurrent strikes, and use of live ordnance is limited to specific areas of the range complex. This reduces realism, inhibits new tactics development, limits application of new weapon technologies, reduces live fire proficiency, increases personnel op-tempo, and increases O&M costs. There is no solution except to use other ranges. No completion date has been identified.
	Amphibious Warfare (AMW)	●	SCIRC land area for AMW is limited due to lack of a soil erosion plan, cultural resources surveys, and presence of UXO. STC land use for AMW is limited to individual and basic level training, larger amphibious events, such as MPF, are currently not approved. Completion of the soil erosion, UXO clearance, and funding cultural resources surveys will resolved SCIRC limitations: additional environmental analysis will be required to support larger field exercises on SSTC.
	Naval Special Warfare (NSW)	●	Range has limited maneuver area and limited beach front areas. Range supports basic level training, but additional land is required for more advanced training. This reduces realism, inhibits new tactics development, limits application of new weapon technologies, reduces live fire proficiency, increases personnel op-tempo, and increases O&M costs. The Navy recommends investing in MOUT, road infrastructure, and firing range areas. No completion date has been identified.
Undersea Space	Anti-Submarine (ASW)	●	The issue is lack of instrumentation of the two West Coast Shallow Water Training Ranges (SWTR). The requirement for an instrumented SWTR was documented in CY1994 in a NAVAIR Mission Needs Statement and then again in CY1997 by COMCRUDESGRU to C3F (R 142 125Z AUG 97). There continues to be a documented, unmet requirement for instrumented deep to shallow water tracking and communication capability in SOCAL. Instrumentation and operational use of SWTRs was included in the SOCAL EIS/OEIS (ROD 2009). A lack of SWTR instrumentation reduces realism, inhibits new tactics development, and limits application of new weapon technologies. Recommend funding instrumentation of the West Coast SWTR. No completion date has been identified.
Targets	Strike Warfare (STW)	●	Range has no moving targets, limited number of structural targets, and inadequate Designated Mean Point of Impact at each site. This reduces realism, inhibits new tactics development, limits application of new weapon technologies, reduces live fire proficiency, increases personnel op-tempo, and increases O&M costs. The Navy recommends it invest in smart targets and upgrades to current targets. No completion date has been identified.
	Electronic Combat (EC)	●	Range has no visually significant targets and live ordnance is not allowed. This reduces realism; inhibits new tactics development, limits application of new weapon technologies, reduces live fire proficiency, increases personnel op-tempo, and increases O&M costs. The Navy recommends it invest in smart targets and EC threat levels through Level No completion date has been identified.

Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

Southern California (SOCAL) Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Targets	Anti-Air Warfare (AAW)	●	The range has no supersonic targets or targets with jamming capability and has altitude restrictions. This reduces realism, inhibits new tactics development, limits application of new weapon technologies, reduces live fire proficiency, increases personnel op-tempo, and increases O&M costs. The Navy recommends investing in supersonic targets and additional drones with active jamming capabilities. No completion date has been identified.
	Mine Warfare (MW)	●	A newly-installed shallow water minefield off SSTC and a mid-depth (and deep-water) minefield on Tanner Bank contain respectively, 28 and 30 non-instrumented, threat-representative shapes in specified field configurations in support of emergent MIW (mine hunting, influence sweeping) training. Both fields contain bottom and tethered mine shapes in accordance with SUBPAC and NMAWC requirements. However, due to excessive costs (i.e. VEMS), the minefields do not contain instrumented mine shapes. OPNAV N433 is the resource sponsor for MCM ranges (as of February 2010); investment in SOCAL MCM ranges (in accordance with SOCAL MCM POM 12 Proposal) is a fully-funded line item in the FYDP; however, the proposal did not contain specifications for instrumented targets. The lack of instrumented targets inhibits new tactics development, reduces training proficiency, and limits application of new weapon technologies. The SOCAL Working Group prioritized establishing fixed MCM training ranges in SOCAL and retained proposals for instrumented shapes as part of out-year planning. The Navy recommends investing in expanding existing shallow and mid- to deep-water mine fields with instrumented mine threat composition targets. No completion date has been identified.
	Amphibious Warfare (AMW)	●	The required target types are not all available to this range, specifically beach obstacles and beach defenses. This reduces realism, inhibits new tactics development, limits application of new weapon technologies, reduces live fire proficiency, increases personnel op-tempo, and increases O&M costs. The Navy recommends installing exposed and submerged targets and beach obstacles that may be engaged with live ordnance. No completion date has been identified.
	Anti-Submarine (ASW)	●	Currently available Mk-30 Mod 1 ASW targets do not support the MH-60R dipping sonar; EMATT does not provide required realism. The MH-60R has a much better dipping sonar than previous sonars; Mk-30 Mod 2 targets are preferred over EMATTs, because they are a more effective/realistic target. Additionally, the Mk-30 Mod 1 is not an effective target for sonar, because there is a delay in response (return) from the target and Mk-30 Mod 1 does not recognize the MH-60R signal. Lack of realistic ASW targets reduces realism, and limits use of new technologies. The Navy recommends investing in additional Mk 30 mod 2 targets. The requirement is to increase use of live submarines and 170 Mk 30 Mod 2 ASW targets. No completion date has been identified.
	Naval Special Warfare (NSW)	●	No range targets meet requirements. This reduces realism, inhibits new tactics development, limits application of new weapon technologies, reduces live fire proficiency, increases personnel op-tempo, and increases O&M costs. The Navy recommends it invest in a wide range of NSW required targets.
Threats	Strike Warfare (STW)	●	There is no dedicated threat aircraft and threats are not available in required quantity. EC threats are not available above level 2. There is no capability for virtual threat aircraft. This reduces realism, inhibits new tactics development, limits application of new weapon technologies, reduces live fire proficiency, increases personnel op-tempo, and increases O&M costs. The Navy recommends investing in enhanced EC threat capabilities. No completion date has been identified.
	Electronic Combat (EC)	●	Realistic OPFOR responses are not available; EC threats are not available above level 2. This reduces realism, inhibits new tactics development, limits application of new weapon technologies, reduces live fire proficiency, increases personnel op-tempo, and increases O&M costs. The Navy recommends investing in enhanced EC threat capabilities. No completion date has been identified.
	Anti-Air Warfare (AAW)	●	The range has no dedicated threat aircraft and threats are not available in required quantity. This reduces realism; inhibits new tactics development; limits application of new weapon technologies; reduces live fire proficiency; increases personnel op-tempo, and increases O&M costs. The Navy recommends investing in contract air threat OPFOR with EC augmentation. No completion date has been identified.
	Anti-Surface Warfare (ASUW)	●	There is no dedicated air or surface threat capability in required numbers; EC threats are not available above level 2; and command and control capability for OPFOR does not meet requirements. This reduces realism, inhibits new tactics development, limits application of new weapon technologies, reduces live fire proficiency, increases personnel op-tempo, and increases O&M costs. The Navy recommends it invest in enhanced EC threat capabilities. No completion date has been identified.
	Mine Warfare (MW)	●	The range has no dedicated threat aircraft or submarines. EC threats are not available above level 2. This reduces realism; inhibits new tactics development, limits application of new weapon technologies, reduces live fire proficiency, increases personnel op-tempo, and increases O&M costs. The Navy recommends investing in enhanced EC threat capabilities. No completion date identified
	Amphibious Warfare (AMW)	●	There is no live, virtual, constructive threat ground force; EC threats are not available above level 2. This reduces realism; inhibits new tactics development, limits application of new weapon technologies, reduces live fire proficiency, increases personnel op-tempo, and increases O&M costs. The Navy recommends investing in enhanced EC threat capabilities. No completion date has been identified.

Southern California (SOCAL) Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Threats	Anti-Submarine (ASW)	●	The range has no dedicated threat aircraft, submarines, or surface ships. Threats are not available in required quantity. EC threats are not available above level 2. There is no capability for virtual threat aircraft. This reduces realism, inhibits new tactics development, and limits application of new weapon technologies, reduces live fire proficiency, and increases personnel op-tempo, and increases O&M costs. The Navy recommends investing in enhanced EC threat capabilities. No completion date has been identified.
	Naval Special Warfare (NSW)	●	The range has no live, virtual, or constructive threat ground force. This reduces realism, inhibits new tactics development, limits application of new weapon technologies, reduces live fire proficiency, increases personnel op-tempo, and increases O&M costs. The Navy recommends investing in enhanced EC threat capabilities. No completion date has been identified.
Scoring & Feedback System	Strike Warfare (STW)	●	There is no M&S capability, and no scoring capabilities. This reduces realism, inhibits new tactics development, limits application of new weapon technologies, reduces live fire proficiency, increases personnel op-tempo, and increases O&M costs. The Navy recommends investing in M&S systems. No completion date has been identified.
	Electronic Combat (EC)	●	Same as above.
	Anti-Air Warfare (AAW)	●	Same as above.
	Anti-Surface Warfare (ASUW)	●	Same as above.
	Mine Warfare (MW)	●	There is no M&S capability, no scoring capabilities, and no instrumented mines. This reduces realism; inhibits new tactics development, limits application of new weapon technologies, reduces live fire proficiency, increases personnel op-tempo, and increases O&M costs. The Navy recommends investing in seeding shallow water and mid to deep water (for SUBPAC and NMAWC) mine fields (see SOCAL MCM Working Group Proposal submitted to CPF TTR and endorsed by MIWIP Training Subgroup; M&S systems.) No completion date has been identified.
	Amphibious Warfare (AMW)	●	There is no Modeling & Simulation capability and no scoring capabilities. This reduces realism, inhibits new tactics development, limits application of new weapon technologies, reduces live fire proficiency, increases personnel op-tempo, and increases O&M costs. The Navy recommends capabilities to invest in M&S systems. No completion date has been identified.
	Naval Special Warfare (NSW)	●	There is no M&S capability and no scoring. This reduces realism; inhibits new tactics development; limits application of new weapon technologies, reduces live fire proficiency, increases personnel op-tempo, and increases O&M costs. The Navy recommends it invest in M&S systems. No completion date has been identified.
Range Support	Strike Warfare (STW)	●	Lack of access control and physical security for the SCIRC open the island to security and safety breaches. There is a requirement for persistent, on-island range control of San Clemente Island (SCI). SCORE provides some aspects of range control through its scheduling process. However, SCORE is not resourced or chartered to provide access control or physical security to the island or training areas on the island. While CINCPACFLT 112353Z FEB00 assigned overall operational authority to SCORE for SCI, changes in Navy structure (CNIC, USFFC) significantly impede SCORE's ability to provide required oversight and coordination. Lack of range control on SCI exacerbates safety concerns, reduces range efficiency, and restricts range usage data collection requirements. SOCAL/NOCAL Fleet Project Team consensus was reached (August 2011) on the requirement for a centralized Range Control Center (RCC) for SCI. The Navy recommends fully funding the RCC for SCI.
	Anti-Air Warfare (AAW)	●	Same as above.
	Amphibious Warfare (AMW)	●	Same as above.
	Naval Special Warfare (NSW)	●	Same as above.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Threatened & Endangered Species	Strike Warfare (STW)	●	The presence of T&E species at SOCAL has an impact on training. It requires significant mitigation effort to support training activities. The Navy plans to update its latest INRMP (In progress; expected completion date 2011), continue mitigations, and update its SOCAL EIS (ECD: January 2014).

Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

Southern California (SOCAL) Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Threatened & Endangered Species	Amphibious Warfare (AMW)	●	<p>Fire restrictions and species protection affect activities at the SCIRC. Restriction of controlled burns (Biological Opinion FWS-LA-09B0027-09F0040) limits Navy’s ability to deal with island-wide UXO, cactus and exotic grasses. Dense grasses and cactus prevent operational range clearance and range personnel from accessing target areas. The ubiquitous presence of 22 million Island Night Lizards (INL) (ESA species) severely restricts the ability to conduct UXO sweeps on SCI as directed in accordance with DoD-mandated Operational Range Clearance (ORC) guidelines. Controlled burns must be implemented in order to remove vegetation, so EOD personnel can see the UXO. However, island-wide presence of the INL creates a requirement to conduct NEPA analysis and ESA consultations on the controlled burns. Although the Navy submitted a INL de-listing package over five years ago, USFWS has not prioritized de-listing the INL.</p> <p>The Loggerhead Shrike and the San Clemente Sage Sparrow also limit training opportunities on San Clemente Island. California Least Tern, Western Snowy Plover, and San Diego Fairy Shrimp presence on the beaches of SSTC create avoidance areas. As long as the INL remains on the ESA list, UXO sweeps, public works projects, operations, and conservation activities requiring access throughout the island will be restricted. Species restrictions create avoidance areas, prohibit certain training events, segment training/reduce realism, limit application of new technologies, and inhibit new tactics development. SCIRC operations must be conducted during times of reduced fire potential and in areas where species are not prevalent. A draft SCI Operational Range Clearance Plan is in development; need for associated Environmental Assessment addressing island-wide, controlled burns has been identified. The Navy requires that USFWS prioritize de-listing the INL on SCI. No completion date has been identified.</p>
	Naval Special Warfare (NSW)	●	<p>Military working dog (MWD) restrictions and species protection affect activities at the SCIRC and SSTC. MWDs are required to meet specific kennel, working area, transport, and health certification requirements provided in SCIIINST 5585.2. The SCI Island Fox is susceptible to diseases and parasites from dogs. MWDs on SSTC are required to remain 30m outside of Western Snowy Plover buffer areas for nests, and have restricted exercise areas on SSTC-N until completion of a study to evaluate the effects of MWDs on Terns and Plovers. Over the beach (OTB) activities at SSTC-S can occur year-round with a platoon of personnel and one dog. USFWS designated the land areas around the ONLY maritime Special Operations Urban Complex (SOUC) MOUT for NSW as medium to poor SCI Sage Sparrow habitat. Per Biological Opinion 1-6-00-F-19 (2001), NSW has paid for Sage Sparrow monitoring around the SOUC. The CY2008 USFWS Biological Opinion extended this monitoring commitment indefinitely, but, to date, USFWS does not have a Recovery Plan for the San Clemente Sage Sparrow (listed as threatened species August 11, 1977 (42 Federal Register 40682). SCI Biological Opinion Terms and Conditions contains restrictions on ordnance use, and insertions and extractions encircling the SOUC. These restrictions reduce access to training ranges; and inhibit new tactics development for NSW in state-of-the-art, real-world urban training environment, including IED, CQC, CQD training. In absence of a USFWS Recovery Plan for the San Clemente Sage Sparrows, operational restrictions on NSW SOUC training (insertion and extractions) and requirement to fund monitoring activities will continue indefinitely.</p>
Munitions Restrictions	Strike Warfare (STW)	●	<p>There are munitions restrictions on SHOBA that affect related training activity. SHOBA users must restrict munitions use to approved types, amounts, and expenditure locations. Munitions restrictions create avoidance areas, prohibit certain training events, segment training/reduce realism, limit application of new technologies, and inhibit new tactics development. Operations involving munitions must be conducted during times of reduced fire potential and in areas where species are not prevalent. No planned remediation.</p>
	Mine Warfare (MW)	●	<p>There are munitions restrictions in SSTC bay training areas (e.g., max 15 grams NEW). SSTC users must restrict munitions use to approved types, amounts, and expenditure locations. Munitions restrictions create safety buffer zones, avoidance areas, prohibit certain training events, segment training/reduce realism, limit application of new technologies, and inhibit new tactics development. No planned remediation. SSTC operations involving munitions may not be conducted in areas where marine mammals, sea birds, and sea turtles are present.</p>
	Amphibious Warfare (AMW)	●	<p>There are munitions restrictions on SHOBA and SSTC that affect related training activity. SHOBA users must restrict munitions use to approved types, amounts, and expenditure locations. Operations involving munitions must be conducted during times of reduced fire potential and in areas where species are not prevalent. Munitions restrictions create avoidance areas, prohibit certain training events, segment training/reduce realism, limit application of new technologies, and inhibit new tactics development. No planned remediation. SSTC conforms to restrictions on small arms blanks and simunitions expenditures and to prohibitions on land detonations.</p>
	Naval Special Warfare (NSW)	●	<p>Same as above.</p>

Southern California (SOCAL) Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Spectrum	Strike Warfare (STW)	●	Employment of Link 16 is restricted. Restrictions limit spectrum operations and prohibit certain training events, segment training/reduce realism, reduce training days, limit application of new weapons technologies, and inhibit new tactics development. The Navy continues to coordinate with appropriate frequency allocation and oversight agencies to seek spectrum relief and to develop encroachment strategies that will reduce encroachment while ensuring pending use of emerging spectrum technologies. Competition for frequency spectrum will add increased pressure on available bandwidth for Naval operations.
	Electronic Combat (EC)	●	Same as above.
	Anti-Air Warfare (AAW)	●	Same as above.
	Anti-Surface Warfare (ASUW)	●	Same as above.
	Mine Warfare (MW)	●	Same as above.
	Amphibious Warfare (AMW)	●	Same as above.
Maritime Sustainability	Anti-Surface Warfare (ASUW)	●	<p>Maritime protective and mitigation measures undertaken in compliance with regulatory requirements have resulted in training restrictions that reduce training flexibility, force segmented training, and ultimately reduce training realism. All at-sea training is impacted to some degree; impacts are most significant to integrated warfare training using active underwater acoustic sources or in-water explosive ordnance. The Navy and National Marine Fisheries Service (NMFS) have developed science-based protective and mitigation measures that adequately protect marine species while accommodating military readiness activities. The Navy continues to develop EISs and obtain permits and authorizations for its range complexes to ensure military training complies with applicable laws and regulations.</p> <p>Litigation risks remain a concern, entailing the potential to delay or further restrict training, despite the protective and mitigation measures applied by the Navy in compliance with the Marine Mammal Protection Act (MMPA) and the Endangered Species Act (ESA). Endangered species encroachment has created avoidance areas that have resulted in some reduction of training days and prohibits certain training events. This area is relatively small in scope; however, if these types of restrictions were applied to other species/areas, there would be significant impacts to readiness through reduction in range access, segmentation of training/reduction in realism, limits on the application of new technologies, raised flight altitudes, reduced live fire proficiency, increased personnel tempo, and increased O&M costs. The Navy will continue to invest in marine mammal research, rely on scientifically valid empirical data results as basis of marine mammal mitigation development, and factor mitigation effectiveness into permit requests. It will continue education of Fleet units to adhere to the maritime protective and mitigation measures, and sponsor public education outreach efforts.</p> <p>The Navy's authorizations under the MMPA and ESA include an adaptive management approach that includes continually evaluating existing mitigation measures for their potential impacts on training. If impacts on training from mitigation measures are identified and documented, the Navy will raise these impacts with the NMFS for resolution during an annual adaptive management review process. The Navy is currently preparing environmental compliance documentation to renew the MMPA and ESA authorizations, which will consider any impacts on training stemming from existing mitigations measures and propose changes as warranted.</p>
	Mine Warfare (MW)	●	Same as above.
	Amphibious Warfare (AMW)	●	Maritime protective and mitigation measures undertaken in compliance with regulatory requirements have resulted in training restrictions that reduce training flexibility, force segmented training, and ultimately reduce training realism. Amphibious landings on SSTC must consider and avoid major grunion spawns on SSTC beaches in April and May. Endangered species encroachment has created avoidance areas that have resulted in some reduction of training areas on SSTC and SCIRC. This area is relatively small in scope; however, if these types of restrictions were applied to other species/areas, there would be significant impacts to readiness through reduction in range access, segmentation of training/reduction in realism, limits on the application of new technologies, raised flight altitudes, reduced live fire proficiency, increased personnel tempo, and increased O&M costs. The Navy will continue to invest in fish habitat research on SSTC and monitor grunion spawns; factor mitigation effectiveness into permit requests. It will continue education of Fleet units to adhere to the maritime protective and mitigation measures, and sponsor public education outreach efforts.
	Anti-Submarine (ASW)	●	Same as above.
Airspace	Amphibious Warfare (AMW)	●	Helicopters supporting SSTC amphibious operations compete with multiple airspace users on SSTC, including military aircraft training, law enforcement, commercial, and private aircraft. Multiple airspace users and congested airspace on SSTC prohibit certain training events, reduce range access, reduce realism, inhibit tactics development, and limit application of new technologies. The Navy continues coordination with Navy air traffic controllers and public stakeholders to educate them on matters of SSTC training.

Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

Southern California (SOCAL) Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Airspace	Naval Special Warfare (NSW)	●	Same as above.
Noise Restrictions	Mine Warfare (MW)	●	Concerns with noise impacts on the Imperial Beach community from SSTC NSW and EOD MCM operations have prohibited the construction of a Demolition Pit at SSTC South. The Demolition Pit was eliminated from the SSTC EIS Proposed Action. Although this expansion was identified by EOD and NSW as a critical backyard capability, the Demolition Pit was not carried forward in the DEIS. Encroachment from noise restrictions creates avoidance areas, prohibits certain training events, reduces range access, reduces realism, inhibits tactics development, and limits application of new technologies. The Navy plans to recommend the evaluation of technologies and structures for an EOD Demolition Pit and to re-engage with the public to permit installation of an EOD pit on the SSTC.
	Amphibious Warfare (AMW)	●	Helicopter noise from SSTC amphibious operations impacts surrounding communities and limits expansion of helicopter supported training. Multiple airspace users and congested airspace on the SSTC prohibits certain training events, reduces range access, reduces realism, inhibits tactics development, and limits application of new technologies. The Navy continues coordination with Navy air traffic controllers and public stakeholders to educate them on matters of SSTC training.
	Naval Special Warfare (NSW)	●	Same as above for the lack of a demo pit in SSTC-S and use of helicopters in training.
Adjacent Land Use	Mine Warfare (MW)	●	Concerns about public usage of beaches adjacent to Navy training areas as well as the impact of noise on the adjacent community on Silver Strand has led to reduced intensity of training and training realism. Usage and noise concerns create avoidance areas, prohibit certain training events, reduce range access, reduce realism, inhibit tactics development, and limit application of new technologies. The Navy continues coordination with public stakeholders to educate on matters of SSTC training.
	Ambitious Warfare (AMW)	●	Same as above.
	Naval Special Warfare (NSW)	●	Same as above.
Cultural Resources	Strike Warfare (STW)	●	Cultural resources on the SHOBA affect STW target placement (impact areas 1 and 2) and expansion of Adversary Village (impact area 1). Cultural resources encroachment creates avoidance areas, reduces range access, reduces realism, and inhibits tactics development. There is collaboration between the Navy and ACHP/CASHPO on the development of the Integrated Cultural Resources Management Plan description of a modeling study to address sec 106 compliance in the impact areas.
	Amphibious Warfare (AMW)	●	SCI is the ONLY maritime training area that can support I MEF Battalion Landings, tactical tracked vehicle insertions, and live fire targeting. The preponderance of the potential archaeological sites identified on San Clemente Island lack definitive eligibility determination, resulting in a reduction in the use of available training areas. Presence of archaeological sites in the Assault Vehicle Maneuver Areas and SHOBA restricts tracked vehicle and howitzer maneuvers. All sites are treated as if eligible under the NHPA. In the absence of an eligibility determination, over 7,000 potential sites and associated landmass create avoidance areas throughout maneuver spaces designated in the SOCAL EIS/OEIS as the USMC Assault Vehicle Maneuver Area, Artillery Firing Positions (AFP), and Assault Maneuver Positions (AMP). The Navy recommends it assess regulatory status of cultural resource for eligibility under the NHPA in accordance with operationally-prioritized areas, and if eligible, annotate the historical significance and either remove representative artifacts or establish avoidance area around representative artifact outside of high-value range areas designated (SOCAL EIS/OEIS) for tracked vehicle maneuvers and live fire operations.
	Naval Special Warfare (NSW)	●	The presence of archaeological sites restrict NSWG-1 and NSWC tactical training at a cost to NSW of over \$25M. SWAT 1 contains the ONLY maritime SOUC. SCI supports the only location for BUD/S Third Phase training. Cultural resources create an avoidance area that resulted in lost range access and tactical training development. The Navy recommends it assess regulatory status of cultural resources for eligibility under the NHPA, and if eligible, annotate the historical significance and remove the artifacts from SSTC range.
Wetlands	Mine Warfare (MW)	●	Vernal Pool Fairy Shrimp habitat restricts use of portion of SSTC South for troop maneuvers, EOD and land mine detection, HRST, and IAD. Habitat encroachment creates avoidance areas, prohibits certain training events, reduces range access, reduces realism, inhibits tactics development, and limits application of new technologies. The Navy adheres to SSTC EIS/BO avoidance measures.
	Amphibious Warfare (AMW)	●	Same as above.
	Naval Special Warfare (NSW)	●	Same as above.

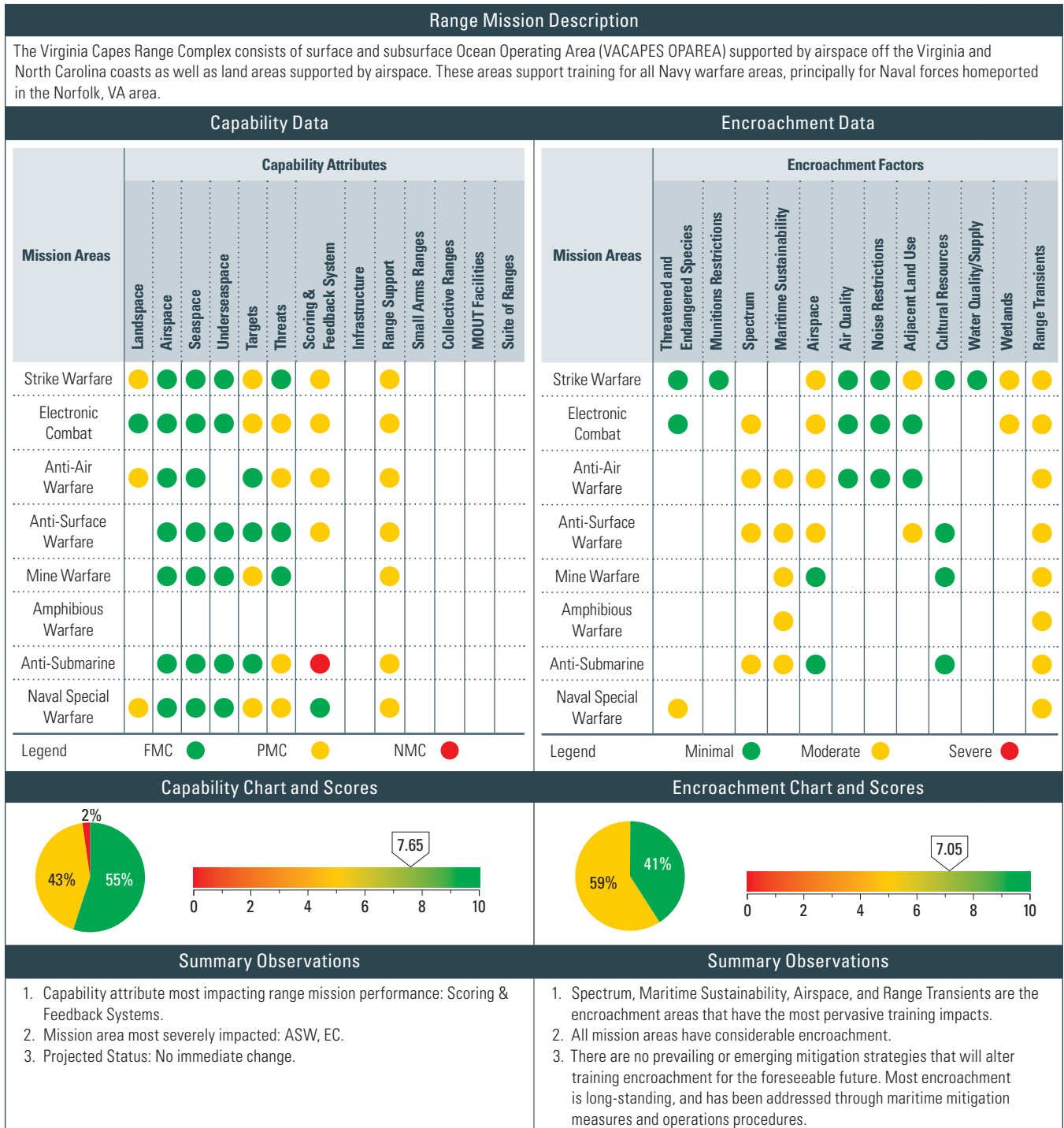
Southern California (SOCAL) Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Range Transients	Anti-Surface Warfare (ASUW)	●	Range transients, involving commercial shipping, commercial fishing, and private pleasure boating, encroach on training, either by delaying events or forcing relocation to less than optimum locations. Commercial vessel and recreational vessel encroachment creates avoidance areas and segments training/reduces realism. The Navy will continue to pursue opportunities to inform industry and the public of the impact of range transient encroachment on at-sea OPAREAs and Navy readiness. FACSFAC SD is currently negotiating with the FAA to establish a restricted area over all of SCI and extending out 12nm. This will allow security enforcement of range transient encroachment, and will assist the public in avoiding hazardous operations.
	Mine Warfare (MW)	●	Same as above.
	Amphibious Warfare (AMW)	●	Same as above.
	Naval Special Warfare (NSW)	●	Incidents of range transients cause the delay or cancellation of operations. SSTC ocean and some bayside areas are open navigable waters, so the Navy has no legal authority to request that boaters leave the boat lanes during scheduled operations. Range transients around SCI create avoidance areas, prohibit certain training events, reduce range access, reduce realism, inhibit tactics development, and limit application of new technologies. Waters off SCI were designated 21 June 2010 through formal Federal rule making (Final Rule—Federal Register 20 May 2010) as a Safety Zone out to 3nm (encircles SCI). NBC and FACSFAC SD are working with the U.S. Coast Guard (USCG) to effectively communicate safety zone status to the public (www.island.org). The USCG is the enforcement agency. Navy will continue to pursue opportunities to inform industry and the public of the impact of range transient encroachment on at-sea OPAREAs and Navy readiness, and will continue to work with the USCG to assess the feasibility of establishing Safety Zones in the SSTC boat lanes and undesignated Bay training areas. FACSFAC SD is currently negotiating with the FAA to establish a restricted area over all of SCI and extending out 12nm. This will allow security enforcement of range transient encroachment, and will assist the public in avoiding hazardous operations.

Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

Virginia Capes (VACAPES) Assessment Details



Virginia Capes (VACAPES) Assessment Details

Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	7.39	7.50	7.50	7.67	Encroachment Scores	8.70	8.38	8.38	8.25
<ol style="list-style-type: none"> EC for Landspace was yellow in CY2008 and reassessed to green in CY2009 and forward based on an updated assessment of Landspace requirement to the primary use of the range, which is for only the "basic" level training. In CY2011 MW, the capability score for Scoring & Feedback Systems changed from red to white based on USFF evaluation that TSPi Scoring data is not required. In CY2012 NSW mission assessment re-added to assessment file, as it is a primary mission area for the VACAPES Range Complex. 					<ol style="list-style-type: none"> Encroachment assessments for CY2008 were different than for CY2009, CY2010, and CY2011. The algorithm for the overall assessment score for CY2009 through CY2011 was revised from the original algorithm used in CY2008 to provide greater fidelity and consistency across all range complexes. Based on an improved review process and revised algorithms, the assessments for CY2009, CY2010, and CY2011 provide a more accurate assessment of encroachment. The assessments for the latter three years reveal there has been little encroachment change from year to year, with relatively constant overall scores for CY2009, CY2010, and CY2011. The VACAPES-Northeast RCMP update is currently in progress; the VACAPES OPAREA EAP was completed in May 2011. Department of Interior (DOI) and private energy interests in the Outer Continental Shelf (OCS) are increasing as domestic energy demand builds. Naval offshore operating areas and training events may be affected. High priority areas include training ranges & sea space in and adjacent to all Navy OPAREAs. OASN (E,I&E), as DoD spokesman for military offshore use, continues to work closely with the Fleets & DOI's Bureau of Ocean Energy Management (BOEM) to resolve issues of combined use of the OCS important to both agencies. Fleet review and analysis of impacts from both oil/gas and wind energy "lease sale" areas (Mission Critical Areas [MCAs]) have been reviewed and forwarded to OSD. DoD and DOI coordination continues. There is potential for wind-farm development in the VACAPES OPAREA. Development of proposed lease blocks with wind farm infrastructure would have an impact on Navy testing and training activities conducted in the vicinity of the infrastructure. The encroachment time frame is undetermined. There is potential for oil/gas development efforts in the VACAPES OPAREA. Development of Lease Sale 220 with oil/gas infrastructure would affect Navy testing and training activities conducted in the vicinity of the infrastructure. Although, on May 27, 2010, President Obama announced Secretary Salazar's decision to cancel Sales 215 and 220, this issue should remain in the Navy's purview as the potential exists that it, along with other areas within the VACAPES Range Complex, may be considered for exploration and production in the future. The Federal Government has warned the City of Virginia Beach that more tall buildings at the resort area could obstruct the long range radar that sits at NAS Oceana. The radar is designed and used to detect low flying objects that could threaten the coastline 				

Virginia Capes (VACAPES) Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Strike Warfare (STW)	●	Landspace is only available at Dare County Bombing Range, which does not fully support size nor topography requirements for placement of required number of targets. Use of live ordnance is not supported. Use of flares is restricted. No land area supports NSFS training or CSAR training. These shortfalls prohibits certain training events, reduces realism, and increases personnel op-tempo. The Navy recommends identifying East Coast land areas of sufficient size to support standoff weapons and CSAR training. No completion date has been identified.
	Anti-Air Warfare (AAW)	●	Landspace is only available at Dare County Bombing Range, which does not fully support size or topography requirements, or support surface combatant detection of aircraft over land. Use of flares is restricted. These shortfalls prohibit certain training events, reduce realism, and increase personnel op-tempo. Overland ACM training is conducted at Fallon Range Training Complex. No additional land options are available within VACAPES.
	Naval Special Warfare (NSW)	●	Landspace is only available at JEB Little Creek-Fort Story, NAS Oceana Detachment Dam Neck, and Navy Dare County Bombing Range, which do not fully support live fire and maneuver and MOUT requirements. This prohibits certain training events; reduces realism; limits application of new weapon systems, reduces live fire proficiency, increases personnel tempo, and increases O&M costs. No additional Navy-owned land options are available within VACAPES. Other Service land areas are used to supplement land area requirements.

Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

Virginia Capes (VACAPES) Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Targets	Strike Warfare (STW)	●	Live ordnance is not allowed, (the urban area is too small). NSFS is not supported ashore; and required targets do not provide both visual and infrared signatures. These shortfalls prohibit certain training events, reduce realism, limit application of weapon technologies, reduce live fire proficiency, increase personnel op-tempo, and increase O&M costs. The Navy recommends increasing the number and variety of targets with more realistic signatures and installing no drop ordnance instrumentation where applicable. No completion date has been identified.
	Electronic Combat (EC)	●	Additional targets are required to achieve required density and a more representative threat. This prohibits certain training events; reduces realism, limits application of weapon technologies, reduces live fire proficiency, increases personnel op-tempo, and increases O&M costs. The Navy recommends increasing the number and variety of EC threats. Install portable systems where applicable. No completion date has been identified.
	Mine Warfare (MW)	●	There are insufficient training mines and range areas to support increased MW training. VACAPES must support the Navy's principal MH-60 and MH-53 MW helicopter squadrons. This prohibits certain training events; reduces realism; inhibits tactics, increases personnel op-tempo, and increases O&M costs. The Navy will investigate procurement of appropriate mix of recoverable and expendable inert bottom and moored mine shapes and instrumented bottom training mines to populate a series of permanent MW training areas. No completion date has been identified.
	Naval Special Warfare (NSW)	●	Available beach areas do not support placement of obstacles and defenses that support employment of HE ordnance clearing devices. Prohibits certain training events, reduces realism, limits application of new weapons, reduces live fire proficiency, increases personnel op-tempo, and increases O&M costs. The Navy recommends investigating other locations to support required training events. No completion date has been identified.
Threats	Electronic Combat (EC)	●	The EC threat representation does not fully support EC threat levels 3 or 4 for required mission areas. The existing instrumentation systems are becoming obsolete and unsupported through the FYDP. This reduces realism; inhibits tactics development; and greatly increases O&M costs. The Navy recommends maintaining the current upgrade schedule to preclude severe degradation of system capability. No completion date has been identified.
	Anti-Air Warfare (AAW)	●	Helicopter threat OPFOR is not available; required number of air threat OPFOR is not available; there is no dedicated supersonic threat OPFOR available. This reduces realism; inhibits tactics, increases personnel op-tempo, and increases O&M costs. The Navy recommends increasing the number and types of air threat OPFOR. No completion date has been identified.
	Anti-Submarine (ASW)	●	There are limited dedicated live submarines, surface ships, or aircraft to serve in the OPFOR role. This prohibits certain training events; reduces realism; inhibits tactics; increases personnel op-tempo; and increases O&M costs. The Navy recommends investing in additional threat OPFOR and increasing the availability of submarines through the DESI and aircraft through CAS. No completion date has been identified.
	Naval Special Warfare (NSW)	●	Dedicated ground, armor, and mechanized vehicle OPFORs are not available. This prohibits certain training events, reduces realism, limits application of new weapons, reduces live fire proficiency, increases personnel tempo, and increases O&M costs. The Navy will investigate other locations that will support the required OPFOR and work with other forces for mutual support of training requirements. No completion date has been identified.
Scoring & Feedback System	Strike Warfare (STW)	●	The OPAREA coverage is not complete, M&S is inadequate, and there is no RTKN. This reduces realism, inhibits tactics, increases personnel op-tempo, and increases O&M costs. The Navy recommends expanding and improving 2-D & 3-D coverage of the OPAREA, investing in JNTC-compliant M&S, and improving debrief capabilities. No completion date has been identified.
	Electronic Combat (EC)	●	Same as above.
	Anti-Air Warfare (AAW)	●	The OPAREA coverage is not complete, M&S is inadequate, and there is no RTKN. This reduces realism, inhibits tactics, increases personnel op-tempo, and increases O&M costs. The Navy recommends expanding and improving 2-D & 3-D coverage of the OPAREA, investing in JNTC-compliant M&S, and improving debrief capabilities. No completion date has been identified.
	Anti-Surface Warfare (ASUW)	●	Same as above.
	Anti-Submarine (ASW)	●	There is no underwater tracking range, scoring capability, M&S, or post mission feedback. This prohibits certain training events, reduces realism, limits weapon technologies, inhibits tactics, reduces live fire proficiency, increases personnel op-tempo, and increases O&M costs. The Navy recommends developing an East Coast USWTR; expanding and improving 2-D & 3-D coverage of the OPAREA, investing in JNTC compliant M&S, and improving debrief capabilities. An East Coast USWTR is planned for the Jacksonville Range Complex; IOC is planned for FY2017. No completion date has been identified for other recommendations.

Virginia Capes (VACAPES) Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Range Support	Strike Warfare (STW)	●	The lack of web-based scheduling system with pre-event, real-time, and post-event modules precludes most efficient scheduling and documenting of range usage. Post-event reporting is particularly critical for ordnance expenditures or active sonar usage in at-sea OPAREAs since MMPA permits require the Navy to periodically report these values. Non-compliance or inaccurately reporting post-event values to regulators risks range access or prohibitions on training events that involve active sonar or high explosives at-sea. PACFLT is developing a Data Collection and Scheduling Tool (DCAST) that includes a post-event module to mitigate issues outlined above. If successful, the Navy could consider adopting it at all range scheduling facilities.
	Electronic Combat (EC)	●	Same as above.
	Anti-Air Warfare (AAW)	●	Same as above.
	Anti-Surface Warfare (ASUW)	●	Same as above.
	Mine Warfare (MW)	●	Same as above.
	Anti-Submarine (ASW)	●	Same as above.
	Naval Special Warfare (NSW)	●	Same as above.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Threats & Endangered Species	Naval Special Warfare (NSW)	●	Sea turtles and marine mammals can be found in the waters offshore from NAS Oceana Dam Neck Annex. Sea turtles use the Dam Neck beach for nesting purposes. Threatened and endangered marine mammal species may migrate through the littoral waters offshore. Both of these conditions result in potential training impacts for Naval Special Warfare Development Group (DEVGRU). Training activities affected are NSW OPS; Over-the-Beach; Marksmanship. Continue Fleet unit education on adherence to marine species protective measures.
Spectrum	Electronic Combat (EC)	●	Restrictions resulting from electromagnetic spectrum encroachment include prohibitions from performing GPS jamming, authorization to radiate the Spoon Rest VHF early warning threat radar system, and restricted use of the Track While Scan Simulator (ITWSS). Additionally, employment of Link 16, SPY-1 radar, SPS 49 radar, and IFF are restricted. These restrictions limit spectrum operations and prohibit certain training events, segment training/reduce realism, reduce training days, limit application of new weapons technologies, and inhibit new tactics development. The Navy continues to coordinate with appropriate frequency allocation and oversight agencies to seek spectrum relief and to develop encroachment strategies that will reduce encroachment while ensuring pending use of emerging spectrum technologies. Competition for frequency spectrum will add increased pressure on available bandwidth for Naval operations.
	Anti-Air Warfare (AAW)	●	Employment of Link 16 is restricted. There is frequency interference with BQM-74 drone operations out of Dam Neck into SUA. These restrictions limit spectrum operations and prohibit certain training events, segment training/reduce realism, reduce training days, limit application of new weapons technologies, and inhibit new tactics development. The Navy continues to coordinate with appropriate frequency allocation and oversight agencies to seek spectrum relief, and to develop encroachment strategies that will reduce encroachment while ensuring pending use of emerging spectrum technologies. Competition for frequency spectrum will add increased pressure on available bandwidth for Naval operations.
	Anti-Surface Warfare (ASUW)	●	Employment of Link 16, SPY-1 radar, SPS 49 radar, and IFF are restricted. These restrictions limit spectrum operations and prohibit certain training events, segment training/reduce realism, reduce training days, limit application of new weapons technologies, and inhibit new tactics development. The Navy continues to coordinate with appropriate frequency allocation and oversight agencies to seek spectrum relief and to develop encroachment strategies that will reduce encroachment while ensuring pending use of emerging spectrum technologies. Competition for frequency spectrum will add increased pressure on available bandwidth for Naval operations.
	Anti-Submarine (ASW)	●	Same as above.

Figure 3-28 Navy Capability and Encroachment Assessment Detail (continued)

Virginia Capes (VACAPES) Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Maritime Sustainability	Anti-Air Warfare (AAW)	●	<p>Maritime protective and mitigation measures undertaken in compliance with regulatory requirements have resulted in training restrictions that reduce training flexibility, force segmented training, and ultimately reduce training realism. All at-sea training is impacted to some degree; impacts are most significant to integrated warfare training using active underwater acoustic sources or in-water explosive ordnance. The Navy and NMFS have developed science-based protective and mitigation measures that adequately protect marine species while accommodating military readiness activities. The Navy continues to develop EISs, and obtain permits and authorizations for its range complexes to ensure military training complies with applicable laws and regulations.</p> <p>Litigation risks remain a concern, entailing the potential to delay or further restrict training, despite the protective and mitigation measures applied by the Navy in compliance with the MMPA and the ESA. Endangered species encroachment from the North Atlantic Right Whale has created avoidance areas that have resulted in some reduction of training days and prohibits certain training events. This area is relatively small in scope; however, if these types of restrictions were applied to other species, there would be significant impacts to readiness through reduction in range access, segmentation of training/reduction in realism, limits on the application of new technologies, raised flight altitudes, reduced live fire proficiency, increased personnel tempo, and increased O&M costs. The Navy will continue to invest in marine mammal research, rely on scientifically valid empirical data results as basis of marine mammal mitigation development, and factor mitigation effectiveness into permit requests and continue education of Fleet units to adhere to the maritime protective and mitigation measures, and sponsor public education outreach efforts.</p> <p>The Navy's authorizations under the MMPA and ESA include an adaptive management approach that includes continually evaluating existing mitigation measures for their potential impacts on training. If impacts on training from mitigation measures are identified and documented, the Navy will raise these impacts with the NMFS for resolution during an annual adaptive management review process. The Navy is currently preparing environmental compliance documentation to renew the MMPA and ESA authorizations by January 2014, which will consider any impacts on training stemming from existing mitigations measures and propose changes as warranted.</p>
	Anti-Surface Warfare (ASUW)	●	Same as above.
	Mine Warfare (MW)	●	Same as above.
	Amphibious Warfare (AMW)	●	Same as above.
	Anti-Submarine (ASW)	●	Same as above.
Adjacent Land Use	Strike Warfare (STW)	●	There are potential Safety Zone Issues with regard to communities underlying Navy Dare County Bombing Range (NDCBR) and Long Shoal Naval Ordnance Area (LSNOA) SUA. The NDCBR Compatibility Zones extend over large areas of Dare and Tyrrell Counties, and some existing and future land uses in these zones are incompatible. The LSNOA Compatibility Zones extend over large areas of the Pamlico Sound and perimeter villages, and some existing and future land uses in these zones are incompatible. This creates avoidance areas, restricts flight altitudes and/or airspeeds, inhibits new tactics development. The Navy will work with Dare County to incorporate the RAICUZ recommendations into Dare County land use planning initiatives. It will continue the DBRAC meetings, and support compatible land use, such as farmland preservation.
	Anti-Surface Warfare (ASUW)	●	Same as above.
Wetlands	Strike Warfare (STW)	●	Self-imposed Clean Water Act/Dare County wetlands and land use plans limit target configuration, placement, and maintenance, due to many NDCBR impact areas having been situated in designated wetlands. This Navy-induced encroachment affects STW by limiting targetry opportunities at NDCBR. Consideration should be given to seeking out a wetlands delineation at NDCBR and seeking wetlands 404 permits to accommodate target configuration, placement, and maintenance. The Navy will assess emerging demands for upgraded or additional impact areas within or out of the wetland areas to accommodate new munitions technologies.
	Electronic Combat (EC)	●	Self-imposed Clean Water Act/Dare County wetlands and land use plans limit target configuration, placement, and maintenance, due to many NDCBR impact areas having been situated in designated wetlands. This Navy-induced encroachment affects STW by limiting targetry opportunities at NDCBR. Consideration should be given to seeking out a wetlands delineation at NDCBR and seeking wetlands 404 permits to accommodate target configuration, placement, and maintenance. The Navy will assess emerging demands for upgraded or additional impact areas within or out of the wetland areas to accommodate new munitions technologies.

Virginia Capes (VACAPES) Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Range Transients	Strike Warfare (STW)	●	Range transients, involving commercial shipping, commercial fishing, and private pleasure boating encroach on training, either by delaying events or forcing relocation to less than optimum locations. Commercial vessel and recreational vessel encroachment create avoidance areas and segments training/reduces realism. The Navy will continue to pursue opportunities to inform industry and the public of the impact of range transient encroachment on at-sea OPAREAs and Navy readiness.
	Electronic Combat (EC)	●	Same as above.
	Anti-Air Warfare (AAW)	●	Same as above.
	Anti-Surface Warfare (ASUW)	●	Same as above.
	Mine Warfare (MW)	●	Same as above.
	Anti-Submarine (ASW)	●	Same as above.
	Naval Special Warfare (NSW)	●	Same as above.

Table 3-10 Navy Range Capability and Encroachment Assessment Comparison

Range Name	Capability Score	Encroachment Score
Atlantic City	9.29	8.33
Atlantic Test Ranges	7.93	8.33
AUTEC	9.86	8.33
Boston	9.29	8.00
China Lake	9.82	8.13
El Centro	9.00	10.00
Fallon Training Range Complex	6.96	8.21
Gulf of Mexico	9.31	8.60
Hawaii	8.02	8.23
Jacksonville	7.74	7.75
Japan	5.45	8.10
Key West	7.86	8.33

Table 3-10 Navy Range Capability and Encroachment Assessment Comparison (continued)

Range Name	Capability Score	Encroachment Score
Mariana Islands		
Narragansett Bay		
Navy Cherry Point		
NOCAL		
Northwest Training Range Complex		
Okinawa		
Point Mugu Sea Range		
SOCAL		
VACAPES		

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3.2.4 Air Force Assessment Results¹²

Air Force Training Range Capability

Assessment Results

The Air Force Range Capability Assessment data from 38 Air Force range complexes are summarized and presented in Table 3-11.

The Air Force Range Capability Chart and Scores are presented in Figure 3-29 and assessments by Range, Attributes, and Mission Areas are shown in Figures 3-31, 3-33, and 3-35.

The Air Force's 38 individual range assessments along with comments for red and yellow ratings are included at the end of this section (Figure 3-39).

Air Force Training Range Encroachment Impact

Assessment Results

The Air Force Range Encroachment Assessment data from 38 Air Force range complexes are summarized and presented in Table 3-12.

The Air Force Range Encroachment Chart and Scores are presented in Figure 3-30 and assessments by Range, Factors, and Mission Areas are shown in Figures 3-32, 3-34, and 3-36.

The Air Force's 38 individual encroachment assessments along with comments for red and yellow ratings are included at the end of this section (Figure 3-39).

The Air Force Range Capability and Encroachment assessment comparisons are presented in Table 3-13.

¹² Of the 40 locations in the Air Force's range inventory in Appendix C, two electronic scoring sites (ESS) were not assessed (Belle Fourche and Snyder). These two ESSs are not considered "range complexes" for the purpose of the report; therefore, the Air Force does not intend to evaluate them unless mission changes or some encroachment factors threaten their abilities to function.

Table 3-11 Air Force Capability Assessment Data Summary

Range	NMC	PMC	FMC	Capability Scores
Adirondack	11	19	45	7.27
Airburst	2	13	62	8.90
Atterbury	0	6	36	9.29
Avon Park	0	16	51	8.81
Barry M. Goldwater Range (BMGR)	1	11	41	8.77
Blair Lake	0	17	37	8.43
Bollen	0	19	58	8.77
Cannon	10	37	11	5.09
Claiborne	0	12	6	6.67
Dare County Ranges	0	0	72	10.00
Draughon	9	22	15	5.65
Edwards Ranges	6	12	85	8.83
Eglin Ranges	0	44	70	8.07
Falcon	0	3	69	9.79
Grand Bay	0	2	108	9.91
Grayling	0	10	80	9.44
Hardwood	0	9	87	9.53
Holloman	4	3	86	9.41
Jefferson	1	16	70	8.97
McMullen	0	28	40	7.94
Melrose	1	4	55	9.50
Mountain Home Ranges	0	0	72	10.00
NTTR	8	14	67	8.31
Oklahoma	0	17	82	9.14
Patrick	0	1	12	9.62
Pilsung	4	11	19	7.21
Poinsett	0	6	126	9.77
Polygone	0	10	11	7.62
Razorback	1	6	76	9.52
Shelby Ranges	0	5	94	9.75
Siegenberg	0	4	2	6.67
Smoky Hill	0	0	63	10.00
Torishima	15	4	4	2.61
Townsend	0	4	67	9.72
UTTR	0	8	80	9.55
Vandenberg	0	3	10	8.85
Warren Grove	5	22	54	8.02
Yukon	0	15	84	9.24
HQ AF	78	433	2,107	8.88

Table 3-12 Air Force Encroachment Assessment Data Summary

Range	Severe	Moderate	Minimal	Encroachment Scores
Adirondack	0	15	56	8.94
Airburst	0	0	74	10.00
Atterbury	0	11	20	8.23
Avon Park	0	7	74	9.57
Barry M. Goldwater Range (BMGR)	0	8	38	9.13
Blair Lake	0	15	51	8.86
Bollen	0	15	73	9.15
Cannon	0	15	69	9.11
Claiborne	0	0	20	10.00
Dare County Ranges	0	0	88	10.00
Draughon	2	25	33	7.58
Edwards Ranges	0	16	35	8.43
Eglin Ranges	0	46	106	8.49
Falcon	0	0	90	10.00
Grand Bay	0	2	130	9.92
Grayling	1	8	90	9.49
Hardwood	0	15	84	9.24
Holloman	0	3	118	9.88
Jefferson	1	27	66	8.46
McMullen	0	4	84	9.77
Melrose	0	5	83	9.72
Mountain Home Ranges	0	0	88	10.00
NTTR	3	28	101	8.71
Oklahoma	0	20	101	9.17
Patrick	0	7	5	7.08
Pilsung	0	8	45	9.25
Poinsett	0	2	130	9.92
Polygone	0	6	14	8.50
Razorback	0	5	87	9.73
Shelby Ranges	0	1	109	9.95
Siegenberg	0	4	4	7.50
Smoky Hill	0	0	88	10.00
Torishima	0	4	8	8.33
Townsend	0	9	90	9.55
UTTR	0	8	80	9.55
Vandenberg	0	5	17	8.86
Warren Grove	1	9	89	9.44
Yukon	0	31	90	8.72
HQ AF	8	384	2,628	9.34

Figure 3-29 Air Force Capability Chart and Scores

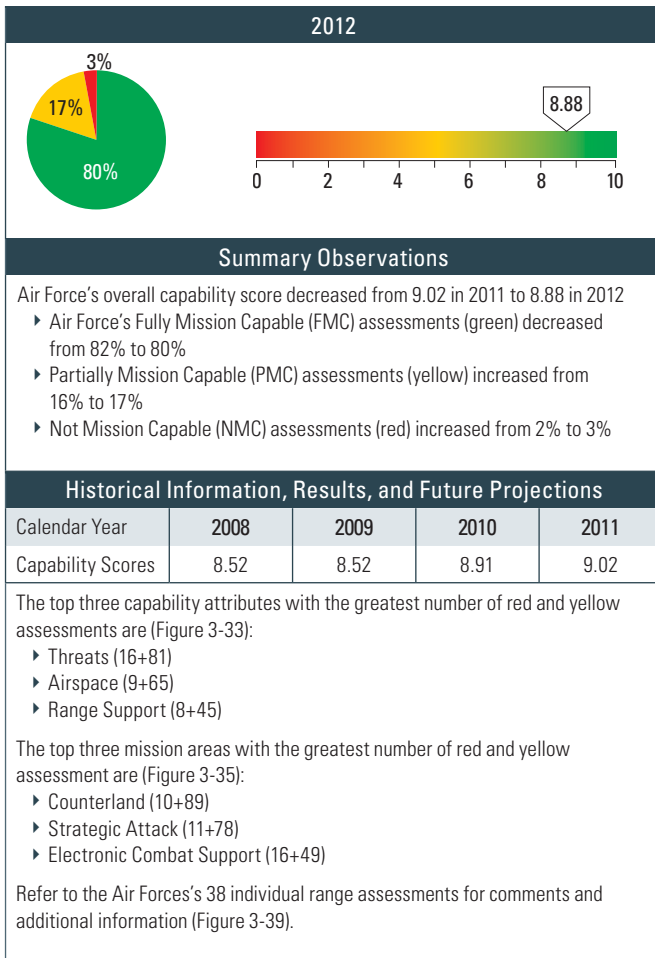


Figure 3-30 Air Force Encroachment Chart and Scores

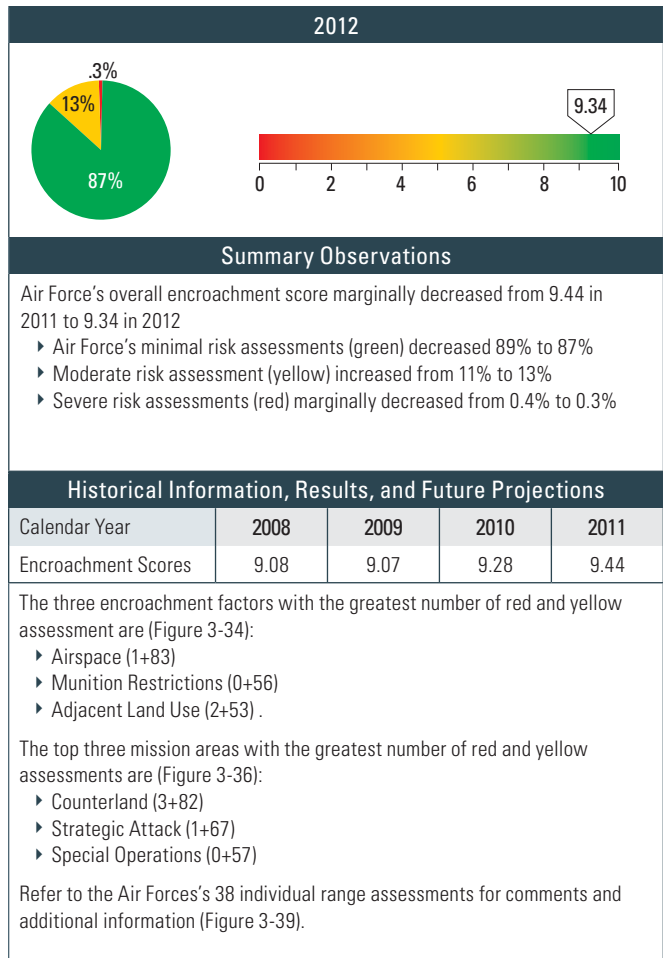


Figure 3-31 Air Force Capability Assessments by Range

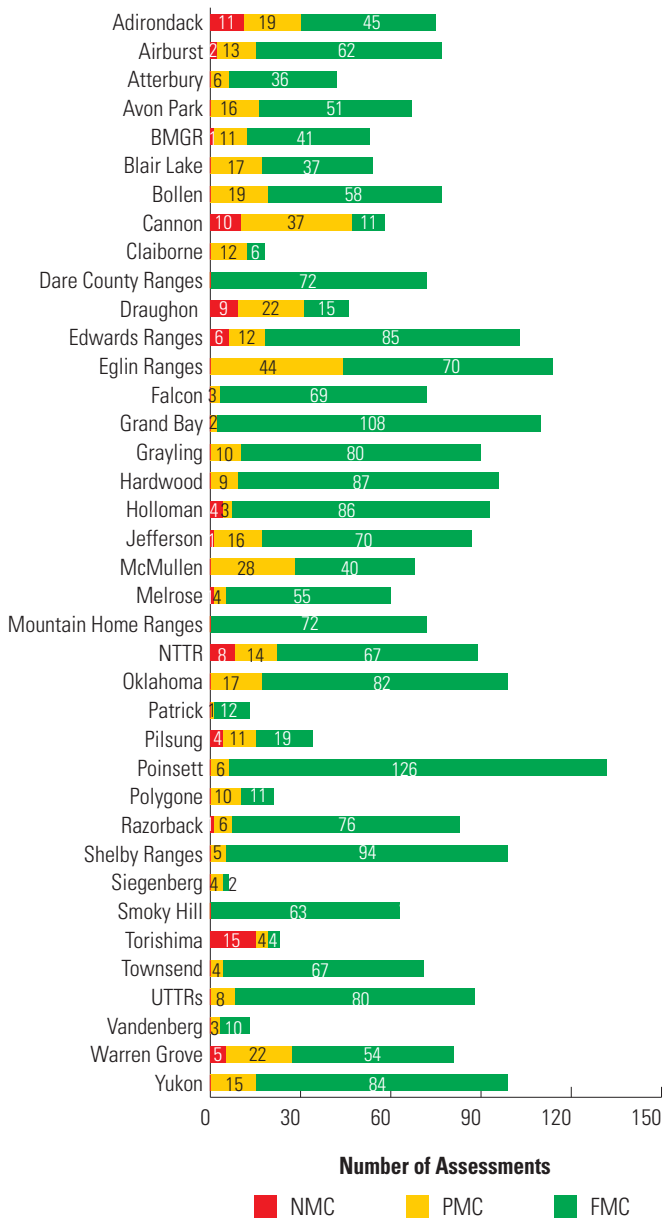


Figure 3-32 Air Force Encroachment Assessments by Range

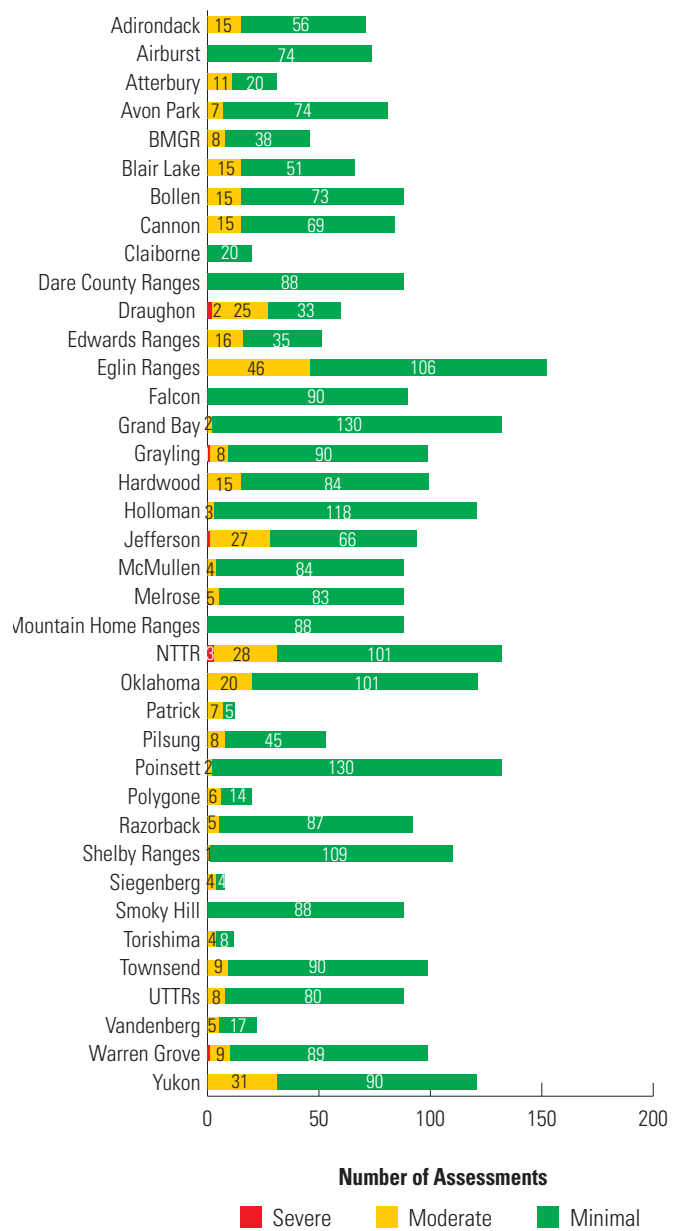


Figure 3-33 Air Force Capability Assessment by Attributes

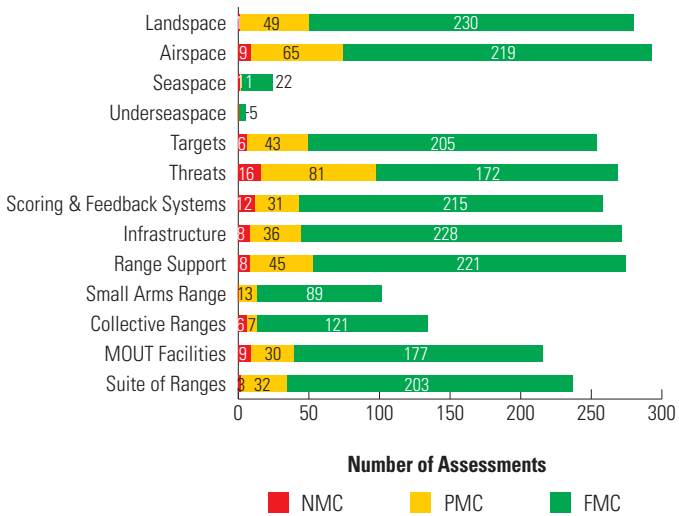


Figure 3-34 Air Force Encroachment Assessment by Factors

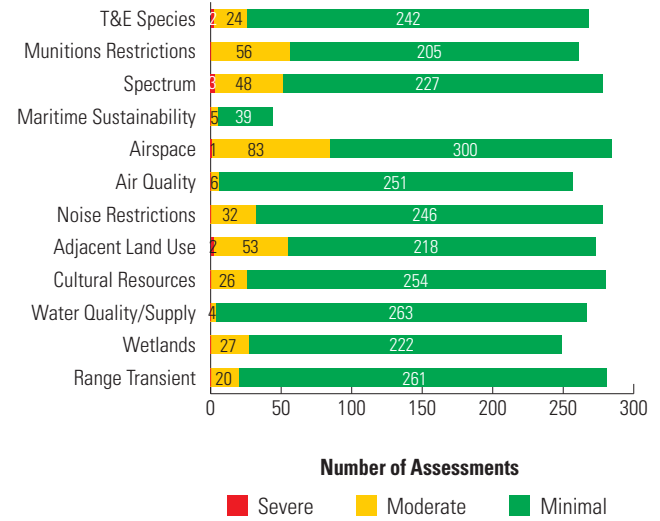
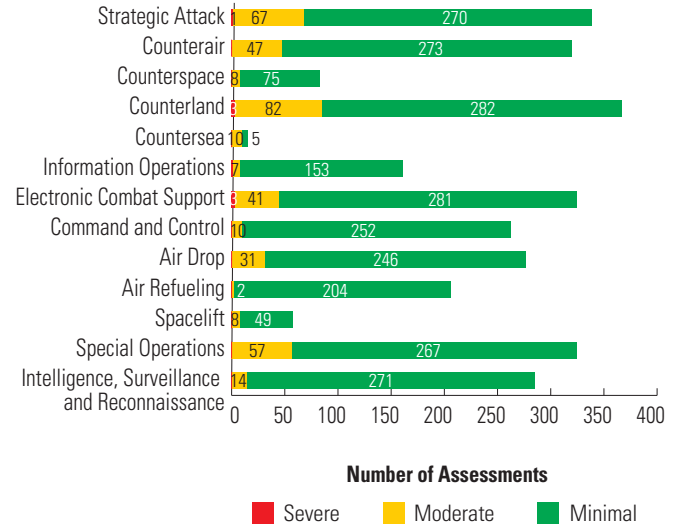


Figure 3-35 Air Force Capability Assessment by Mission Areas



Figure 3-36 Air Force Encroachment Assessment by Mission Areas



Air Force Special Interest Section

General Issues

Gulf Regional Airspace Strategic Initiative (GRASI)

The eastern Gulf of Mexico region of the United States has one of the highest concentrations of military activity in the country. Airspace in the Gulf is quickly becoming over-congested, due to public and military growth. SUA was created to segregate civilian aircraft from military operations. SUA includes Restricted Airspace (RA), Military Operations Areas (MOAs), Alert Areas, and Warning Areas, each characterized by unique requirements for non-participating aircraft. RA that extends to the ground is especially important, as it allows for the testing of munitions dropped from an aircraft.

Five major installations call the area home, and each requires the presence of SUA to accomplish its mission. Eglin Air Force Base (AFB) manages two-thirds of the surface-to-unlimited RA in the eastern United States. Due to the extremely significant reach that use of this high-demand airspace has into military, socio-economic, and commercial aviation aspects of the region, the Air Force is actively working to ensure the continued utility of SUAs in the region via the Gulf Regional Airspace Strategic Initiative (GRASI).

GRASI is the result of DoD bringing together appropriate stakeholders to discuss the growing issue of airspace congestion and its associated hazards between military and civilian aircraft. Its goal is to ensure the availability of airspace and the continued economic prosperity of the Gulf coast. Using an agreed upon set of Performance Expectations, GRASI stakeholders worked for two years to model the region's future airspace usage and formulated the following goals: 1) develop and modernize air traffic control (ATC) procedures and airspace; 2) enhance military capacity of the region; and 3) maintain and enhance regional collaboration. A sitting Executive Steering Committee (ESC) oversees the GRASI, ensuring it runs according to three core guiding principles:

- ▶ **Economic Prosperity**—Solutions should have a neutral or positive economic impact on the region
- ▶ **Collaboration**—Solutions should involve cooperation between military stakeholders and general and commercial aviation officials
- ▶ **Mission**—Solutions should accommodate the region's various military missions and the requirements of civil aviation

Based on these principles, the ESC established a set of recommendations to help ensure near optimum use of airspace by civilians and the military. These recommendations, which must be approved by the FAA, are as follows:

- ▶ Develop and Modernize ATC Procedures and Airspace
- ▶ Enhance Military Capacity of the Region
- ▶ Maintain and Enhance Regional Collaboration

Air Force Center Scheduling Enterprise

As recently as 2009, the Air Force used 32 different systems and associated procedures to schedule activity on their ranges. These systems were all developed in the field to meet the day-to-day range needs. A 2007 Secretary of the Air Force "Eagle Look" examined the effectiveness of range management, and determined:

- ▶ Available airspace and range utilization reports did not provide a complete and accurate assessment of utilization
- ▶ Current reporting processes were labor intensive, difficult to complete, and lacked standardized tools
- ▶ IO activities were not consistent with standard open air range activities, precluding future integration

These issues led to a series of impacts across the Air Force, affecting both the efficient use of current Air Force range and airspace assets, and the ability to plan for future needs. These impacts were summarized into five areas:

- ▶ Failure to maximize usage of the limited resource of range and airspace
- ▶ Failure to capture all capabilities of airspace and ranges
- ▶ Inaccurate report of airspace and range use
- ▶ Lack of insight into possible addition capabilities and capacities
- ▶ Lack of integration in joint exercises

A key recommendation of the report was to "Implement a common automated utilization reporting tool for airspace and ranges." After examining all current Air Force and other Military Service ranges scheduling systems, the Center Scheduling Enterprise (CSE) system was chosen to provide an end-to-end capability from scheduling a range and/or airspace asset to recording utilization.

The Air Force CSE is currently being used by Eglin AFB Range, Edwards AFB Range, and the Nevada Test and Training Range. With several of the Air Force largest ranges currently using the CSE, instituting use across the Air Force is the most cost-effective low risk course of action. Specific benefits of the Air Force CSE include that it:

- ▶ Provides a common system for units to schedule Air Force assets across DoD
- ▶ Standardizes terms, practices, and procedures at all Air Force Ranges for scheduling and utilization reporting, allowing true asset comparisons

- ▶ Provides a quantitative basis for defending current requirements and developing future needs
- ▶ Provides a single interface to the future mandatory FAA Military Airspace Data Entry (MADE) system for the scheduling of SUA

Current Status of the Air Force CSE

Figure 3-37 depicts the Air Force CSE implementation status as of August 2011. Airspace shown in green is live and scheduling is accomplished using the CSE. Airspace shown in purple is live in the system, but these range/airspace managers have not completed training in the CSE. (The initial round of training has been completed.) All remaining Air Force airspace has been entered into the system; however, installation personnel training in use of the CSE will continue through the second quarter of FY2011.

CSE is in the process of being further enhanced using service oriented architecture (SOA) compliant to work with other flight scheduling systems as they come online in the future. Specific technical work has already been conducted with Patriot Excalibur (PEX), Graduate Training Integration Management System (GTIMS), and Training Management System (TMS). Figure 3-38 depicts the information sharing process between the flight and range schedulers, as well as the approval process for scheduling ranges and/or airspace.

Air Force CSE completed the interface with the FAA MADE system and is expected to start live scheduling in the second quarter of FY2012. The use of MADE will be required to schedule any SUA in the United States. Integration has also begun with the Army/USMC Range Facility Management Support System (RFMSS). RFMSS is responsible for range land scheduling required by Army and USMC ground forces. The goal of the integration efforts is to have seamless scheduling between the Military Service systems for both land and air assets.

Energy Compatibility Studies and Tool Development

The Air Force is currently involved in analyzing and minimizing operational impacts posed by wind turbines on Air Force operations, particularly those arising from interference with radar operations. These turbines affect radar performance in two primary ways: decreased probability of detection and an increased number of false tracks (also referred to as clutter returns). A 2010 Air Force Research Laboratory (AFRL) report reviewed existing published research on operational impacts with respect to radar and other mission-related assets. The report also summarized current and proposed mitigation solutions to assess effectiveness and the relative pros and cons of each. In researching the report, one outstanding issue was a lack of real world data to support impact and mitigation effects.

Figure 3-37 Air Force CSE Airspace Status as of 8 August 2011

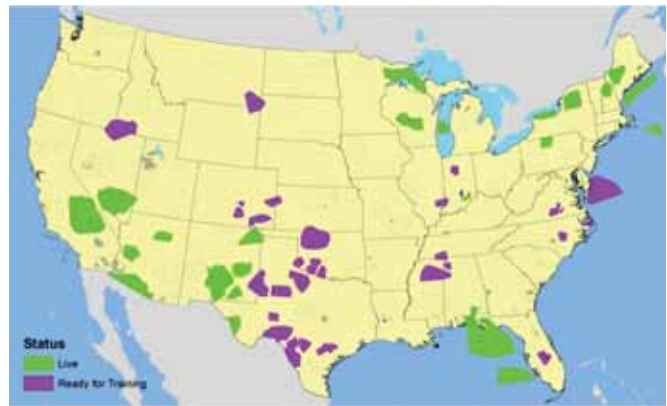
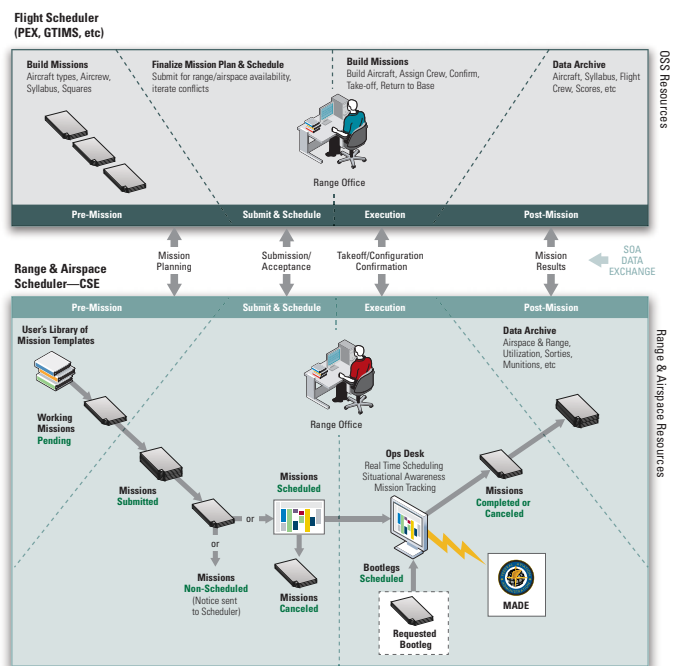


Figure 3-38 Air Force Flight Scheduler Process Flow



Another observed shortfall was the lack of a coherent, top-down policy approach within DoD to effectively and efficiently quantify the effects of a proposed renewable energy development on operations and engage with developers. Proposal response was occurring late in the development process, past the point at which DoD concerns and requests could be addressed, and in an ad hoc manner. This situation resulted in legislative action that significantly raised the requirements for opposing a proposed project. It is important to note that this shortfall is being addressed by the current DoD Siting Clearinghouse.

Mission Compatibility Analysis Tool (MCAT)

The goal of MCAT is to develop a GIS-based database of existing and proposed renewable energy projects. A tracking tool developed for the Navy will be modified for use by all

Military Services. Proposed renewable energy and potential transmission projects will be logged in MCAT by users, and the installations that may be impacted will be notified. MCAT will then track the project through the OSD Clearinghouse process, allowing installation and MAJCOM assessments to be logged and viewed. This will create a central record of all proposed energy projects, and a history of action taken with regard to each proposal.

Radar Toolbox

The Air Force Radar Toolbox is an automated software tool for recording, reducing, and analyzing surveillance system performance data. The Air Force is working to add capability to the Radar Toolbox, which would allow it to estimate the effects of a proposed wind development project on radar performance. The ability to accurately predict the impact of a proposed project on radar performance would allow the Air Force to determine whether or not the proposal poses a hazard to operations and, if so, provides evidence to support such a claim. Efforts are currently underway to create a module that estimates the decrease in Probability of Detection (PD) from a proposed wind farm. Once the modifications are made to add this predictive analysis capability, an updated version of the Radar Toolbox that includes the new features will be released for use by federal and civilian agencies, including for use by military installations. Obtaining a baseline radar performance would allow an installation to assess its vulnerability to degraded performance from proposed wind development. Performance data could also be used to evaluate mitigation solutions. Once the predictive analysis capability is developed, performance data would form the basis for estimating new performance with the proposed development in place.

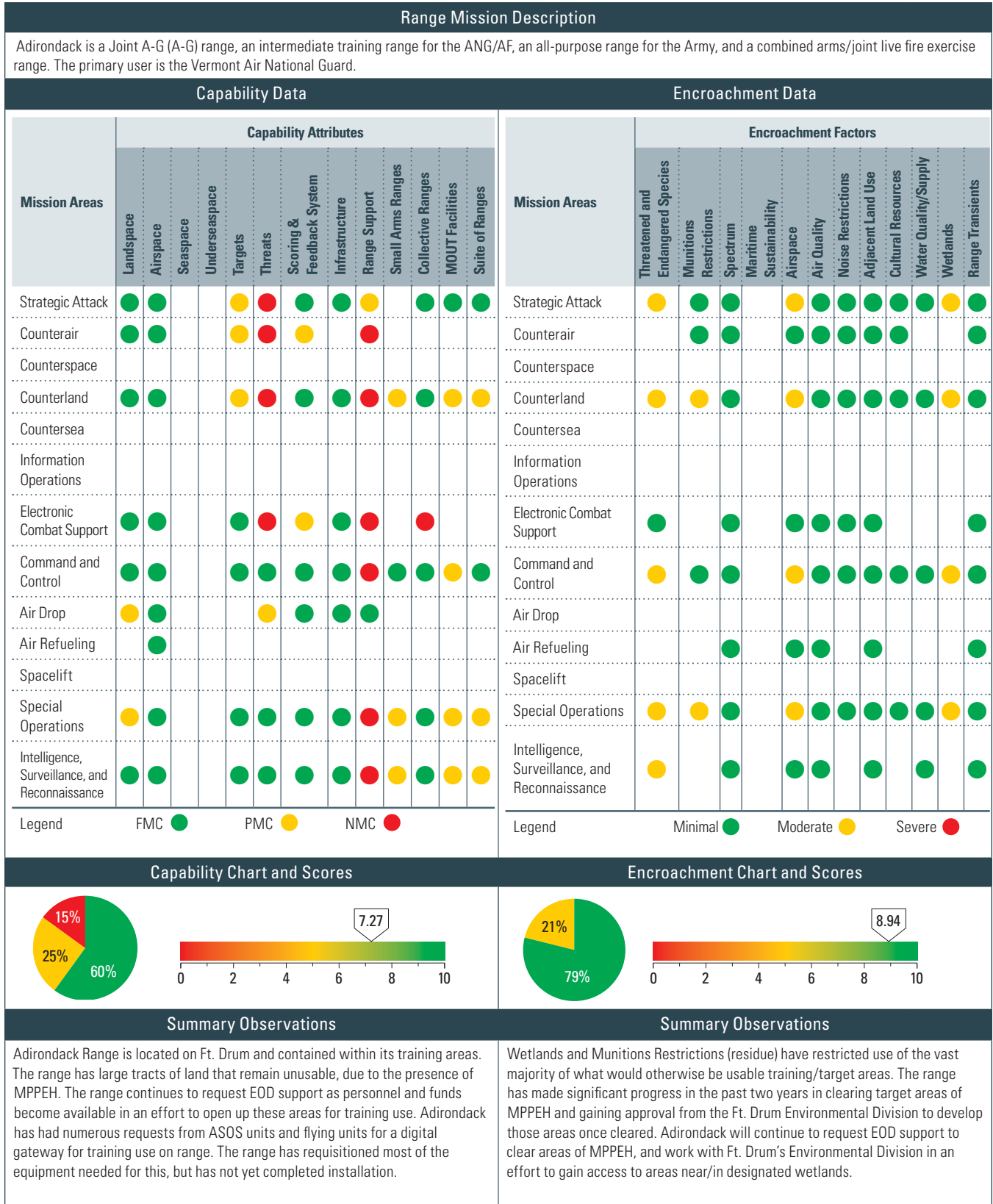
Experimental Data Collection and Validation

Experimental data collection provides documented scientific evidence of operational impacts, such as degraded radar or radio communications performance, and allows for the development, testing and evaluation of analysis tools. Current activities include flight trials of helicopter and fixed wing aircraft above local wind farms. Data is collected from the Airport Surveillance Radar (ASR)-11 Standard Terminal Automation Replacement System (STARS) operating at the Johnstown, Pennsylvania, airport. Radar performance is assessed by calculating probability of detection (PD) and false track rate for aircraft operating both within and outside of the wind farm to quantify wind turbine effects on these metrics. The results of two such trials have been submitted for publication, which could lead to a peer reviewed scientific paper documenting the effects of wind turbines on ASR-11 performance.

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Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Adirondack Assessment Details



Adirondack Assessment Details

Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	7.77	7.77	N/A	7.27	Encroachment Scores	8.96	8.96	N/A	8.94
No comments.					No comments.				

Adirondack Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Air Drop	●	Significant progress has been made in the past year with EOD clearance, but large areas of land remain unusable due to the presence of MPPEH. These hazards prevent the range from constructing realistic airfield and realistic urban training areas, and allowing realistic maneuver of ground forces. The range will continue to request EOD support as funding and EOD personnel become available. Additional tree clearance will occur this year. The Air Force needs an IR stimulator for realistic/relevant threat simulation.
	Special Operations	●	Significant progress has been made in the past year with EOD clearance, but large areas of land remain unusable due to the presence of MPPEH. These hazards prevent the range from constructing realistic airfield and realistic urban training areas, and allowing realistic maneuver of ground forces. The range will continue to request EOD support as funding and EOD personnel become available.
Targets	Strategic Attack	●	Significant progress has been made in the past year with EOD clearance, but large areas of land remain unusable due to the presence of MPPEH. These hazards prevent the range from constructing realistic airfield and realistic urban training areas. The range will continue to request EOD support as funding and EOD personnel become available.
	Counterair	●	Same as above.
	Counterland	●	Significant progress has been made in the past year with EOD clearance, but large areas of land remain unusable due to the presence of MPPEH. These hazards prevent the range from constructing realistic airfield and realistic urban training areas, and allowing realistic maneuver of ground forces. The range will continue to request EOD support as funding and EOD personnel become available.
Threats	Strategic Attack	●	The Wideband Remote Emitter Threat System (WRETS) has no supply or depot support. The RWR Lite has very limited range. The range has very limited success providing EW threats to its customers when requested to do so.
	Counterair	●	Same as above.
	Counterland	●	Same as above.
	Electronic Combat Support	●	Same as above.
	Air Drop	●	Same as above.
Scoring & Feedback System	Counterair	●	The range has no ACMI type system available.
	Electronic Combat Support	●	The range is transmitter only, visual/verbal feedback only in training.
Range Support	Strategic Attack	●	There is no current Link 16 capability. The range has acquired most of the hardware to setup a Digital Gateway but installation is still in development.
	Counterair	●	Same as above.
	Counterland	●	Same as above.
	Electronic Combat Support	●	Same as above.
	Command and Control	●	Same as above.
	Special Operations	●	Same as above.
Small Arms Ranges	Intelligence, Surveillance and Reconnaissance	●	Same as above.
	Counterland	●	Much of the range has become overgrown and/or littered with MPPEH. This prevents installation of targets and precludes land navigation training on much of the range. The range continues to request EOD support and work with environmental personnel to clear more land.
	Special Operations	●	Same as above.
Collective Ranges	Intelligence, Surveillance and Reconnaissance	●	Same as above.
	Electronic Combat Support	●	The Wideband Remote Emitter Threat System (WRETS) has no supply or depot support. The RWR Lite has very limited range. The range has very limited success providing EW threats to its customers when requested to do so.

Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Adirondack Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
MOUT Facilities	Counterland	●	Significant progress has been made in the past year with EOD clearance, but large areas of land remain unstable due to the presence of MPPEH. These hazards prevent the range from constructing realistic airfield and realistic urban training areas. The range will continue to request EOD support as funding and EOD personnel become available.
	Command and Control	●	Same as above.
	Special Operations	●	Significant progress has been made in the past year with EOD clearance, but large areas of land remain unstable due to the presence of MPPEH. These hazards prevent the range from constructing realistic airfield and realistic urban training areas, and allowing realistic maneuver of ground forces. The range will continue to request EOD support as funding and EOD personnel become available.
	Intelligence, Surveillance and Reconnaissance	●	Same as above.
Suite of Ranges	Counterland	●	Same as above.
	Special Operations	●	Same as above.
	Intelligence, Surveillance and Reconnaissance	●	Same as above.

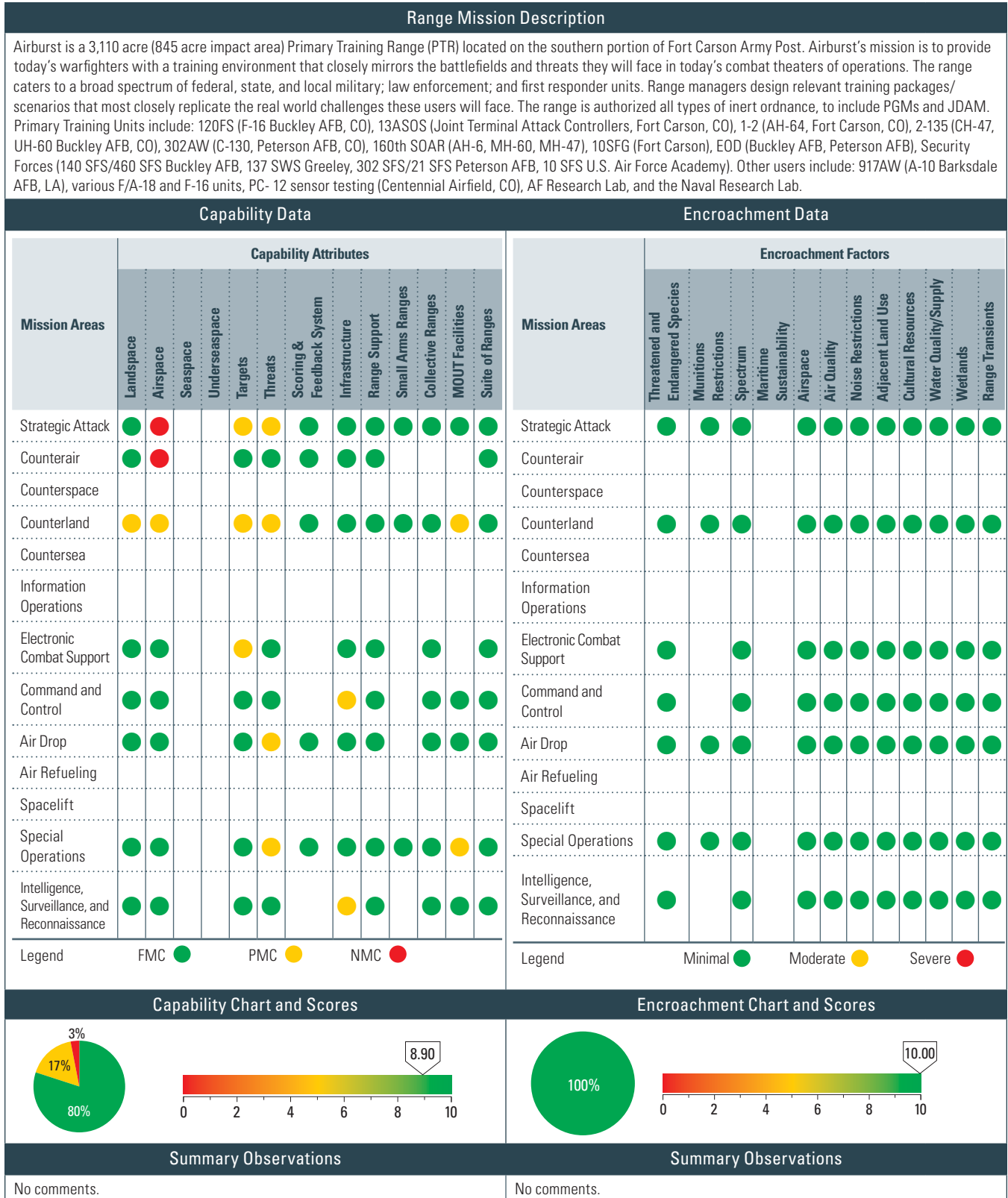
Encroachment Observations

Attributes	Assigned Training Mission	Score	Comments
Threatened & Endangered Species	Strategic Attack	●	The presence of the Indiana Bat prevents the cutting of trees, which may be used as habitat for the bat, during much of the year. This restriction delays or prevents clear cutting of various parts of the range for target construction.
	Counterland	●	Same as above.
	Command and Control	●	Same as above.
	Special Operations	●	Same as above.
	Intelligence, Surveillance and Reconnaissance	●	Same as above.
Munitions Restrictions	Counterland	●	Significant progress has been made in the past year with EOD clearance, but large areas of land remain unstable due to the presence of MPPEH. These hazards prevent the range from constructing realistic airfield and realistic urban training areas, and allowing realistic maneuver of ground forces. The range will continue to request EOD support for surface clearance as funding and EOD personnel become available.
	Special Operations	●	Same as above.
Airspace	Strategic Attack	●	Army UAS activity and the Safety Danger Zones created by concurrent use of other ranges on Fort Drum create a number of restrictions on any given day in the R5201 restricted airspace.
	Counterland	●	Same as above.
	Command and Control	●	Same as above.
	Special Operations	●	Same as above.
Wetlands	Strategic Attack	●	Wetlands restrictions have had a significant negative impact on target area/training area development. The approval process required to develop target/training areas in the vicinity of wetlands often takes years to navigate. Requests for use of the wetlands mitigation bank on Ft. Drum have always been denied. Wetlands cover much of the training areas on Ft. Drum and, combined with the presence of MPPEH, have precluded use of vast tracts of land that would otherwise be available for training. The range continues to work with the Environmental Division to resolve wetland related issues.
	Counterland	●	Same as above.
	Command and Control	●	Same as above.
	Special Operations	●	Same as above.

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Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Airburst Assessment Details



Airburst Assessment Details

Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	8.28	8.28	10.00	8.90	Encroachment Scores	8.86	8.86	10.00	10.00
<p>A vast majority of areas rated yellow can be attributed to the range's inability to create the most realistic and relevant training environment due to insufficient landspace, airspace, funding and target sets. The range performs very well at Close Air Support, Basic Surface Attack, and Basic Air Drops. Training evolutions suffer in terms of realism/relevance when the mission dictates large ground forces, enhanced threats, and large force exercises. In the coming years we will continue to operate as is currently, maximizing available assets and personnel the Air Force while operating on a shrinking budget.</p>					<p>No comments.</p>				

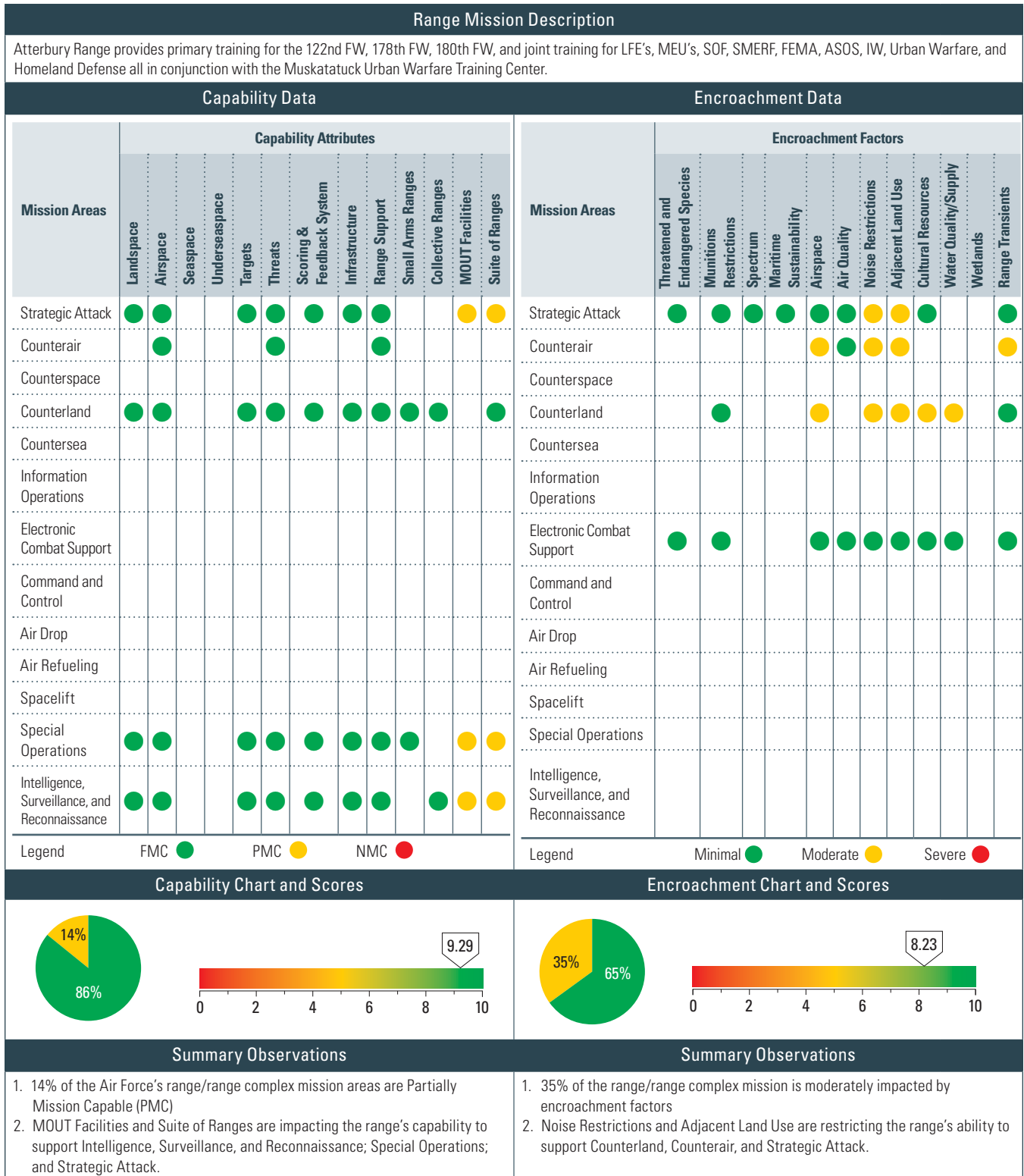
Airburst Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Counterland	●	Limited land space does not allow for the building of a realistic Urban CAS village. The training impact is a limited number of targets and associated scenarios. The range will continue to build the best Urban CAS village within current land constraints.
Airspace	Strategic Attack	●	Insufficient volume and attributes of airspace to conduct large force exercises or for bomber aircraft to maneuver. Marginal for fighter aircraft conducting strategic attack training.
	Counterair	●	Insufficient volume and attributes of airspace to conduct large force exercises. Working to expand airspace via the Colorado Airspace Initiative.
	Counterland	●	Volume and attributes of airspace limits tactics and ordnance. Virtually all attack runs with PGMs or JDAM are limited to one direction. Working to expand airspace via Colorado Airspace Initiative.
Targets	Strategic Attack	●	Range target suite provides some but not all target types possible for strategic attack (e.g., real buildings/complexes vice stacked conex containers). Additionally, the range does not possess any target sets with required fidelity for 5th generation fighters. The Air Force will continue to try to build the most realistic target sets that current assets allow.
	Counterland	●	Range target suite provides some but not all target types possible for close air support. Limits are no realistic village for Urban CAS and no compressed soil block machine to build "mud huts" similar to those in OIF/OEF. Additionally, the range does not have any moving strafe targets that can be employed against with inert ordnance. Currently trying to procure funds for the compressed soil block machine through various channels.
	Electronic Combat Support	●	Limited capability to provide targets in the electro-magnetic spectrum, both in target types as well as range and cueing.
Threats	Strategic Attack	●	Limited capability to replicate a few tactical surface-to-air threats—RWR Lite x1, Smokey SAM launchers x 2.
	Counterland	●	Limited capability to replicate a few tactical surface-to-air threats—RWR Lite x1, Smokey SAM launchers x 2. Limited untrained, highly motivated, ground force (personnel) act as aggressors/Red Force against JTACS/SOF.
	Air Drop	●	Limited capability to replicate a few tactical surface-to-air threats—RWR Lite x1, Smokey SAM launchers x 2.
	Special Operations	●	Limited capability to replicate a few tactical surface-to-air threats—RWR Lite x1, Smokey SAM launchers x 2. Limited untrained, highly motivated, ground force (personnel) act as aggressors/Red Force against SOF.
Infrastructure	Command and Control	●	Current communications suite is antiquated and need of replacement by building of greater functional configuration, visibility, and cost-effective construction. Date of remedy unknown. Additionally, no SADL, Link-16 or RADS (ATC feed) capabilities at the range. Currently attempting to procure software/hardware for a SADL and RADS feed.
	Intelligence, Surveillance and Reconnaissance	●	No small paved runway available for small ISR platforms requiring a prepared or hard surface.
MOU Facilities	Counterland	●	A MOU facility would greatly enhance the CAS and ground forces (Security Forces, EOD, and Special Ops Forces) training evolutions. This could go hand in hand with an Urban CAS Village.
	Special Operations	●	Same as above.

Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Atterbury Range Assessment Details



Atterbury Range Assessment Details

Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	8.98	8.98	8.98	9.29	Encroachment Scores	8.23	8.23	8.23	8.23
No comments					No comments				

Atterbury Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
MOUT Facilities	Strategic Attack	●	MOUT facilities for the range are under construction.
	Special Operations	●	Same as above.
	Intelligence, Surveillance, and Reconnaissance	●	Same as above.
Suite of Ranges	Strategic Attack	●	There are various types of ranges available on post through the Army.
	Special Operations	●	Same as above.
	Intelligence, Surveillance, and Reconnaissance	●	Same as above.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Airspace	Counterair	●	The Racer MOA cannot be scheduled at the same time as the JPG MOA, restricting the potential number of missions that could be scheduled.
	Counterland	●	There are occasional altitude restrictions over adjacent Army ranges.
Noise Restrictions	Strategic Attack	●	Missions cannot over fly Princes Lakes to the west due to noise complaints.
	Counterair	●	Same as above.
	Counterland	●	Same as above.
Adjacent Land Use	Strategic Attack	●	Missions cannot over fly Princes Lakes to the west due to noise complaints.
	Counterair	●	Same as above.
	Counterland	●	Same as above.
Cultural Resources	Counterland	●	No comments.
Water Quality/Supply	Counterland	●	No comments.
Range Transients	Counterair	●	There are occasional civilian aircraft entering airspace during operations.

Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Avon Park Assessment Details



Avon Park Assessment Details

Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	9.62	9.62	9.62	8.81	Encroachment Scores	9.32	9.32	9.32	9.57
<p>APAFR’s capabilities rating has decreased in relation to the last two years, primarily due to a significant increase in op-tempo and the number and variety of units seeking training space. APAFR will be pursuing a man-power study in an effort to better align workload and manpower requirements. APAFR is actively pursuing runway certification and the programming actions needed to sustain the airfield as an integral part of the training environment. One significant mission change will be the introduction of the F-35 into the CAF and the associated operational requirements. Impacts of the F-35 operational training on range operations are not known at this time.</p>					<p>Increased emphasis on public outreach and the JLUS process has helped reduce encroachment impacts. Efforts to pursue adoption of the JLUS recommendations by the local jurisdictions will be a major emphasis area in the coming years. Recently passed legislation in the State of Florida makes it mandatory for local planning councils to coordinate with military installations in their districts. This has the potential to lessen encroachment pressures.</p>				

Avon Park Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Threats	Counterair	●	APAFR has no high-fidelity, surface-to-air threat replication capability. Lack of high-fidelity threats limits the quality of training, especially during large force exercises. No current plans to integrate high-fidelity threats at APAFR.
	Counterland	●	Same as above.
	Electronic Combat Support	●	Same as above.
	Special Operations	●	Same as above.
	Intelligence, Surveillance and Reconnaissance	●	Same as above.
Scoring & Feedback System	Counterair	●	APAFR lacks any TSPI capability, which limits fidelity of air to air training. No current plans to integrate TSPI capability at APAFR.
	Electronic Combat Support	●	APAFR has an outdated communications infrastructure that cannot support LVC operations. This limits fidelity of training. APAFR communications upgrade has been funded and is underway. Expect new architecture in place by end of CY2010. LVC capability has been discussed and will be more actively pursued once upgrade is complete.
	Command and Control	●	Same as above.
Infrastructure	Counterair	●	APAFR has an 8000x150 ft runway that is currently only certified as an LZ. Lack of runway certification severely limits the number and type of aircraft that can operate from the range. Range is pursuing airfield certification/waiver approval with an estimated completion within 6 months.
	Counterland	●	Same as above.
Range Support	Counterair	●	Operational tempo has significantly increased, particularly over the last five years. Range manning has not been updated to keep pace with the additional workload. Manning, combined with the 60 hour per week contract limitation, has reached the point where APAFR staff cannot support all incoming training requests. Additionally, APAFR lacks SIPRNET capability, meaning units have to reschedule or are being denied range time. Lack of SIPRNET limits training fidelity and complicates range scheduling. APAFR staff will pursue a manpower survey and seek additional manpower authorizations, but an estimated completion date is unknown. SIPRNET capability will be pursued once communications infrastructure upgrade is complete.
	Counterland	●	Same as above. Additionally, APAFR has limited capability to respond to wildland fires and relies heavily on State assistance. APAFR will be coordinating the results of a wildland fire program evaluation with the 23rd WG .
	Electronic Combat Support	●	Same as above.
	Command and Control	●	Same as above.
	Special Operations	●	Same as above.
	Intelligence, Surveillance and Reconnaissance	●	Same as above.

Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Avon Park Detailed Comments

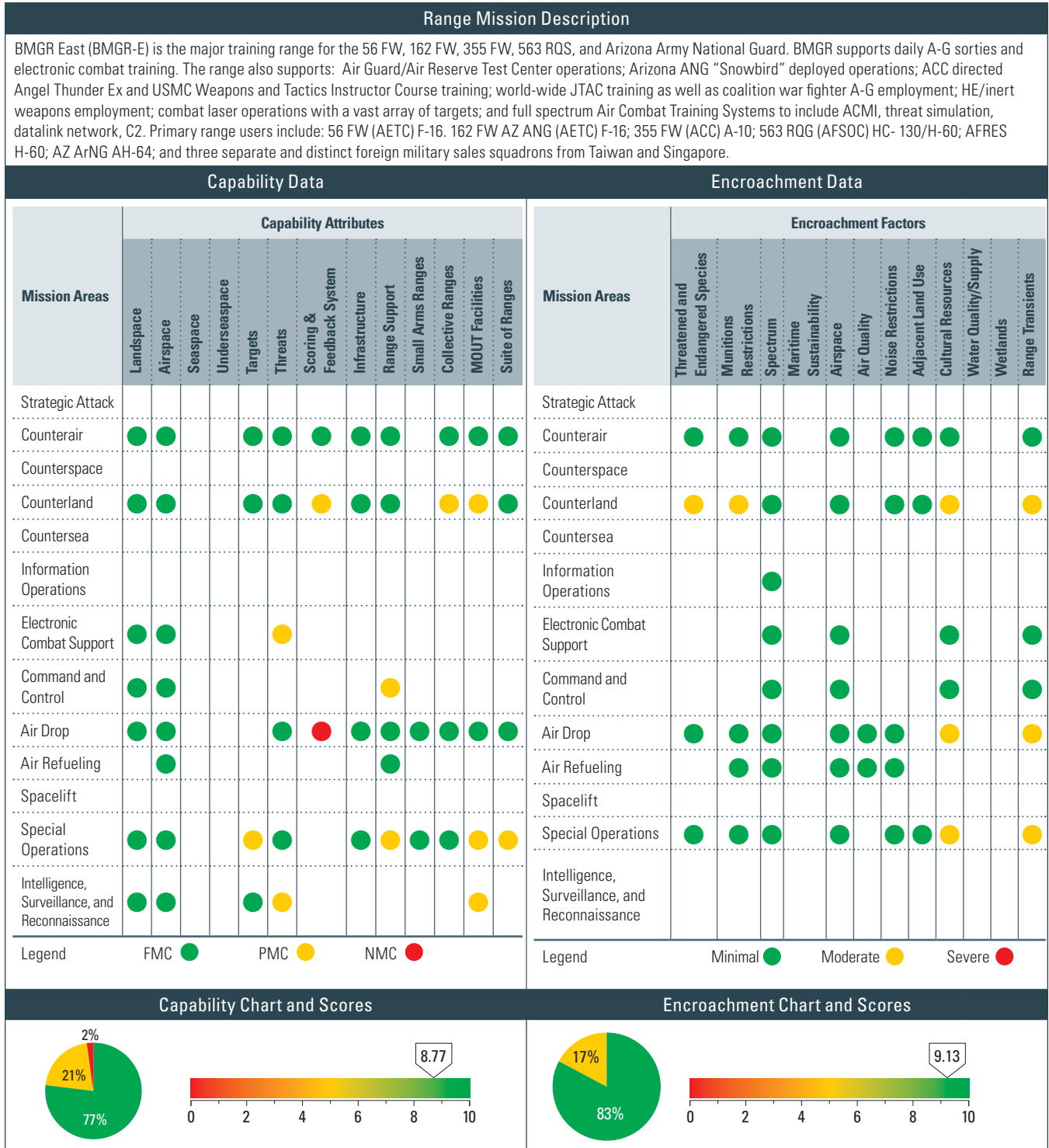
Encroachment Observations

Attributes	Assigned Training Mission	Score	Comments
Spectrum	Intelligence, Surveillance and Reconnaissance	●	Limited frequencies are available of UAS/RPA activity. Due to increased UAS/RPA activity at APAFR, available frequencies must be deconflicted through scheduling. Requests for range time have to be denied due to spectrum availability, despite available air and ground space. APAFR personnel need to determine if additional frequencies can be obtained and if the expanded frequencies will alleviate the conflicts.
Adjacent Land Use	Counterair	●	Private development and other land use could affect the training mission at APAFR. A specific project is the Destiny project in Osceola County, which would affect 1/3rd of the Marion MOA. APAFR does not have a community planner. If the development goes through, APAFR could lose 1/3rd of the Marion MOA, which extends from 500 to 5000 ft. AGL. The Air Force recently completed a Joint Land Use Study (JLUS) involving four counties and three municipalities, including Osceola County. It is working with all the planning councils to adopt JLUS recommendations, which will help fight encroachment. APAFR needs an authorization for a community planner. ECD—Encroachment is an ongoing issue with no completion date.
	Counterland	●	Same as above.
	Air Refueling	●	Same as above. Additionally, low-level helicopter refueling occurs in Marion MOA.
	Special Operations	●	Same as above.
Wetlands	Counterland	●	Any new training mission, project, or change to an existing range activity that impacts wetlands requires extensive coordination and approval from numerous State and Federal entities. Efforts to meet wetland requirements have the potential to delay or even prevent training activities. An effort to produce a range-wide FONPA is being processed to minimize impact.
	Special Operations	●	Same as above.

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Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Barry M. Goldwater Range (BMGR) Assessment Details



Barry M. Goldwater Range (BMGR) Assessment Details

Summary Observations					Summary Observations				
<ol style="list-style-type: none"> Did not rate training activities currently not conducted on the BMGR-E. In some cases, the range could support other mission needs, but with limited capability; i.e., ISR, electronic combat. Effective C2 of training space is having a negative effect on some operations/training, i.e., JTAC train-like-you fight operations. Better fidelity MOUT facilities is the single most impactful attribute affecting the training mission. While not a core competency of the range, supporting SPECOPS and like training is most the effected training activity on the BMGR. 					<ol style="list-style-type: none"> 82.61% of the range/range complex mission areas are fully capable and are not impacted by encroachment factors. 17.39% of the range/range complex missions areas are moderately impacted by encroachment factors, but are being addressed. While it appears cultural resources and range transients are impacting BMGR-E the most, the Air Force is still able to support the mission as it stands today. Future/different military mission requirements may be more or less impacted in the future. Cultural impact is prevalent, given magnitude of archeological finds on range. Its impact is mitigated through need, assessment, and resolution. Range Transients issue is sporadic, based on Border Patrol effectiveness and overall flow of illegal traffic, but raises concern due to lack of solid visibility downrange. Range users have seen illegal transients in nontraditional areas and in an area not traditionally monitored. Counterland mission most effected by above encroachment factors. Sonoran Pronghorn population on the increase, due in part to a joint captive breeding venture. Introduction of a second herd being proposed by U.S. Fish and Wildlife Service. Potential exists to de-list the species in mid-term, vice long term, if herd continues to grow at current rate. No range/range complex mission areas are severely impacted by encroachment. The Air Force is beginning to see solar development gain significant interest and development on the northern border of the BMGR-E (west of Gila Bend, AZ). 				
Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	8.77	8.77	8.77	8.77	Encroachment Scores	9.13	9.13	9.13	9.13
<ol style="list-style-type: none"> Electronic combat/threats are a limited threat capability, with lack of interactive feedback to pilots. BMGR is seeing a lack of use due to limited system capabilities and nature/pace of F-16 syllabus training. While Counterland/Airspace is coded "green," integration of RPAs/UAVs is extremely difficult, if not impossible, based on current manned aircraft customer base (significant amount of RTU training coupled with operational squadron training). The RPA/UAV mission is currently assessed as incompatible. 					<ol style="list-style-type: none"> Rating stayed the same; however, BMGR realized significant gain in the new Sonoran Pronghorn Biological Opinion. New opinion reduced target closure criteria and lessened impact by over 80 percent, and a take statement was added to the agreement. New opinion realized from health of population and ongoing efforts, including Air Force cooperation. Due to its endangered status, the Pronghorn must be actively monitored and will continue to be an impact to the mission until de-listed. Until the U.S.-Mexican border can be truly controlled, illegal trespass will continue to be an issue and impact the military mission. Excellent coordination with Customs and Border Protection is helping minimize impacts; most crossing are occurring during no-military operating times. Currently, no electronic observation means available on the BMGR (USAF side). All clearing is done by humans on-site, and can have limited effect based on volume of land space. Non-renewable energy source development still being "watched" on the northern border of BMGR, primarily in the vicinity of Gila Bend, AZ. No ground breaking development to date, but permits and incentives have been issued by the State. 56 RMO and 56 FW trying to stay engaged with developers to ensure compatible development with military flying operations is considered. 				

Barry M. Goldwater Range (BMGR) Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Targets	Special Operations	●	There are limited targets designed for SPECOPs (e.g., people/pop ups). There are severely limited opportunities for SPECOPs and combat search and rescue training. Planned action is to continue development of SPECOPs/CSAR ground movement area and the current EIS addressing the development of a helicopter unique range incorporating pop-up targets. ROD expected in Spring 2011; target area specific funding source unknown.
Threats	Electronic Combat Support	●	There is a lack of interactive threat simulation, limited threat capability, and no electronic means for real time feedback capability to ECM or maneuver. Therefore, the range has limited usefulness for flying community. Unknown remedies at this time; operations must provide requirement in order for BMGR-E to realize capability to support requirement.

Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Barry M. Goldwater Range (BMGR) Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Threats	Intelligence, Surveillance and Reconnaissance	●	There is limited threat generation down range, which limits ISR technique training and the inability to effectively support the mission. Unknown remedies at this time; addressing need however operational requirement will drive capability.
Scoring & Feedback System	Counterland	●	There is manual range scoring only. Lack of scoring capabilities on tactical ranges limits positive feedback to aircrew on effectiveness. The short-term solution is to provide limited optical scoring capability in one of the tactical ranges; however, there is limited capability funded in-house; IOC Spring 2011.
	Air Drop	●	There is no scoring capability for air drops and scoring is only provided on manned ranges. This limits operational feedback on effectiveness. Unknown remedy at this time; no operational requirement for drop zone scoring.
Range Support	Command and Control	●	There is limited capability for daily operations. No infrastructure exists to support operational C2 (AOC) if desired. LMR coverage is severely lacking. Air/ground advisory service is available, but ATC-like facility and positive control are necessary to sustain future operations. Impact to Training: Safety of humans on the ground and restrictions to aircrew based on low situational awareness from a C2 perspective. Planned Action: 1) Current C2 node continues to grow in support of range and airspace operations, and can provide access, deconfliction, and situational awareness to users with limited resources (one long range FAA radar feed, read-only Air Marine Operations Center [DHS] composite radar feed), extremely limited LMR system. 2) LMR repeater architecture submitted for assessment and approval—funding unknown; must wait for overall LMR upgrade of truncated system. 3) ATC-like facility being readdressed for requirements/funding. The capability is seen as a must, given future real-time airspace sharing with FAA and expected integration of different assets downrange.
	Special Operations	●	There are limited maneuver areas and no instrumented MOUT facilities. This effects viable training opportunities for unique user set/requirement. Unknown remedy at this time; operators have not specifically addressed limited facilities with BMGR management. Currently, they have limited on-ground maneuver training opportunities.
Collective Ranges	Counterland	●	The range is primarily air-maneuver centric. This provides a limited opportunity to integrate full spectrum air with ground maneuver training such as convoy escort. Range Enhancement EIS is addressing this shortfall to a limited degree; ROD expected Spring 2011.
MOUT Facilities	Counterland	●	There are limited maneuver areas and no instrumented MOUT facilities. This affects viable training opportunities for unique user set/requirement. Unknown remedy at this time; operators have not specifically addressed limited facilities with BMGR management. Currently, they have limited on-ground maneuver training opportunities.
	Special Operations	●	MOUT areas are relatively rudimentary and limited in complexity (i.e., they are not instrumented for IED/cellular network and do not allow for full scale recovery operations). Limited utility/operational use. Planned Action: Continue to develop limited maneuver MOUT areas in support of SPECOPs and CSAR. While it may not be feasible to develop down range, Gila Bend AFAP is a potential candidate to support special mission training requirements.
	Intelligence, Surveillance and Reconnaissance	●	Same as above.
Suite of Ranges	Special Operations	●	Same as above.

Encroachment Observations

Attributes	Assigned Training Mission	Score	Comments
Threatened & Endangered Species	Counterland	●	Sonoran Pronghorn Antelope (endangered species) are on the range. Their presence on the range closes targets and slows EOD/maintenance activity. The range has a continuing program of unique, ongoing assessment and avoidance measures. A new Biological Opinion realized in 2010 reduced target closure criteria, opened targets by over 80% and realized one take statement. An additional captive breeding plot is being proposed by the Fish and Wildlife Service. The herd will be classified “experimental” and, therefore, should not have any operational impact to mission. However, if animals intermix with existing herd (by area), then they become protected.
Munitions Restrictions	Counterland	●	HEI bullets not allowed on range due to EOD and safety. This limits training opportunities. Planned actions include considering development of an HEI-only target area, contained. Unknown completion date due to operational requirement/needs statement.
Cultural Resources	Counterland	●	BMGR-E lands are rich in cultural artifacts requiring assessment and mitigation of each site that may or may not affect operations. Given time, each can be mitigated, minimizing impact. Cultural resource surveys and Section 106 consultation is required for most operational undertakings (outside existing/historical target sets). Discovery may impact training objectives and limit scope of operations. Planned actions are to continue programmatic survey of all range lands, determine eligibility of site(s), and continue to work with users to determine best course of action balancing operational need with cultural and biological sensitivities. Range enhancement EIS is to address expanded land use for target placement; ROD anticipated in Spring 2011.

Barry M. Goldwater Range (BMGR) Detailed Comments

Encroachment Observations

Attributes	Assigned Training Mission	Score	Comments
Cultural Resources	Air Drop	●	Same as above.
	Special Operations	●	Same as above.
Range Transients	Counterland	●	Illegal human traffic and resulting law enforcement cross/access the BMGR-E; currently, no electronic ground detection exists downrange. Discovery leads to range closures and cease weapons expenditures. Planned actions include continued interaction with Customs Border Protection agents and continued research on feasibility of ground-based, ground-detection radar systems in interest of human safety. In 2010, the Air Force has leveraged Civil Air Patrol flights with early AM sorties to help clear the range before opening. This program has been deemed a success to help visually acquire illegal traffic (abandoned and staged vehicles) and act as a deterrent to illegal traffic.
	Air Drop	●	Same as above.
	Special Operations	●	Same as above.

Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Blair Lakes Assessment Details



Blair Lakes Assessment Details

Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	7.31	7.31	8.61	NA	Encroachment Scores	9.09	9.09	8.64	NA
No comments.					No comments.				

Blair Lakes Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Counterair	●	The small range limits Counterair operations. There is no remedy; some mitigation if scheduling adjacent Eielson MOA simultaneously.
	Counterland	●	The small range limits air operations supporting ground maneuver tactics. There is no remedy; some mitigation if scheduling adjacent Eielson MOA simultaneously. Also, there is limited terrain available in/near infrastructure and targets that are conducive to vehicle and foot movements. Most terrain is sensitive tundra and wetlands.
	Special Operations	●	Same as above.
Airspace	Counterair	●	The small range limits Counterair operations. There is no remedy; some mitigation if scheduling adjacent Eielson MOA simultaneously.
	Counterland	●	The small range limits air operations in support of Counterland operations. There is no remedy; some mitigation if scheduling adjacent Eielson MOA simultaneously.
	Air Drop	●	The small range limits Counterair operations. There is no remedy; some mitigation if scheduling adjacent Eielson MOA simultaneously.
Targets	Counterland	●	There are limited infrastructure targets and suitable maneuver spaces for large scale training operations. Small unit movement and small CAS scenarios are applicable. Sensitive tundra terrain and isolated locale prohibit further development.
	Air Drop	●	Air Drop is limited to the main complex and must avoid target impact areas. The noted target sizes are small and in close proximity to inhabited structures, thus restricting choices of munitions training units are able to expend. Surrounding terrain is muskeg/permafrost soils not conducive to movement by foot. There is no remedy other than expensive gravel excavation and backfill.
	Intelligence, Surveillance and Reconnaissance	●	Year-round access is limited, inhibiting placement of C4ISR targets. There is a cost effective remedy until permanent year-round access is developed.
Threats	Counterland	●	Surface-to-air emitter threats are not normally resident. They could be emplaced; however, it would be logistically and financially challenging.
	Electronic Combat Support	●	Same as above. In addition, electronic emitters face added restrictions due to their proximity and line-of-sight to critical FAA radars and communications nodes.
	Special Operations	●	Same as Counterland.
	Intelligence, Surveillance and Reconnaissance	●	Same as Counterland.
Scoring & Feedback System	Intelligence, Surveillance and Reconnaissance	●	There currently is limited feedback and scoring for any type of C4ISR operations.
Infrastructure	Air Drop	●	The range is isolated and remote. All Air Drop operations, except in winter months when ice bridge is in place, will require land to recover loads.
	Intelligence, Surveillance and Reconnaissance	●	The isolated and remote nature of the range limits emplacing detailed C4ISR targets and feedback systems.
MOUT Facilities	Special Operations	●	Existing infrastructure could be used for small-unit tactics, but are not true MOUT facilities. Additionally, no small-unit tactics feedback systems are permanently installed.

Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Blair Lakes Detailed Comments

Encroachment Observations

Attributes	Assigned Training Mission	Score	Comments
Munitions Restrictions	Counterair	●	Counterair may be conducted, but it is limited to short-range engagements due to small lateral and vertical size of airspace. There is no room for live ordnance expenditures. One aspect of a remedy for non-ordnance delivery training is scheduling Eielson MOA and R-2211 simultaneously, alleviating some lateral space restrictions.
	Counterland	●	Counterland is limited by small number of targets/target sets. Surrounding terrain is muskeg/permafrost soils that are not conducive to movement by foot/vehicle traffic, and the range's remote nature precludes significant build up. There is no remedy other than expensive gravel excavation/backfill and road building.
	Air Drop	●	Air Drop is limited to the main complex and must avoid target impact areas. The noted targets sizes are small and in close proximity to habitable structures, thus restricting choices of munitions training units are able to expend. Surrounding terrain is muskeg/permafrost soils not conducive to movement by foot. There is no remedy other than expensive gravel excavation and backfill.
Spectrum	Electronic Combat Support	●	There is limited capability to emplace threat emitters on-range. They have to be flown in during summer months, or hauled over an ice bridge in the winter and left there. Moreover, the airspace lateral and vertical limits may limit tactics to familiarization operations only. Lastly, the close proximity and direct line of site to critical FAA radars limits the type and quantity of emitters.
Airspace	Counterair	●	Airspace volume is too small for large force employment. Strictly designed for a 4-ship maximum, and simple/basic tactics execution.
	Counterland	●	Same as above.
	Electronic Combat Support	●	Same as above.
	Air Drop	●	Same as above.
	Special Operations	●	Same as above.
Adjacent Land Use	Counterair	●	There is a limited MOA surrounding the restricted area. All lands surrounding are wetlands, sensitive forest lands, and/or possess civil airways. All of these factors act as de facto encroachment aspects.
	Counterland	●	Same as above.
	Electronic Combat Support	●	Same as above.
	Intelligence, Surveillance and Reconnaissance	●	Same as above.
Wetlands	Counterland	●	The surrounding terrain is comprised of sensitive muskeg/permafrost soils and is not conducive to movement by vehicle or foot. Targets are limited to the small number of existing bombing circles. There is no remedy other than expensive gravel excavation and backfill.
	Special Operations	●	The surrounding terrain is comprised of sensitive muskeg/permafrost soils and is not conducive to movement by vehicle or foot. There is no remedy other than expensive gravel excavation and backfill.

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Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Bollen Assessment Details



Bollen Assessment Details

Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	8.90	8.90	8.77	8.77	Encroachment Scores	9.43	9.43	9.15	9.15
1. The size of the current airspace needs to be modified. Preliminary research is underway and discussions with FAA have taken place regarding modifying existing training airspace. Positive results anticipated. 2. Several threat systems have been researched and several avenues for funding are being pursued. Anticipating positive outcome with greatly improved threat training capabilities. 3. Several new missions to range are being integrated. These new missions will increase training realism and do so on a non-interference basis with existing training missions. 4. Encroachment issues stable at this time.					No comments.				

Bollen Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Strategic Attack	●	Range activities restricted due to small landspace that limit tactics; no planned remedy.
	Counterair	●	Same as above.
	Counterland	●	Same as above.
	Air Drop	●	Same as above.
	Special Operations	●	Same as above.
	Intelligence, Surveillance and Reconnaissance	●	Same as above.
Airspace	Strategic Attack	●	Range activities restricted due to small landspace that limit tactics; planning to increase restricted airspace size.
	Counterair	●	Same as above.
	Counterland	●	Same as above.
	Air Drop	●	Same as above.
	Special Operations	●	Same as above.
	Intelligence, Surveillance and Reconnaissance	●	Same as above.
Threats	Strategic Attack	●	There is limited threat capability resulting in a minimal training benefit; funding request for upgrade has been made.
	Counterair	●	Same as above.
	Counterland	●	Same as above.
	Command and Control	●	Same as above.
	Air Drop	●	Same as above.
	Special Operations	●	Same as above.
	Intelligence, Surveillance and Reconnaissance	●	Same as above.

Encroachment Observations

Attributes	Assigned Training Mission	Score	Comments
Threatened & Endangered Species	Air Drop	●	Endangered species inhabit the current drop zone. The drop zone offers incomplete mission feedback and selective relocation by wildlife biologists.
Munitions Restrictions	Strategic Attack	●	The range has a small landspace and restricts munition types. Planning taking place to modify existing airspace to better meet mission requirements.
	Counterair	●	Same as above.
	Counterland	●	Same as above.

Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Bollen Detailed Comments

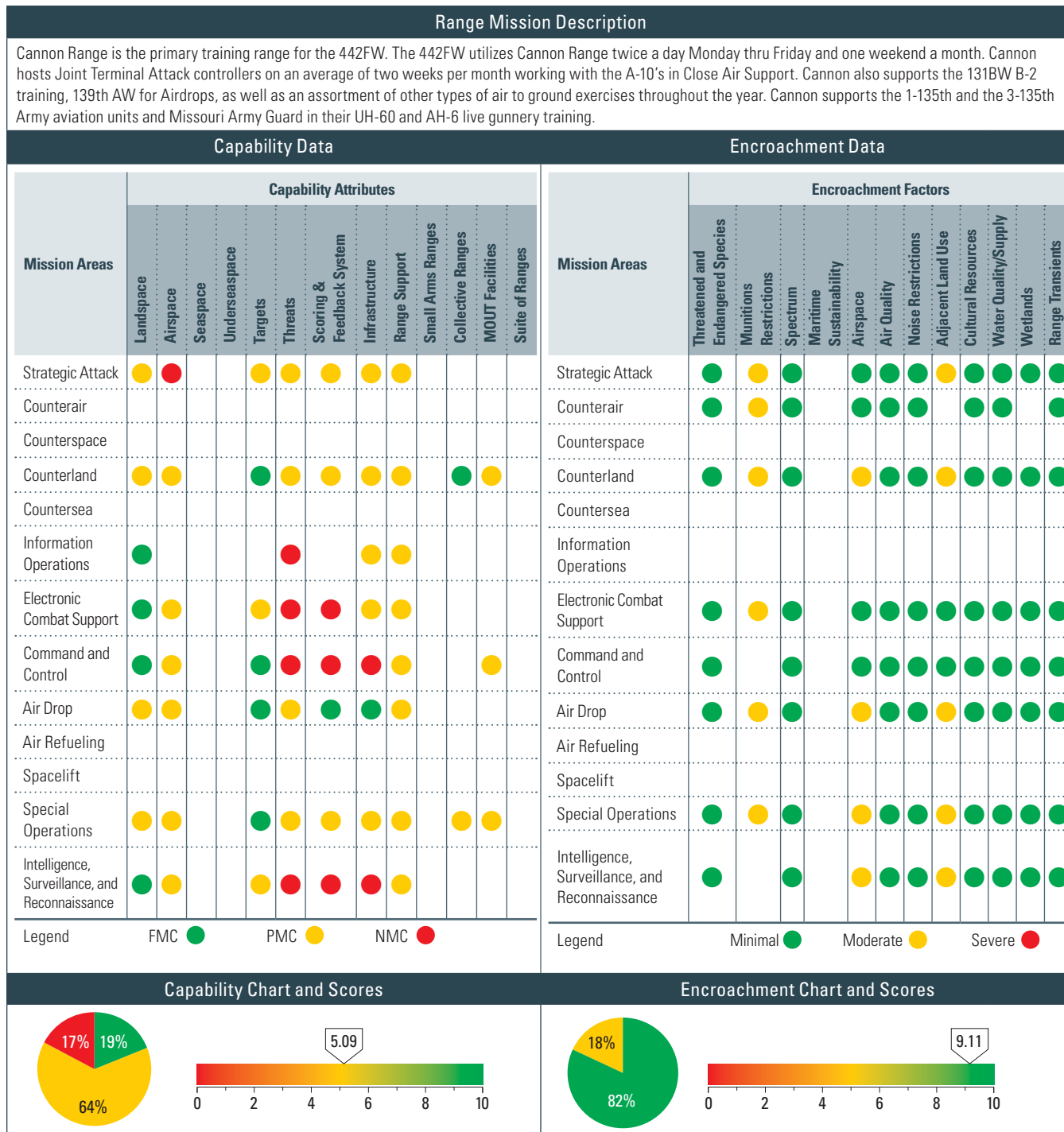
Encroachment Observations

Attributes	Assigned Training Mission	Score	Comments
Airspace	Strategic Attack	●	The range has a small airspace which limits tactics. Planning in process to increase restricted airspace size.
	Counterair	●	Same as above.
	Counterland	●	Same as above.
	Electronic Combat Support	●	Same as above.
	Command and Control	●	Same as above.
	Air Drop	●	Same as above.
	Special Operations	●	Same as above.
	Intelligence, Surveillance and Reconnaissance	●	Same as above.
Noise Restrictions	Strategic Attack	●	Range is restricted because no missions are allowed from 2300 hours–0700 hours local, which limits night training. There is currently no planned remedy.
	Counterland	●	Same as above.
	Electronic Combat Support	●	Same as above.

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Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Cannon Assessment Details



Cannon Assessment Details

Summary Observations					Summary Observations				
1. Cannon Range primarily provides a joint training environment for Counterland operations. Other training uses in decreasing order of utilization are Special Operations, Air Drop, Strategic Attack, ISR, and Counterair. Training for Command and Control, Electronic Combat Support, and Information Operations are integrated, within Cannon Range’s capabilities, in each mission area. 2. Range Support, particularly resource allocation (personnel and O&M \$) is driving factor behind many of areas rated “Yellow” 3. 84% of rated areas are fully or partially mission capable					1. Adjacent Land Use is the highest encroachment factor affecting Cannon Range. As part of Fort Leonard Wood, small arms ranges are encroaching on the east side of Cannon to the point where it is effecting all air usage to some degree, and in some cases limiting when users can occupy these facilities (Army .50 cal range being active) 2. Mission areas most severely impacted are Counterland, since this encompasses most of the range’s mission.				
Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	5.17	5.17	5.17	5.09	Encroachment Scores	9.05	9.05	9.05	9.11
Capability scores have remained relatively unchanged from last CY. A vast majority of areas rated yellow are due to insufficient personnel to perform the type and duration of missions being requested. Cannon Range has limited capability to perform missions outside the normal day to day operations. The range performs very well at CAS, basic air drops, etc. When the mission dictates large ground forces, enhanced threats, and large force exercises, training capabilities fall short. This shortfall is due to manning, airspace size, and budget shortfalls. In the coming years, range managers will continue to operate as always, maximizing the assets and personnel available.					1. Scores remained relatively the same since last CY; however, improved business practices have been implemented to mitigate the impact of the .50 cal Army range. Range managers have continued to deconflict the range schedule proactively with Fort Leonard Wood. 2. Encroachment will continue to be an issue in the future, maybe more so since the Army is modifying some of their small arms ranges, to include Range 24 (.50 cal) to support more soldiers. This will negate the current way of deconflicting schedules. Currently, the Army’s requirement to train soldiers on the .50 cal range is able to be mitigated by giving them days that Cannon Range is not scheduled to go hot. However, in the future with more soldiers needing trained on those ranges, the Air Force sees encroachment to be an issue for several years to come. 3. In the future with current encroachment from other DoD assets (i.e., Army), Cannon Range will mitigate all conflicting land usage requirements by developing a solid relationship with our DoD counterparts. This will include analyzing the scheduling process to ensure all parties can perform their missions using the same landscape to accomplish goals.				

Cannon Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Strategic Attack	●	Adjoining land uses and infrastructure effectively limit or preclude certain ordnance deliveries, due to WDZ containment. No planned remedy.
	Counterland	●	Adjoining land uses and infrastructure effectively limit or preclude certain ordnance deliveries, particularly IAM due to WDZ size. The terrain limits feasible observation positions for Type 1 CAS controls.
	Air Drop	●	Range is unable to conduct static line airdrop due to vegetation, terrain, and adjacent HE impact area.
	Special Operations	●	Adjoining land uses and infrastructure effectively limit or preclude certain ordnance deliveries. Terrain limits feasible observation positions for Type 1 CAS controls.
Airspace	Strategic Attack	●	There is insufficient volume and attributes of airspace to conduct large force exercises or for bomber aircraft to maneuver. Training space is marginal for fighter aircraft conducting strategic attack training.
	Counterland	●	The volume and attributes of airspace limit tactics and ordnance.
	Electronic Combat Support	●	The volume of airspace limits types of EC aircraft that can utilize range airspace. Other nearby airspace can accommodate Iron Triad. The volume and attributes (chaff/flare restrictions) of airspace limit some types of defensive reactions.
	Command and Control	●	The volume of airspace limits types of C2 aircraft that can utilize range airspace. Other nearby airspace can accommodate Iron Triad. (Lindbergh MOA/ATCAA).
	Air Drop	●	The volume and attributes of airspace limit tactics.
	Special Operations	●	The volume and attributes of airspace limit tactics and ordnance.
	Intelligence, Surveillance and Reconnaissance	●	The volume of airspace limits types of ISR aircraft that can utilize range airspace. Other nearby airspace can accommodate manned ISR. The range accommodates space-based ISR. The restricted airspace is suitable for small and micro-UAS, but marginal for medium UAS.

Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Cannon Detailed Comments

			Capability Observations
Attributes	Assigned Training Mission	Score	Comments
Targets	Strategic Attack	●	The range target suite provides only some but not all target types possible for strategic attack.
	Electronic Combat Support	●	The range has a limited capability to provide targets in the electro-magnetic spectrum.
	Intelligence, Surveillance and Reconnaissance	●	Thermal characteristics of the target array are low-fidelity. Good CCD capabilities: terrain; vegetation; and dynamic, movable, and mobile targets provide high quality training for the find, fix, and track portions of the kill chain.
Threats	Strategic Attack	●	Limited capability to replicate a few surface-to-air tactical threats—RWR Lite x 2, Smokey SAM launchers x 2.
	Counterland	●	There is limited capability to replicate a few tactical surface-to-air threats—RWR Lite x2, Smokey SAM launchers x 2. There is limited untrained, highly motivated ground force (personnel) to act as aggressors/Red Force against JTACS/SOF.
	Information Operations	●	Limited because the only IO threat capability is spoofing or denial of service in UHF/VHF spectrum.
	Electronic Combat Support	●	Limited capability to replicate a few surface-to-air tactical threats—RWR Lite x 2, Smokey SAM launchers x 2.
	Command and Control	●	There is no capability to provide threats effecting C2 at a level higher than JTAC/AFAC/Flt Lead.
	Air Drop	●	There is only limited capability to replicate a few tactical surface-to-air threats—RWR Lite x2, Smokey SAM launchers x 2.
	Special Operations	●	There is only limited capability to replicate a few tactical surface-to-air threats—RWR Lite x2, Smokey SAM launchers x 2. There is only limited untrained, highly motivated ground force (personnel) to act as aggressors/Red Force against SOF.
Scoring & Feedback System	Intelligence, Surveillance and Reconnaissance	●	Only limited capability to replicate a few tactical surface-to-air threats—RWR Lite x2, Smokey SAM launchers x 2.
	Strategic Attack	●	A portion of the target array is un-scoreable; aircraft and ground personnel TSPI are not collected or stored. The range is SADL equipped, with no JTIDS capability, and no method to monitor C4I network information flow. Some hardware on site for implementation of LVC network. The scoreable target array will increase by end of FY2010 with phase 2 and 3 of JAWSS installation.
	Counterland	●	A portion of the target array is un-scoreable; aircraft and ground personnel TSPI are not collected or stored. The range is SADL equipped, with no JTIDS capability, and no method to monitor C4I network information flow. Some hardware on site for implementation of LVC network. The scoreable target array will increase by end of FY2010 with phase 2 and 3 of JAWSS installation.
	Electronic Combat Support	●	There is no method to assess or provide feed back for ECM/ECCM. SADL equipped, no JTIDS capability, no method to monitor C4I network information flow.
	Command and Control	●	Aircraft and ground personnel TSPI are not collected or stored. SADL equipped, with no JTIDS capability, no method to monitor C4I network information flow. There is some hardware on site for implementation of LVC network through ARCNet.
	Special Operations	●	A portion of the target array is un-scoreable; aircraft and ground personnel TSPI are not collected or stored. SADL equipped, with no JTIDS capability, and no method to monitor C4I network information flow. Some hardware on site for implementation of LVC network. The scoreable target array will increase by end of FY2010 with phase 2 and 3 of JAWSS installation.
Infrastructure	Intelligence, Surveillance and Reconnaissance	●	No substantial capability to provide feedback for ISR training. A portion of target array is un-scoreable; aircraft TSPI not collected or stored. The range is SADL equipped, with no JTIDS capability, and no method to monitor C4I network information flow. Some hardware is on site for implementation of LVC network through ARCNet. The scoreable target array will increase by FY2010 with phase 2 and 3 of JAWSS installation.
	Strategic Attack	●	The volume of indoor storage space is inadequate to store and maintain certain strategic attack targets, including next generation threats. There is no classified vault.
	Counterland	●	A bridge failure in FY2005 cut off access to the host U.S. Army post, nearly eliminating joint ground force access, and increasing time for JTACs to reach Cannon Range and certain OPS.
	Information Operations	●	There is a limited volume of space to improve/add hardware.
	Electronic Combat Support	●	Same as above.
Command and Control	●	There is insufficient volume of space for a C2 unit to mobilize and operate out of existing buildings.	

Cannon Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Infrastructure	Special Operations	●	Bridge failure in FY2005 cut off access to host U.S. Army post, nearly eliminating joint ground force access, increasing time for JTACs to reach Cannon Range and certain OPS.
	Intelligence, Surveillance and Reconnaissance	●	No small paved runway available for small ISR platforms requiring a prepared or hard surface.
Range Support	Strategic Attack	●	Insufficient number of personnel, full-time or part-time, to maintain target array, conduct support functions, or provide 2-shift manning. Operational hours limited to 8 hours per day.
	Counterland	●	Insufficient number of personnel, full-time or part-time, to maintain target array, conduct support functions, or provide 2-shift manning. Operational hours limited to 8 hours per day. UHF/VHF systems at 100% capacity, and additional hardware is required for mission growth.
	Information Operations	●	Insufficient number of personnel, full-time or part-time, to maintain target array, conduct support functions, or provide 2-shift manning. Operational hours limited to 8 hours per day. SIPRNET consistently unreliable. Limited NIPRNET bandwidth
	Electronic Combat Support	●	Insufficient number of personnel, full-time or part-time, to maintain target array, conduct support functions, or provide 2-shift manning. Operational hours limited to 8 hours per day.
	Command and Control	●	Same as above.
	Air Drop	●	Insufficient number of personnel, full-time or part-time, to maintain target array, conduct support functions, or provide 2-shift manning. Operational hours limited to 8 hours per day. Limited personnel and equipment to handle CDS or HE airdrops.
	Special Operations	●	Insufficient number of personnel, full-time or part-time, to maintain target array, conduct support functions, or provide 2-shift manning. Operational hours limited to 8 hours per day. Range personnel generally unavailable to assist with
	Intelligence, Surveillance and Reconnaissance	●	Insufficient number of personnel, full-time or part-time, to maintain target array, conduct support functions, or provide 2-shift manning. Operational hours limited to 8 hours per day.
Collective Ranges	Special Operations	●	Need to add properly equipped and trained aggressors/Red Force to improve.
MOUT Facilities	Counterland	●	There are five total complexes, and only low-fidelity thermal/IR signature.
	Command and Control	●	Same as above.
	Special Operations	●	There are five total complexes, and only low-fidelity thermal/IR signature. The range needs to add a sim-round capable shoot complex which is required to integrate the total mission from infiltration through exfiltration with A-G platforms.

Encroachment Observations

Attributes	Assigned Training Mission	Score	Comments
Munitions Restrictions	Strategic Attack	●	No live ordnance permitted. Theoretically, the range has limited capability to employ IAM 170 acres of inactive U.S. Army artillery range cannot be cleared for range residue. Flares not permitted below 1,000 ft. AGL.
	Counterair	●	Chaff (except RR-112) not permitted above 3,000 ft. AGL
	Counterland	●	No live ordnance permitted. White Phosphorous not permitted. Theoretically, the range has limited capability to employ IAM. 170 acres of inactive U.S. Army artillery range cannot be cleared for range residue; Chaff (except RR-112) not permitted above 3,000 ft. AGL. Flares not permitted below 1,000 ft. AGL. Illumination flares not permitted.
	Electronic Combat Support	●	Chaff (except RR-112) not permitted above 3,000 ft. AGL. Flares not permitted below 1,000 ft. AGL.
	Air Drop	●	Chaff (except RR-112) not permitted above 3,000 ft. AGL. Flares not permitted below 1,000 ft. AGL.
	Special Operations	●	No live ordnance permitted. White Phosphorous not permitted. Theoretically, the range has limited capability to employ IAM 170 acres of inactive U.S. Army artillery range cannot be cleared for range residue; Chaff (except RR-112) not permitted above 3,000 ft. AGL. Flares not permitted below 1,000 ft. AGL.
Airspace	Counterland	●	Surface Danger Zones from U.S. Army small arms ranges and demolitions ranges limit minimum altitudes over certain areas adjacent to impact area 10% of time.
	Air Drop	●	Same as above.

Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Cannon Detailed Comments

Encroachment Observations

Attributes	Assigned Training Mission	Score	Comments
Airspace	Special Operations	●	Same as above.
	Intelligence, Surveillance and Reconnaissance	●	Same as above.
Adjacent Land Use	Strategic Attack	●	Adjoining U.S. Army Multi-Purpose Machine Gun Range (.50 cal) closes Cannon Range to all use, including maintenance, approximately 30-60 hours/month, but not all of these hours are scheduled by Cannon Range for use or maintenance. Adjacent land uses limit or eliminate employing inert IAMs, some PWII, and other ordnance.
	Counterland	●	Same as above.
	Air Drop	●	Adjoining U.S. Army Multi-Purpose Machine Gun Range (.50 cal) closes Cannon Range to all use, including maintenance, approximately 30-60 hours/month, but not all of these hours are scheduled by Cannon Range for use or maintenance. Adjoining Live Fire Convoy course limits minimum altitudes over a portion of the range and ground personnel locations, including a portion of Slingshot DZ, 20% of time
	Special Operations	●	Same as above.
	Intelligence, Surveillance and Reconnaissance	●	Same as above.

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Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Claiborne Assessment Details

Range Mission Description																										
Claiborne is an A-G range whose primary user is the 47th Fighter Squadron, Barksdale AFB, LA.																										
Capability Data							Encroachment Data																			
Mission Areas	Capability Attributes										Mission Areas	Encroachment Factors														
	Landspace	Airspace	Seaspace	Underspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges		Collective Ranges	MOUT Facilities	Suite of Ranges	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
Strategic Attack	●	●			●	●	●	●	●		●	●		●	●			●	●	●	●	●	●	●	●	●
Counterair																										
Counterspace																										
Counterland	●	●			●	●	●	●	●		●	●		●	●			●	●	●	●	●	●	●	●	●
Countersea																										
Information Operations																										
Electronic Combat Support																										
Command and Control																										
Air Drop																										
Air Refueling																										
Spacelift																										
Special Operations																										
Intelligence, Surveillance, and Reconnaissance																										
Legend	FMC ●		PMC ●		NMC ●								Legend	Minimal ●		Moderate ●		Severe ●								
Capability Chart and Scores							Encroachment Chart and Scores																			
Summary Observations							Summary Observations																			
No comments.							No comments.																			
Historical Information, Results, and Future Projections							Historical Information, Results, and Future Projections																			
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011																	
Capability Scores	6.56	6.56	7.86	6.67	Encroachment Scores	10.00	10.00	10.00	10.00																	
No comments.							No comments.																			

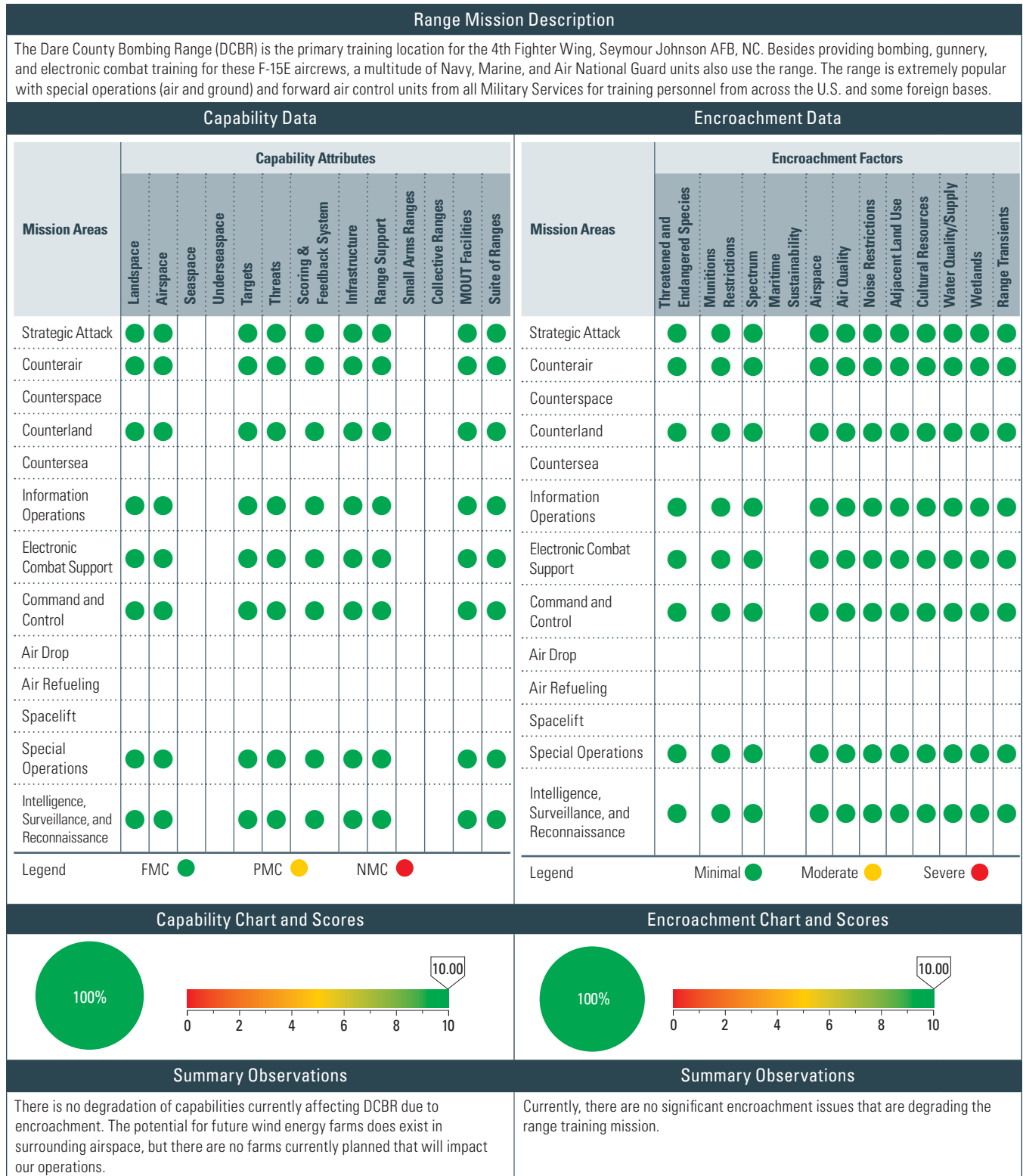
Claiborne Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landscape	Strategic Attack	●	Claiborne Range is a small range located in a U.S. National Forest. Authorized weapons are limited to practice bombs and training rounds. This does not include inert JDAMs or LGBs. Additional land is not currently available. No remedy planned at this time.
	Counterland	●	Same as above.
Threats	Strategic Attack	●	Current inventory includes only an RWR lite threat emitter, which is not utilized very often in A-10 training scenarios and not robust enough for B-52 training. Local ACFT are required to travel further to accomplish required training. The current plan is to investigate increasing the ECM capabilities and adding simulated SAM threats upon completion of other improvements; 3 year plan.
	Counterland	●	Same as above.
Scoring & Feedback System	Strategic Attack	●	The current JAWSS scoring system is limited by antiquated analog technology. This prevents efficient and ongoing data storage and limits feedback to hard copies only. Current plan is to update scoring system upon completion of other facility upgrades; 2–3 years.
	Counterland	●	Same as above.
Range Support	Strategic Attack	●	Although a T1 communications line is in place and functioning, AF global email and the PEX server are unavailable. This requires additional effort by all to ensure that range personnel are aware of changes to the training schedule. A work order is in progress; estimated time of resolution is unknown.
	Counterland	●	Same as above.
Collective Ranges	Strategic Attack	●	There are currently no designated observation points besides the control towers for ground units; i.e., TACP teams. This limits training scenarios in which JTACs are required. Plans for construction are in currently in progress with an estimated completion date no later than October 2012.
	Counterland	●	Same as above.
MOUT Facilities	Strategic Attack	●	The current facility is very limited in scope. This limits training opportunities. Plans for construction are in currently in progress with an estimated completion date no later than October 2012.
	Counterland	●	Same as above.

Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Dare County Ranges Assessment Details



Dare County Ranges Assessment Details

Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	9.95	9.95	9.59	10.00	Encroachment Scores	9.95	9.95	9.55	10.00
<p>There is no current issue with capability degradation from encroachment on DCBR due to the isolated location. The only potential issue in the future could be the vertical encroachment of wind farms into the surrounding airspace which could infringe on low altitude training in the R5314 Complex.</p>					<p>The effects of encroachment factors are negligible. Range training capabilities have expanded dramatically due to the efficient use of existing air and ground space. Developers are showing increasing interest in developing wind farms at various locations in the coastal area, some in fairly close proximity to the range air and ground space. No development has been done as of yet. The range mission should continue to be unaffected for the foreseeable future.</p>				

Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Draughton Assessment Details



Draughton Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Strategic Attack	●	Limited landspace cannot accommodate modern weapons' danger zones, except from very limited attack axis against non-representative targets for strategic attack. Training is conducted "dry" against simulated targets in off-range areas. There is no further mitigation anticipated. The Air Force is working with USFJ/GOJ Joint Committee to update host nation agreements.
	Counterland	●	Same as above.
	Information Operations	●	Limited land area would limit ability to distribute threat systems to provide a realistic electronic order of battle, even if frequency spectrum permitted use of threat emitters.
	Electronic Combat Support	●	Same as above.
Airspace	Strategic Attack	●	Limited size and time restrictions for use of restricted airspace and Positive Control Airspace (PCA) limit ability to realistically train to mission area; efforts continue to expand PCA.
	Counterland	●	Same as above.
	Information Operations	●	Same as above.
	Electronic Combat Support	●	Same as above.
	Air Drop	●	Same as above.
Targets	Strategic Attack	●	Limited range size and material availability limits ability to simulate strategic targets; no further mitigation planned.
	Counterland	●	Limited range size and limited availability of tactical targets from DRMO within Japan limits ability to simulate tactical targets. Provision of excess tactical/armored vehicles/helicopters would significantly improve counterland targets.
	Information Operations	●	Electronic Threats for use as targets are not provided except for RWR Lite with limited frequency clearance to single threat system (AAA). Range needs multiple UMTE or JTE with broad frequency clearance from GOJ; however, no efforts are underway due to untenable spectrum restrictions.
	Electronic Combat Support	●	Same as above.
Threats	Strategic Attack	●	Electronic Threats for use as targets are not provided except for RWR Lite with limited frequency clearance to single threat system (AAA). Range needs multiple UMTE or JTE with broad frequency clearance from GOJ; however, no efforts are underway due to untenable spectrum restrictions. In addition, the range is exploring provision of visual simulation of threat systems. Draughton has recently purchased two (simulated) SA-6 Straight Flush radars with the following features: Skid Mounted, Rotating Dish, Copper Coating, and Green Top Coat with Camo Pattern. Draughton has also constructed a (simulated) SA-3 SAM emplacement as well as a (simulated) AAA formation.
	Counterland	●	Same as above.
	Information Operations	●	Electronic Threats for use as targets are not provided except for RWR Lite with limited frequency clearance to single threat system (AAA). Range needs multiple UMTE or JTE with broad frequency clearance from GOJ. No efforts underway due to untenable spectrum restrictions.
	Electronic Combat Support	●	Same as above.
	Air Drop	●	Same as Strategic Attack.
Scoring & Feedback System	Information Operations	●	Current low-fidelity threat system (RWR Lite) has no capability to integrate with ACMI or embedded training systems to automatically validate weapons system employment or results.
	Electronic Combat Support	●	Same as above.
Small Arms Ranges	Counterland	●	The range only has capability for 40mm grenade launcher training due to Host Nation restrictions. While surface area into water is available, the range is technically "Misawa A-G Range" in USFJ/GOJ Joint Committee agreements. Therefore, range is restricted from using ground fire of projectile ammunition. There is no planned resolution.
Collective Ranges	Strategic Attack	●	Limited air and land space and proximity of adjacent training areas limits ability for integrated operations with other assets for collective training.
	Counterland	●	Same as above; limited ability for small-unit collective training with tactical air control parties is available. There are no additional efforts underway.
	Information Operations	●	Same as Strategic Attack.
	Electronic Combat Support	●	Same as above.
	Air Drop	●	Air and land space size limits ability to conduct large force/collective training.

Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Draughton Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Suite of Ranges	Strategic Attack	●	The range is primarily limited in order by Landspace, Airspace, Targets, and Threats.
	Counterland	●	Same as above.
	Information Operations	●	The range is primarily limited in order by Threats, Targets, Airspace, and Landspace from primary encroachment factor of Spectrum.
	Electronic Combat Support	●	Same as above.
	Air Drop	●	Same as Strategic Attack.

Encroachment Observations

Attributes	Assigned Training Mission	Score	Comments
Spectrum	Strategic Attack	●	It is challenging to obtain a frequency clearance from GoJ to operate across the band of threat systems, which makes training to any electronic combat unavailable. Embedded training capability of local aircraft (F-16CM with Harm Targeting System R7) provides partial mitigation, but embedded training is insufficient and does not validate total system operation, nor does it replicate adversary tactics, techniques, and procedures for threat system operation. Additional mitigation is underway to conduct cooperative training with local JGSDF I-HAWK and Patriot systems, but coordination with Host Nation takes time. USFJ/DoS/DoD assistance to obtain frequency clearance to operate service/joint threat emitters might enable frequency clearance to operate an Electronic Warfare Range.
	Counterland	●	Same as above.
	Information Operations	●	Same as above.
	Electronic Combat Support	●	Same as above.
	Air Drop	●	Same as above.
Airspace	Strategic Attack	●	Actual restricted airspace is limited and supplemented with a range Positive Control Area (PCA) sanitized by Misawa AB radar approach control facility. Under Host Nation agreement, PCA is available for hazardous activities (laser/ weapons transit), but extent of PCA is limited due to proximity of Misawa AB (10nm South), JGSDF restricted area and commercial air routes. Efforts are underway to extend PCA with additional volume for limited operating times to accommodate specialized training (exercise CAS scenarios and IAM weapons employment). Weapons employment is further restricted by USFJ/GOJ Joint Committee agreement on range restrictions originally established in 1952. Those agreements specify authorized weapons and attack restrictions, which do not account for increased weapon capability and weapon safety analysis. Efforts are underway to modify JC agreement on range restrictions but resolution is uncertain.
	Counterland	●	Same as above.
	Information Operations	●	Same as above.
	Electronic Combat Support	●	Same as above.
Noise Restrictions	Strategic Attack	●	Operating hours of the range are limited by USFJ/GOJ Joint Committee agreement on use restrictions for the range originally established in 1952. Range cannot be used after 2000 hrs during Fall-Spring and 2200 hrs during Summer. Operations from 2000-2200 are limited in total number per month. Efforts are underway to amend restrictions, but resolution is uncertain.
	Counterland	●	Same as above.
	Information Operations	●	Same as above.
	Electronic Combat Support	●	Same as above.
	Air Drop	●	Same as above.

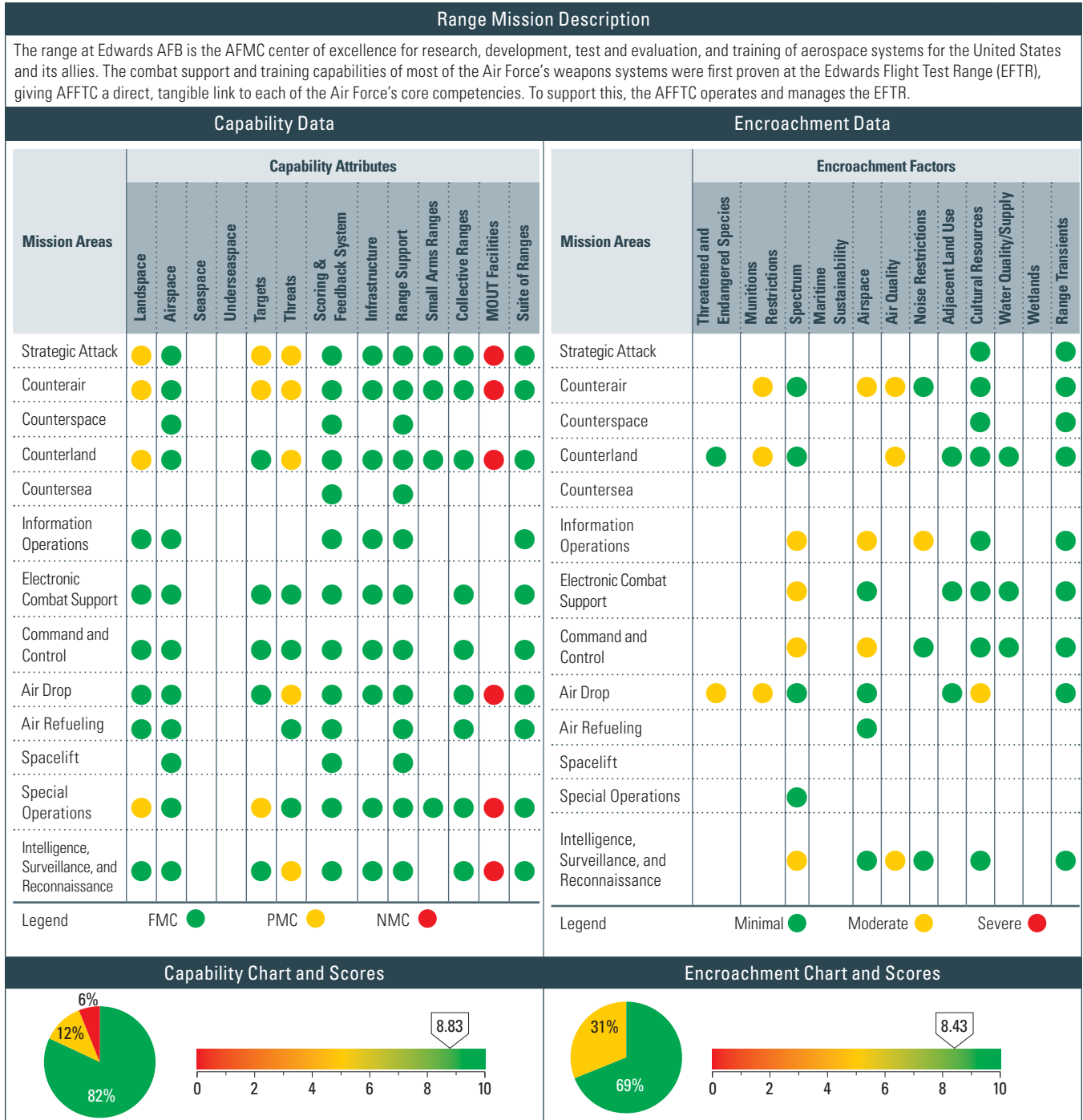
Draughton Detailed Comments

Encroachment Observations

Attributes	Assigned Training Mission	Score	Comments
Adjacent Land Use	Strategic Attack	●	Adjacent land has been purchased and or leased by Aomori/Misawa Defense Facilities Office (DFO) when frequent low altitude operations are routine. However, several cattle farms, a port, and a nuclear power plant/fuel processing facility have "no overflight" restrictions, which limit access to the range and constrain operations. There is no current effort to increase the buffer area or alter DFO land ownership based on current use.
	Counterland	●	Same as above.
	Information Operations	●	Same as above.
	Electronic Combat Support	●	Same as above.
	Air Drop	●	Same as above.
Cultural Resources	Strategic Attack	●	Formal constraints are minimal, but as a jointly operated range with JASDF, discovery of cultural sites is handled on a case-by-case basis. Land area around the range is a historical site of regional Nanbu clan activities in Northern Japan. If discovered in areas close to target areas, archaeological assessments have the potential to reduce operating availability. No further mitigation planned.
	Counterland	●	Same as above.
	Air Drop	●	Same as above.
Range Transients	Strategic Attack	●	Range includes littoral region off the east coast of the range. Use requires sanitization to ensure area is clear of transients and fishing boats. There is no additional mitigation planned beyond current observation from additional manned sites on range.
	Counterland	●	Same as above.
	Information Operations	●	Same as above.
	Electronic Combat Support	●	Same as above.
	Air Drop	●	Same as above.

Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Edwards Ranges Assessment Details



Edwards Ranges Assessment Details

Summary Observations					Summary Observations				
<p>This assessment addresses the capabilities of EFTR and the 412 Range Squadron, Edwards AFB, CA to support the T&E mission. For the purpose of this assessment, EFTR is defined as the airspace within the R-2508 Restricted Area Complex, the 301,000 acres of withdrawn land making up the Edwards AFB Reservation, and the range instrumentation array. While the 412th RANS is the Range Operating Agency (ROA) as defined in AFI 13-212, the entire EFTR is a compilation of capabilities of multiple organizations within the 412 Test Wing, 95 Air Base Wing, and the USAF Flight Test Center. It is also important to note EFTR does not operate as stand-alone entity, but as a component of the DoD Southwest Complex, which includes EFTR, Ventura County NAS (Pt. Mugu), China Lake NAS, Nellis Test and Training Range, Utah Test and Training Range, White Sands Missile Range, and Vandenberg AFB. As such, the complementary capabilities of these ranges allow EFTR to operate at the fully mission capable level over all T&E mission area. Overall, EFTR is in good shape concerning Suite of Ranges, Collective Ranges, Range Support, Infrastructure, Scoring, and Airspace. There are potential medium risk concerns associated with Landspace in terms of size, Targets from a strategic attack and counterair perspective, and Threats primarily in the areas of Strategic Attack, Counterair, and Intelligence, Surveillance and Reconnaissance. MOUT facilities are classified as high risk as they pertain to this analysis, but are outside the scope of EFTR and therefore non-material.</p>					<p>This assessment addresses the capabilities of EFTR and the 412 Range Squadron, Edwards AFB CA to support the T&E mission. For the purpose of this assessment, EFTR is defined as the airspace within the R-2508 Restricted Area Complex, the 301,000 acres of withdrawn land making up the Edwards AFB Reservation, and the range instrumentation array. While the 412th RANS is the ROA as defined in AFI 13-212, the entire EFTR is a compilation of capabilities of multiple organizations within the 412 Test Wing, 95 Air Base Wing, and the USAF Flight Test Center. It is also important to note EFTR does not operate as stand-alone entity, but as a component of the DoD Southwest Complex, which includes EFTR, Ventura County NAS (Pt. Mugu), China Lake NAS, Nellis Test and Training Range, Utah Test and Training Range, White Sands Missile Range, and Vandenberg AFB. As such, the complementary capabilities of these ranges allow EFTR to operate at the fully mission capable level over all T&E mission areas. 68.63 % of the range/range complex mission areas are fully capable and are not impacted by encroachment factors; 31.37% of the range/range complex mission areas are moderately impacted by encroachment factors, but impacts are minimal and all issues are workable. Because of the Encroachment Prevention and Management Committee (EPMC), no range/range complex mission areas are severely impacted by encroachment. The future is uncertain due to large wind and solar development being mandated from the state and federal governments.</p>				
Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	7.02	7.02	7.02	NA	Encroachment Scores	8.43	9.43	9.25	NA
<p>Capability scores have historically remained the same over the last four years with only slight variation (CY2008, CY2009, CY2010, and CY2011).</p>					<p>Encroachment scores have historically remained the same over the last four years with only slight variation (CY2008, CY2009, CY2010, and CY2011).</p>				

Edwards Ranges Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Strategic Attack	●	The existing range area can support most types of gravity and precision guided munitions. The landspace is not adequate for the employment of large footprint weapons, such as the JSOW and SDB. However, EFTR has the necessary infrastructure to support all aspects of the Strategic Attack training mission in conjunction with its DoD Southwest Range partners. This limitation restricts certain types of weapons training. EFTR is working to leverage partnership agreements with other DoD ranges; this is a continuing action where partnerships support activities on an as needed basis.
	Counterair	●	The existing range area can support of most types of counter air training. The range space is not adequate for the employment of large footprint air-to-air/ground-to-air weapons, such as the AIM-9 and AIM-120. However, EFTR has the necessary infrastructure to support all aspects of the Counterair training mission in conjunction with its DoD Southwest Range partners. This limitation restricts certain types of weapons training. EFTR is working to leverage partnership agreements with other DoD ranges; this is a continuing action where partnerships support activities on an as needed basis.
	Counterland	●	The existing range area can support training of some Counterland systems. The range space is not adequate for the employment of large footprint weapons or training of some platforms, such as the AC-130, using live munitions. However, EFTR has the necessary infrastructure to support all aspects of the Counterland training mission in conjunction with its DoD Southwest Range partners. This limitation restricts certain types of weapons training. EFTR is working to leverage partnership agreements with other DoD ranges; this is a continuing action where partnerships support range activities on an as needed basis.
	Special Operations	●	The existing range area can support training of most types of Special Operations (SPECOPs) systems. The range space is not adequate for the employment of large force activities or live fire training of some SPECOPs platforms, such as the AC-130. However, EFTR has the necessary infrastructure to support all aspects of the Special Operations training mission in conjunction with its DoD Southwest Range partners. This limitation restricts certain types of training. EFTR is working to leverage partnership agreements with other DoD ranges; this is a continuing action where partnerships support range activities on an as needed basis.

Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Edwards Ranges Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Targets	Strategic Attack	●	The 412th RANS has numerous target arrays, which can support most aspects of the Strategic Attack mission area. In addition, the range's Command and Control system/facility has the ability to generate airborne and ground threat scenarios and targets for distribution to participants via Link-16 and SADL. Specific target requirements, such as hardened bunkers and MOUT facilities, are not available but can be built with customer funding. However, EFTR has the necessary target infrastructure to support all aspects of the Strategic Attack training mission in conjunction with its DoD Southwest Range partners. This limitation restricts certain types of training. EFTR is working to leverage partnership agreements with other DoD ranges; this is a continuing action where partnerships support activities on an as needed basis.
	Counterair	●	EFTR cannot support Counterair training activities requiring the employment of large footprint air-to-air/ground-to-air weapons such as AIM-9 and AIM-120. However, the EFTR has the necessary infrastructure to support all aspects of the Counterair training mission in conjunction with our DoD Southwest Range partners. In addition the range's Command and Control System/facility has the ability to generate airborne and ground threat scenarios for distribution to participants via Link-16 and SADL. This limitation restricts certain types of training. EFTR is working to leverage partnership agreements with other DoD ranges; this is a continuing action where partnerships support activities on an as needed basis.
	Special Operations	●	The 412th RANS has numerous target arrays that can support aspects of the Special Operations mission area. Specific target requirements, such as urban environments and related facilities, are not available, but can be built with customer funding. However, EFTR has the necessary target systems to support all aspects of the Special Operations training mission in conjunction with its DoD Southwest Range partners. This limitation restricts certain types of training. EFTR is working to leverage partnership agreements with other DoD ranges; this is a continuing action where partnerships support range activities on an as needed basis.
Threats	Strategic Attack	●	EFTR has the ability to present threat scenarios using ground moving targets, such as armor and static airfield configurations with AAA sites. In addition, the range's Command and Control system/facility has the ability to generate airborne and ground threat scenarios for distribution to participants via Link-16 and SADL. EFTR does not include active threat systems, such as radar, Smokey SAMS, and IR simulators. These assets are available to range programs on a scheduled basis through the AFFTC/NAWCWPNS alliance at the ECR China Lake and from other DoD Southwest Range partners. It is also possible for users to bring mission specific threat systems on range as necessary to meet their training requirements. This limitation restricts certain types of training. EFTR is working to leverage partnership agreements with other DoD ranges; this is a continuing action where partnerships support range activities on an as needed basis.
	Counterair	●	EFTR has the ability to present threat scenarios using ground moving targets, such as armor and static airfield configurations with AAA sites. In addition, the range's Command and Control system/facility has the ability to generate airborne and ground threat scenarios for distribution to participants via Link-16 and SADL. EFTR does not include active threat systems, such as radar, Smokey SAMS, and IR simulators. These assets are available to range programs on a scheduled basis through the AFFTC/NAWCWPNS alliance at the ECR China Lake and from other DoD Southwest Range partners. It is also possible for users to bring mission specific threat systems on range as necessary to meet their training requirements. This limitation restricts certain types of training. EFTR is working to leverage partnership agreements with other DoD ranges; this is a continuing action where partnerships support range activities on an as needed basis.
	Counterland	●	EFTR has the ability to present threat scenarios using ground moving targets, such as armor and static airfield configurations with AAA sites. In addition, the range's Command and Control system/facility has the ability to generate airborne and ground threat scenarios for distribution to participants via Link-16 and SADL. EFTR does not include active threat systems, such as radar, Smokey SAMS, and IR simulators. These assets are available to range programs on a scheduled basis through the AFFTC/NAWCWPNS alliance at the ECR China Lake and from other DoD Southwest Range partners. It is also possible for users to bring mission specific threat systems on range as necessary to meet their training requirements. This limitation restricts certain types of training. EFTR is working to leverage partnership agreements with other DoD ranges; this is a continuing action where partnerships support range activities on an as needed basis.

Edwards Ranges Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Threats	Air Drop	●	EFTR has the ability to present limited threat scenarios using ground moving targets, such as armor and static airfield configurations with AAA sites. In addition, the range's Command and Control system/facility has the ability to generate airborne and ground threat scenarios for distribution to participants via Link-16 and SADL. EFTR does not include active threat systems, such as radar, Smokey SAMS, and IR simulators. These assets are available to range programs on a scheduled basis through the AFFTC/NAWCWPNS alliance at the ECR China Lake and from other DoD Southwest Range partners. It is also possible for users to bring mission specific threat systems on range as necessary to meet their training requirements. This limitation restricts certain types of training. EFTR is working to leverage partnership agreements with other DoD ranges; this is a continuing action where partnerships support on range activities as needed basis.
	Intelligence, Surveillance and Reconnaissance	●	EFTR has the ability to present threat scenarios using ground moving targets, such as armor and static airfield configurations with AAA sites. In addition the range's Command and Control system/facility has the ability to generate airborne and ground threat scenarios for distribution to participants via Link-16 and SADL. EFTR does not include active threat system, such as radars, Smokey SAMS, or IR simulators; however, these assets are available to EFTR programs on a scheduled basis through the AFFTC/NAWCWPNS alliance at the ECR China Lake and from other DoD Southwest Range partners. It is also possible for users to bring mission specific threat systems on range as necessary to meet their training requirements. This limitation restricts certain types of training. EFTR is working to leverage partnership agreements with other DoD ranges; this is a continuing action where partnerships support on range activities as needed basis.
MOUT Facilities	Strategic Attack	●	MOUT capability does not currently exist on EFTR, but is available through our Alliance partnerships with the other Southwest Ranges (Nellis AFB and China Lake). This prevents MOUT training. EFTR is working to leverage partnership agreements with other DoD ranges. In addition, EFTR is evaluating a future I&M effort to build a MOUT capability to satisfy unique training requirements; soonest remedy date would be FY2016.
	Counterair	●	Same as above.
	Counterland	●	Same as above.
	Air Drop	●	Same as above.
	Special Operations	●	Same as above.
	Intelligence, Surveillance and Reconnaissance	●	Same as above.

Encroachment Observations

Attributes	Assigned Training Mission	Score	Comments
Threatened & Endangered Species	Air Drop	●	Presence of the Desert Tortoise restricts ground disturbing activities and limits training missions on EFTR which may require survey and limited use of range area. There is no known solution to this issue.
Munitions Restrictions	Counterair	●	The base needs to establish a Weapons Safety Footprint (WSF) that could extend beyond the Precision Impact Range Area to plan for future test/training missions using REPI funding. This area is a concern since developer encroachment is crowding the base boundary, thus creating a smaller on-base WSF due to separation distances. This limitation impacts potential expansion for future training activities; no planned remedy.
	Counterland	●	Same as above.
	Air Drop	●	Same as above.
Spectrum	Information Operations	●	AFFTC has limited spectrum and risks losing more each year, limiting the amount of training the range can support. This requires training activities to take the following actions: create avoidance areas, reduce usage days, reduce range access, increases personnel tempo, and increase cost and risk. Most capabilities, like the reduced range access, could be in place as soon as FY2012 if needed; others, like avoidance areas, may take much longer.
	Electronic Combat Support	●	Same as above.
	Command and Control	●	Same as above.
	Intelligence, Surveillance and Reconnaissance	●	Same as above.

Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Edwards Ranges Detailed Comments

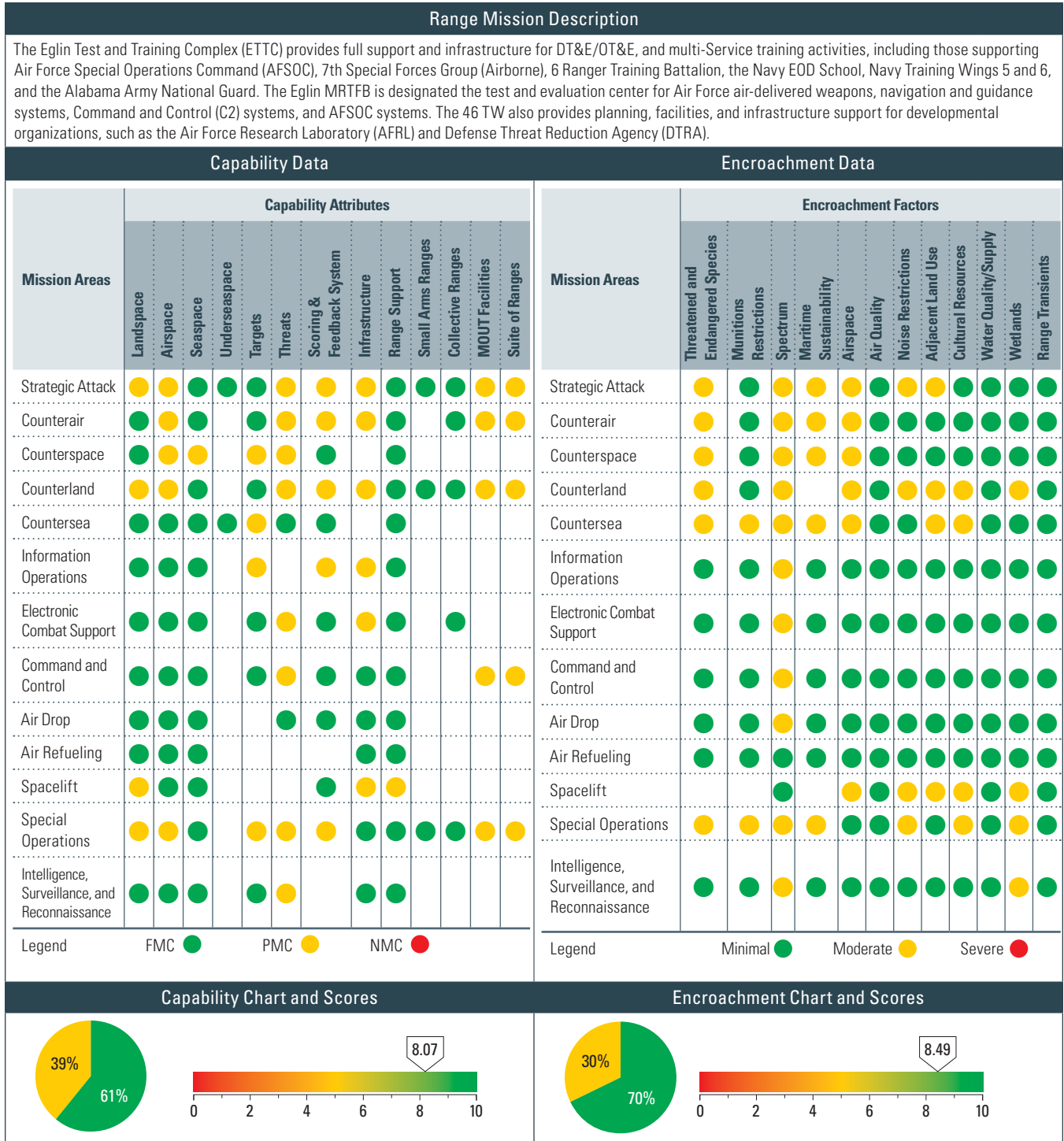
Encroachment Observations

Attributes	Assigned Training Mission	Score	Comments
Airspace	Counterair	●	There is limited airspace with an increasing amount of users; the result is increases in cost/risks and training activity restrictions. The solution is to create avoidance areas and restrict flight altitudes and limit range access. Most capabilities, like reduced range access, could be in place as soon as FY2012, if needed, while others, like avoidance areas, may take much longer.
	Information Operations	●	Same as above.
	Command and Control	●	Same as above.
Air Quality	Counterair	●	The air quality is currently suitable for flight training, but this is expected to change if the California population models are correct and population increases.
	Counterland	●	Same as above.
	Intelligence, Surveillance and Reconnaissance	●	Same as above.
Noise Restrictions	Information Operations	●	Large wind farms produce a low-frequency audible that may cause spectrum interference in a quiet training environment; this limits training and increases cost and risk. Solutions include creating avoidance areas and restricting flight altitudes. Most capabilities, like reduced range access, could be in place as soon as FY2012, if needed, while others, like avoidance areas, may take much longer.
Cultural Resources	Air Drop	●	Presence of the Desert Tortoise restricts ground disturbing activities and limits training missions on EFTR. This may require surveys and limited use of range area; no known solution to issue.

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Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Eglin Ranges Assessment Details



Eglin Ranges Assessment Details

Summary Observations					Summary Observations				
1. There are no red areas under Capabilities Assessment and approximately 61% of attributes are green; Threats, Infrastructure, Scoring & Feedback Systems, Airspace, Landspace, MOUT Facilities, and Suite of Ranges are the primary attribute areas that restrict the range's training capability. 2. Strategic Attack, Counterland, and Special Operations are the mission areas most affected, with seven of the Capability Attributes graded yellow due to one or more restrictions.					1. There are no red areas, and 70% are graded green. Spectrum, T&E Species, Airspace, and Cultural Resources are the factors most frequently graded yellow. 2. Counterland, Countersea, and Special Operations are the mission areas most affected.				
Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	8.50	8.50	8.42	8.03	Encroachment Scores	8.52	8.52	8.52	8.42
1. The primary cause for changes in CY2010 and CY2011 scores is improved accuracy in assessment data quality. 2. Airspace continues to be a concern. The Gulf Regional Airspace Strategic Initiative (GRASI) will provide a macro-level perspective of available airspace and will recommend approaches to use it most effectively. This should ease some of the Airspace concerns identified in this report. However, beddown of the Joint Strike Fighter (JSF) training program and significant increases in AFSOC flying activity will probably continue to stress the Airspace capacity of ETTC in the 3-5 year future. 3. When 7SFG(A) live fire ranges are completed, many of the Suite of Ranges shortfalls will be resolved, and part of the MOUT Facilities deficiency will be eliminated.					1. The primary cause for changes in CY2010 and CY2011 scores is improved accuracy in assessment data quality. 2. Availability of Spectrum continues to be a concern. The primary approach to reducing its impact has been to improve Frequency Management equipment and procedures, and to attempt to acquire instrumentation and communication equipment that uses less bandwidth. 3. The GRASI will provide a macro-level perspective of available airspace and will recommend approaches to use it most effectively. This should ease some of the Airspace concerns identified in this report. However, beddown of the JSF training program and significant increases in AFSOC flying activity will probably still stress the Airspace capacity of the ETTC in the 3-5 year future. 4. Overall, projected status should remain essentially the same for the future, unless Outer Continental Shelf oil and gas drilling is expanded to the point the Military Mission Line in the Gulf of Mexico must be moved eastward.				

Eglin Ranges Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Strategic Attack	●	There is inadequate Landspace to conduct some large footprint weapons' training. Some long range standoff weapons currently require flight termination systems or must be released over Eglin's water range. A next generation proposal for a remote impact area in a sparsely populated area near the Florida coast is being reviewed for resubmission. This solution would provide a large water-to-land corridor that would enable the overwater launch and subsequent land impact of almost any long range standoff weapon in development or in the inventory. An anticipated date is unknown at this time.
	Counterland	●	Current Landspace available to conduct large footprint weapons has been reduced by siting of BRAC-directed 7SFG(A) support facilities near the center of the Eglin Range. The potential large number of JDAM and GBU drops during JSF training ops may seriously stress the capacity of air-to-surface impact areas on Eglin. Fewer long-range standoff weapons can be dropped over land without flight termination systems, or they must be released over Eglin's water range. The number of desired JSF munitions drops may need to be revised downward, or inert munitions may be dropped over Eglin's water range. No planned resolution for large footprint weapons. An EIS has been completed and ROD has been signed. The desired number of munitions releases during JSF training is being reviewed, but an anticipated date of completion is unknown at this time.
	Spacelift	●	Infrastructure limits potential launch locations. Launch locations are limited by resources required (e.g., serviceable roads, utilities, and size of ground area required). All potential launch sites will be evaluated for existing infrastructure and improvements/changes will be funded by the proponent.
	Special Operations	●	Restricted airspace above ground targets will become more congested from the 7th SFG(A) and JSF impact on the MRTFB. SPECOPs flight training will be restricted to smaller pieces of airspace, resulting in less realistic training and missed planned training. There is no planned action for resolution.

Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Eglin Ranges Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Airspace	Strategic Attack	●	Integration of the BRAC-directed JSF training activities at Eglin, additional training requirements at Tyndall and NAS Pensacola, expansion of oil/gas drilling, and projected growth in civilian general aviation activities are resulting in increased competition for existing airspace between training, test, and civilian use, while the amount of SUA available for weapons releases is shrinking due to oil/gas drilling in EGTR. The GRASI will provide a macro-level perspective of available airspace and will recommend approaches to use it most effectively. Updated Mission Impact Analyses concerning oil/gas drilling in the Gulf are provided to the DoD Executive Agent for OCS activities on a regular basis. These analyses provide a basis for maintaining the current Military Mission Line and preserving DoD's ability to test and train in the Gulf of Mexico. Anticipated date of GRASI completion, final planning, and implementation is FY2012–FY2015.
	Counterair	●	Integration of the BRAC-directed JSF training activities at Eglin, additional training requirements of AFSOC at Tyndall and NAS Pensacola, expansion of oil/gas drilling, and projected growth in civilian general aviation activities are resulting in increased competition for existing airspace between training, test, and civilian use, while the amount of SUA available for weapons releases is shrinking due to oil/gas drilling in EGTR. The GRASI will provide a macro-level perspective of available airspace and will recommend approaches to use it most effectively. Updated Mission Impact Analyses concerning oil/gas drilling in the Gulf are provided to the DoD Executive Agent for OCS activities on a regular basis. These analyses provide a basis for maintaining the current Military Mission Line and preserving DoD's ability to test and train in the Gulf of Mexico. Anticipated date of GRASI completion, final planning, and implementation is FY2012–FY2015.
	Counterspace	●	Airspace over EGTR is inadequate for very large-scale counterspace test and training operations. Airspace over the Gulf of Mexico is adequate for many, but not all, such operations. No planned action for resolution. Pacific Missile Range can be used for very large scale counterspace operations.
	Counterland	●	Restricted airspace above ground targets will become more congested from the 7th SFG(A) and JSF impact on MRTFB. Other training customer flight training will be restricted to smaller pieces of airspace, resulting in less realistic training and missed planned training. Planned Action: Eglin's Central Scheduling Enterprise will be used to minimize conflicts.
	Special Operations	●	Same as above.
Seaspace	Counterspace	●	Seaspace in EGTR is inadequate for very large-scale counterspace test and training operations. Seaspace over the Gulf of Mexico is adequate for many, but not all, such operations. No planned action for resolution. Pacific Missile Range can be used for very large scale counterspace operations.
Targets	Counterspace	●	Mid-to-high altitude targets are limited by net explosive weight of propellant used. Santa Rosa Island (SRI) provides launch capability for mid-to-high altitude targets. Endo-atmospheric probes have been launched from SRI, but overall capabilities are limited by net explosive weight of the propellant used. Site D-3 was selected as a candidate for a Space Port Florida launch site. No planned resolution.
	Countersea	●	No undersea targets are available except those provided by test and training customers for specific programs. Test and training customers must provide their own undersea targets and instrumentation. Land and sea targets are available. No planned resolution; customers will continue to supply their own undersea targets.
	Information Operations	●	Same as above.
	Special Operations	●	Target sets available to SPECOPs units are static and unrealistic. These targets do not represent what personnel will encounter during combat operations, resulting in poor reactions to real world situations. No planned resolution; customers will continue to supply their own targets.
Threats	Strategic Attack	●	There are few representative EC emitters. SRI has numerous EC emitters, but few are representative of those faced by military forces. Also, the range lacks OPFOR capability and battlefield effects simulators. No current program to upgrade existing EC emitters or acquire training threat simulators.
	Counterair	●	Same as above.
	Counterspace	●	There are few representative EC emitters. SRI has numerous EC emitters, but few are representative of those faced by reentry vehicles. No current program to upgrade existing EC emitters or acquire training threat simulators.

Eglin Ranges Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Threats	Counterland	●	There are few representative EC emitters. SRI has numerous EC emitters, but few are representative of those faced by military forces. Also, the range lacks OPFOR capability and battlefield effects simulators. No current program to upgrade existing EC emitters or acquire training threat simulators.
	Electronic Combat Support	●	Same as above.
	Command and Control	●	There are no viable threat emitters or simulators for this area. Net-centric weapons and UAS activities require a limited set of emitters/simulators. No action planned beyond identifying the minimum set of threats needed in this area. Customers will continue to provide their own system-specific threats.
	Special Operations	●	There are few representative EC emitters. SRI has numerous EC emitters, but few are representative of those faced by military forces. Also, the range lacks OPFOR capability and battlefield effects simulators. No current program to upgrade existing EC emitters or acquire training threat simulators.
	Intelligence, Surveillance and Reconnaissance	●	There are no viable threat emitters or simulators for this area. Net-centric weapons and UAS activities require a limited set of emitters/simulators. No action planned beyond identifying the minimum set of threats needed in this area. Customers will continue to provide their own system-specific threats.
Scoring & Feedback System	Strategic Attack	●	Scoring & Feedback Systems are inadequate to support certain training and exercise operations. There are no state-of-the-art facilities to support training reconstruction or facilities to allow for deployment of large air or ground forces into the range. Multiple sources of TSPI are currently available, but some not compatible with deployed aircraft. Joint Test and Training Operations Control Center will incorporate numerous tracking capabilities, but will not include training and exercise mission reconstruction and analysis.
	Counterair	●	Same as above.
	Counterland	●	Same as above.
	Information Operations	●	There is a lack of facilities to demonstrate effects for training audience, including a lack of targets. This limits scope of mission debriefing capabilities. No planned resolution.
	Special Operations	●	Scoring & Feedback Systems do not exist on ranges used by SOF. Personnel provide their own scoring, which can lead to errors. There is no independent record keeping and analysis, which prevents commanders from identifying trends and implementing corrective measures. No planned resolution.
Infrastructure	Strategic Attack	●	There are inadequate facilities to support deployed assets. There is less than efficient use of deployed assets due to the need to use available facilities, which may not have a full range of features needed by deployed units. Range needs an Exercise Support Facility, but is currently unfunded.
	Counterair	●	Same as above.
	Counterland	●	Same as above.
	Information Operations	●	Same as above.
	Electronic Combat Support	●	There are inadequate systems to meet needs of some training customers. As such, there is less than fully effective support for some training customers. There is no funding available for acquiring new systems. The Air Force may be able to leverage on JSF training needs to obtain some simulators that could be used by other customers, as well. Otherwise, customers must bring their own specific emitters/simulators.
	Spacelift	●	There is limited infrastructure for Spacelift. Also, there are limited site options for Spacelift operations. However, SRI sites have been used for endo-atmospheric probe launches, and D-3 was selected as a Space Port Florida site. No planned resolution; current facilities have been adequate to date.
Range Support	Spacelift	●	Same as above.
MOUT Facilities	Strategic Attack	●	There are no consolidated MOUT facility for joint training needs. Only a small number of MOUT-like facilities exist across the range. The range needs a joint, consolidated plan to install a dedicated MOUT facility to meet joint training needs. A small sophisticated MOUT capability is being constructed to specifically support 7SFG(A) training. This, in conjunction with smaller MOUTs built for AFSOC training operations, will satisfy the majority of joint training needs. The anticipated completion date is December 2011.
	Counterair	●	Same as above.
	Counterland	●	Same as above.
	Command and Control	●	Same as above.
	Special Operations	●	Same as above.

Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Eglin Ranges Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Suite of Ranges	Strategic Attack	●	There is no certified joint MOUT facility with adjacent ground maneuver areas. This causes the inability to perform maneuver and MOUT operations on a joint certified training area, which hampers effective joint training operations. A small sophisticated MOUT capability is being constructed to specifically support 7SFG(A) training. This, in conjunction with smaller MOUTs built for AFSOC training operations, will satisfy the majority of joint training needs. The anticipated completion date is December 2011.
	Counterair	●	Same as above.
	Counterland	●	Same as above.
	Command and Control	●	Same as above.
	Special Operations	●	Same as above.

Encroachment Observations

Attributes	Assigned Training Mission	Score	Comments
Threatened & Endangered Species	Strategic Attack	●	A proposal to establish Marine Protected Areas (MPAs) or monuments in the northern Gulf of Mexico has the potential to significantly impact Eglin's munitions test and training mission. This would restrict AFSOC overwater training munitions expenditures and the release of munitions during test missions over EGTR. The planned action is to continue to provide mission impact data to decision makers. Anticipated completion date for a solution is unknown.
	Counterair	●	A proposal to establish MPAs or monuments in the northern Gulf of Mexico has the potential to significantly impact Eglin's munitions test and training mission. This would restrict overwater testing of munitions, including air-to-air tests of AMRAAM/AIM-9X and other A-T-A missiles and Combat Archer A-T-A training activities over EGTR. The planned action is to continue to provide mission impact data to decision makers. Anticipated completion date for a solution is unknown.
	Counterspace	●	A proposal to establish MPAs or monuments in the northern Gulf of Mexico has the potential to significantly impact Eglin's munitions test and training mission. This would restrict test and deployment of theatre missile defense systems for flights over EGTR. It would also interfere with Directed Energy and Hypervelocity test activities in support of counterspace DT&E systems. The planned action is to continue to provide mission impact data to decision makers; anticipated completion date for a solution is unknown.
	Counterland	●	The existence of Red Cockaded Woodpeckers, Okaloosa Darters, Flatwoods Salamanders, Gopher Tortoises, marine mammals, and various sea turtles (the primary local endangered/threatened species), and designated critical habitat for certain shorebirds on Santa Rosa Island and the Gulf Sturgeon along shorelines and adjacent rivers/streams restrict the use of some land areas and littoral/riverine areas for the use of some aircraft, munitions, and targets, as well as land/water training maneuvers. The planned action is to continue to work with the local Natural Resources office to develop mitigations and procedures to minimize the impact of T&E considerations on test and training capabilities. There has been continual coordination with both the Test Wing and regulators to mitigate activities within these areas. It is not so much that the areas are restricted to use, as is that there are certain terms and conditions that have to be met in order to use these areas. The delays occur mainly during the consultation process; ample time must be given in order to complete consultation for all activities that could potentially impact protected species. An anticipated date for a solution is unknown.
	Countersea	●	Limitations on operations due to Gulf Sturgeon critical habitat along the coast, in the Bay, and in adjacent rivers; the presence of marine mammals along the coast and in the bays; and a proposal to establish MPAs or monuments in the northern Gulf of Mexico have the potential to significantly impact Eglin's munitions test and training mission. This restricts certain operations over EGTR, including those that were designed/intended for countersea operations. The planned action is to continue to work with the local Natural Resources office to develop mitigations and procedures to minimize the impact of T&E considerations on test and training capabilities. The Air Force will provide mission impact analysis to decision makers concerning the proposed MPA. An anticipated date for a solution is unknown.

Eglin Ranges Detailed Comments

Encroachment Observations

Attributes	Assigned Training Mission	Score	Comments
Threatened & Endangered Species	Special Operations	●	Limitations on operations due to Gulf Sturgeon critical habitat along the coast, in the Bay, and in adjacent rivers; the presence of marine mammals along the coast and in the bays; and a proposal to establish MPAs or monuments in the northern Gulf of Mexico has the potential to significantly impact Eglin's munitions test and training mission. Restrictions due to Sea Turtle nesting and seasonal shorebird presence on SRI restrict certain operations over EGTR and in littoral and riverine areas, including those that were designed/intended for SPECOPs. The planned action is to continue to work with local Natural Resources office to develop mitigations and procedures to minimize the impact of T&E considerations on test and training capabilities. There has been continual coordination with both the Test Wing and regulators to mitigate activities within these areas. It is not so much that the areas are restricted to use, as is that there are certain terms and conditions that have to be met in order to use these areas. Where the delays occur is during the consultation process, ample time must be given in order to complete consultation for all activities that could potentially impact protected species. The Air Force will provide mission impact analysis to decision makers concerning the proposed MPA. An anticipated date for a solution is unknown.
	Countersea	●	Limitations on operations due to Gulf Sturgeon critical habitat along the coast, in the Bay, and in adjacent rivers restricts certain operations over EGTR, including those that were designed/intended for Countersea operations. The planned action is to continue to work with the local Natural Resources office to develop mitigations and procedures to minimize the impact of T&E considerations on test and training capabilities. An anticipated date for a solution is unknown.
Munitions Restrictions	Special Operations	●	Same as above.
	Strategic Attack	●	There are constraints placed on training/testing due to unavailability of, or interference with, required electromagnetic spectrum. All frequencies shall be scheduled for deconfliction to prevent RFI to its users. Eglin has a Frequency Control and Analysis function with both fixed and mobile assets that find conflicting signal sources that need to be shut down. Eglin is in the process of installing three additional fixed DF sites, which will aid in finding those conflicting signals. Two of these sites are currently planned, but unfunded. They are anticipated to be funded and constructed during FY2012. Eglin has also done extensive upgrades and is continuing to purchase newer radios and equipment that have tighter control of their emissions (narrower bands) and the ability to shift to less used frequency bands. The range also actively works on shielding and noise attenuation to limit impacts to and impacts from equipment. An anticipated date for a solution for overall is unknown, but two (of three) fixed DF sites are anticipated to be constructed during FY2012.
Spectrum	Counterair	●	Same as above.
	Counterspace	●	Same as above.
	Counterland	●	Same as above.
	Countersea	●	Same as above.
	Information Operations	●	Same as above.
	Electronic Combat Support	●	Same as above.
	Command and Control	●	Same as above.
	Air Drop	●	Same as above.
	Special Operations	●	There are constraints placed on training/testing due to unavailability of, or interference with, required electromagnetic spectrum. All frequencies shall be scheduled for deconfliction to prevent RFI to its users. Eglin is in the process of installing three additional fixed DF sites, which will aid in finding those conflicting signals. Two of these sites are currently planned, but unfunded. They are anticipated to be funded and constructed during FY2012. An anticipated date for a solution for the overall spectrum problem is unknown, but two (of three) fixed DF sites are anticipated to be constructed during FY2012.
	Intelligence, Surveillance and Reconnaissance	●	Same as above.

Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Eglin Ranges Detailed Comments

Encroachment Observations

Attributes	Assigned Training Mission	Score	Comments
Maritime Sustainability	Strategic Attack	●	Encroachment from oil drilling operations in the Gulf, restrictions on use of high explosives in Gulf, and increased volume of civilian boating activities in potential danger areas are all limitations to Strategic Attack. Oil drilling operations with above surface structures greatly reduce the area available to test and train with large footprint weapons over EGTR; certain types of high explosive munitions are restricted from use in EGTR which restricts the type of training and testing that can be done in EGTR. Increased civilian boat traffic makes it more time consuming to clear large areas of EGTR for large footprint weapons releases. The range plans to work with EGTR customers to ensure updated Mission Impact Analyses are provided to the DoD Executive Agent (for Outer Continental Shelf [OCS] oil and gas development) of DoD's use of the Gulf of Mexico to protect the military's interests in maintaining the current Military Mission Line and restrictions for OCS development to enable future test and training operations in EGTR. The range will continue to work with the local Natural Resources office to develop mitigations and procedures to minimize the impact of T&E considerations on test and training capabilities in EGTR. The Air Force will ensure range clearance procedures are reviewed frequently and provide the most efficient process for clearing required areas of EGTR. An anticipated date for a solution is unknown.
	Counterair	●	Same as above.
	Counterspace	●	Same as above.
	Countersea	●	Same as above.
	Special Operations	●	There are limitations on operations due to Gulf Sturgeon critical habitat along the coast, in the Bay, and in adjacent rivers and the presence of marine mammals along the coast and in the bays. This restricts the use of certain operations over EGTR and in littoral/riverine areas, including those that were designed/intended for SPECOPs. The range will continue to work with the local Natural Resources office to develop mitigations and procedures to minimize the impact of T&E considerations on test and training capabilities. An anticipated date for a solution is unknown.
Airspace	Strategic Attack	●	There are limitations on operations due to Gulf Sturgeon critical habitat along the coast, in the Bay, and in adjacent rivers and the presence of marine mammals along the coast and in the bays. This restricts the use of certain operations over EGTR and in littoral/riverine areas, including those that were designed/intended for Special Operations. The range will continue to work with the local Natural Resources office to develop mitigations and procedures to minimize the impact of T&E considerations on test and training capabilities. An anticipated date for a solution is unknown.
	Counterair	●	Same as above.
	Counterspace	●	Same as above.
	Counterland	●	Increased general aviation traffic in the North-South corridor and placement of the 7SFG(A) cantonment area in the north central portion of the Eglin land range restricts the capability for cross range shots, large footprint munitions test and training, and simultaneous use of east and west range areas for live weapons activity. Some safety profiles have been reengineered to include the new restrictions and some profiles have been deleted. The Gulf Regional Airspace Strategic Initiative (GRASI) has been developed to address all airspace issues. The anticipated date of GRASI completion, final planning, and implementation is FY2012–FY2015.
	Countersea	●	Increasing pressures for off-shore oil and gas exploration and production, and increased volume of civilian air traffic over potential danger area have caused reduced surface area and associated airspace, and reduced availability of existing Special Use Airspace for Countersea test and training operations. The range will work with EGTR customers to ensure updated Mission Impact Analyses are provided to the DoD Executive Agent (for Outer Continental Shelf [OCS] oil and gas development) of the DoD's use of the Gulf of Mexico to protect the military's interests in maintaining the current Military Mission Line and restrictions for OCS development to enable future test and training operations in EGTR. The GRASI has been developed to address all airspace issues. The anticipated date of GRASI completion, final planning, and implementation is FY2012–FY2015.
Spacelift	●	There is insufficient land space to conduct vertical launch for delivery into space; however, space plane launch/recovery could be a viable option from within the Eglin reservation. The range is unable to support vertical launch operations. There is no known/planned solution at this time.	

Eglin Ranges Detailed Comments

Encroachment Observations

Attributes	Assigned Training Mission	Score	Comments
Noise Restrictions	Strategic Attack	●	Land use conversion can create noise-sensitive areas near low-level routes and airfield approaches. Future JSF training and 7SFG(A) range activities will exacerbate this problem. Basing the majority of JSF training operations at Eglin Main Base has already elicited a noise-related lawsuit from the community of Valparaiso. The proximity of the 7th SFG live-fire ranges to populated areas may cause public noise complaints. A Supplemental EIS is being prepared to evaluate other JSF flight options, including moving the bulk of airfield training activities to Auxiliary Field 3. A community outreach program to disseminate noise information related to 7SFG(A) range activities will be conducted prior to the ranges becoming active. The SEIS was released to the public in September 2010.
	Counterland	●	Low-level routes and overwater approaches to the land range result in occasional noise complaints. This problem will increase when JSF training operations begin. Noise complaints could increase, which could cause additional restrictions to be placed on low-level and overwater approaches. The original EIS did not identify this area as a high risk issue, but if noise complaints do become a problem, local officials will develop modified procedures to address it. An anticipated date for a solution is unknown.
	Spacelift	●	There is noise related to space launch activities. Local communities would be affected by launch noise from larger space launch activities, and public sentiment might not support space launches if the noise levels were very high and on a frequent basis. If Eglin or Cape San Blas is ever considered for a role in space launches, the EIS will place special emphasis on the attendant noise, and all feasible mitigations and controls. An anticipated date for a solution is unknown.
	Special Operations	●	SOF accomplishes much of its training during the hours of darkness, frequently requiring the use of explosives. The noise of these operations will impact the local community during normal rest periods, leading to negative impressions of the military by the affected communities. No planned action/solution is known at this time.
Adjacent Land Use	Strategic Attack	●	The range has limited water-to-land flight access for armed weapons systems. This reduces the flexibility of making realistic water-to-land transitions with armed weapons systems or allowing water-to-land transitions by long-range standoff weapons. Potential land acquisitions and cooperative efforts with other agencies to obtain overflight privileges are always reviewed with an eye toward increasing the width of the water-to-land corridor. A next generation proposal for a remote impact area in a sparsely populated area near the Florida coast is being reviewed for resubmission. This solution would provide a large water-to-land corridor that would enable the overwater launch and subsequent land impact of almost any long-range standoff weapon in development or in the inventory. An anticipated date for resolution is unknown, since review is still in informal phase.
	Counterland	●	Urban sprawl, land use conversion from agriculture to residential, and new transportation corridors (on and off Eglin) restrict training. The push for use of more renewable energy sources has resulted in siting a solar farm near the eastern boundary of the land range, and there is increased use of small wind energy systems (including "turbine" designs) in the civilian areas surrounding Eglin. This can restrict future military operations on the periphery of the Eglin Range, and interfere with flight operations, and data transmission and receipt on test and training missions. The range will develop REPI projects to acquire property rights to adjoining private property in areas of expanded military use, and participate actively in local JLUS initiatives. Solar Farm coordinated the project with Eglin officials to ensure AF design concerns were addressed. Eglin is working with Santa Rosa County planners to draft a small wind energy ordinance that could become the model for the other counties surrounding Eglin. Collaboration should be completed by end of CY2011.
	Countersea	●	Urban sprawl, land use conversion from agriculture to residential, and new transportation corridors (on and off Eglin) can restrict future military operations on the periphery of the Eglin Range, including shore-to-ship and ship-to-shore weapons systems; and water-land test and training operations. The range will develop REPI projects to acquire property rights to adjoining private property in areas of expanded military use, and participate actively in local JLUS initiatives. A well structured Range Planning Process is in place with a Mission Impact Analysis performed on any significant proposal for range reconfiguration or mission change. The anticipated date for completion is unknown.
	Spacelift	●	There is noise related to space launch activities. Local communities would be affected by launch noise from larger space launch activities and public sentiment might not support space launches if the noise levels were very high and on a frequent basis. If Eglin or Cape San Blas is ever considered for a role in space launches, the EIS will place special emphasis on the attendant noise and all feasible mitigations and controls. An anticipated date for a solution is unknown.

Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Eglin Ranges Detailed Comments

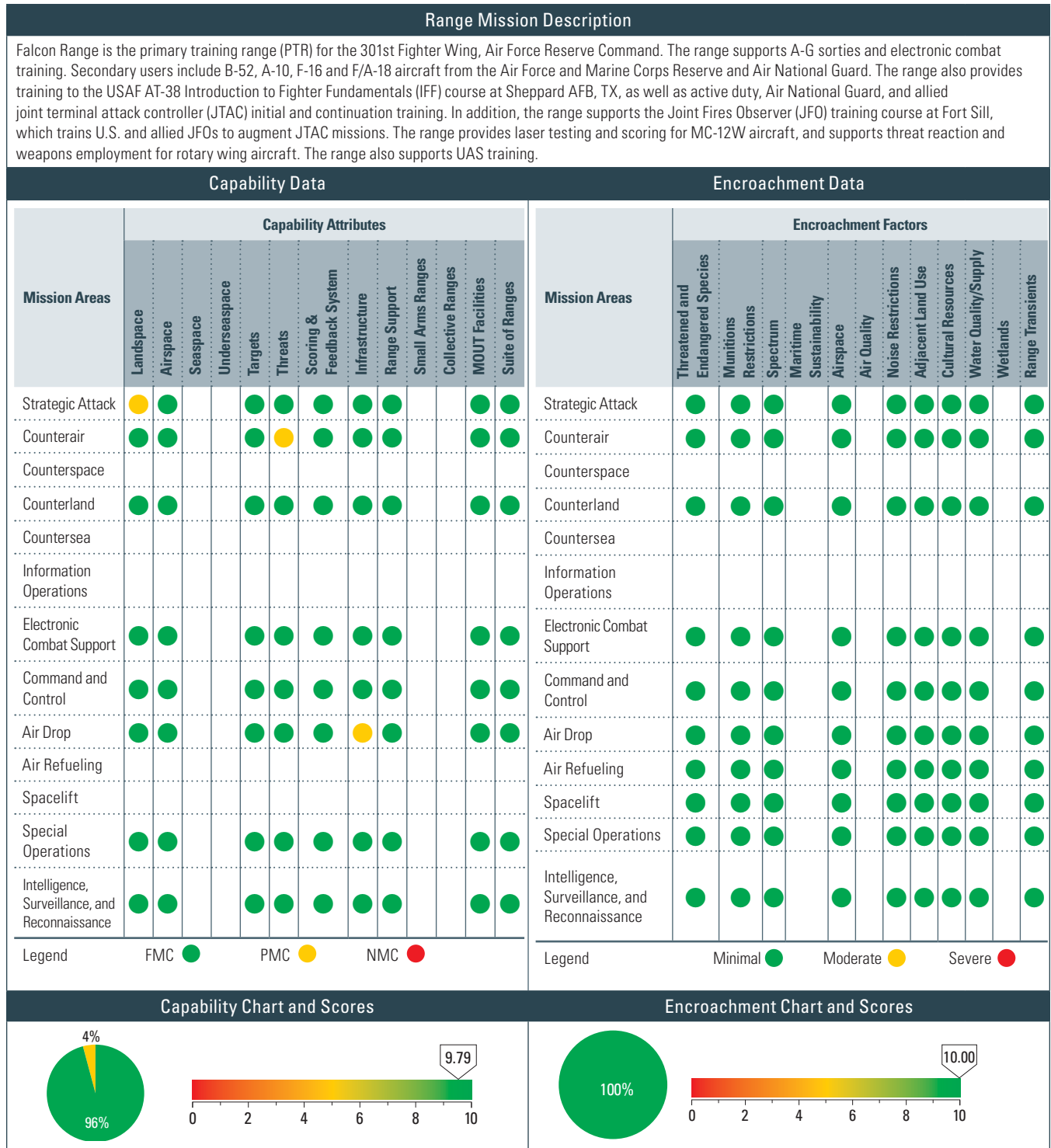
Encroachment Observations

Attributes	Assigned Training Mission	Score	Comments
Cultural Resources	Counterland	●	There are known and suspected cultural resource sites along the coast and in the interior of the land range. Known, but undefined and suspected cultural resource sites along the Gulf/Bay coasts, and along rivers and streams impede the use of these areas for important military test and training missions. Littoral and riverine, ingress/egress training operations are restricted to several small and somewhat uncharacteristic areas along the coasts and streams. The proponent must work with the Cultural Resources office during AF Form 813 review to identify available training sites and determine what restrictions apply to the proponent’s preferred sites. An anticipated date for a solution is unknown.
	Countersea	●	There are known and suspected cultural resource sites along the coast and in the interior of the land Range. Known, but undefined and suspected cultural resource sites along the Gulf/Bay coasts, and along rivers and streams impede the use of these areas for important military test and training missions. Littoral and riverine, ingress/egress training operations are restricted to several small and somewhat uncharacteristic areas along the coasts and streams. The proponent must work with the Cultural Resources office during AF Form 813 review to identify available training sites and determine what restrictions apply to the proponent’s preferred sites. An anticipated date for a solution is unknown.
	Spacelift	●	There are known and suspected cultural resource sites along the coast and in the interior of the land Range. Known, but undefined and suspected cultural resource sites along the Gulf/Bay coasts could impact selection of launch location, especially on Santa Rosa Island. Potential launch areas would undergo the standard AF Form 813 review process, which would include evaluation of each launch site from a cultural resources standpoint. An anticipated date for a solution is unknown.
	Special Operations	●	There are known and suspected cultural resource sites along the coast and in the interior of the land range. Known, but undefined and suspected cultural resource sites along the Gulf/Bay coasts, and along rivers and streams impede the use of these areas for important military test and training missions. Littoral and riverine, ingress/egress training operations are restricted to several small and somewhat uncharacteristic areas along the coasts and streams. The proponent must work with the Cultural Resources office during AF Form 813 review to identify available training sites and determine what restrictions apply to the proponent’s preferred sites. An anticipated date for a solution is unknown.
Wetlands	Counterland	●	There are land use restrictions in or near wetlands. Some restrictions on land use affects aircraft, munitions, and targets, as well as land maneuvers in or near wetlands. The proponent must work with the Natural Resources office during AF Form 813 review to identify available test and training sites and determine what restrictions apply to the proponent’s preferred sites. An anticipated date for a solution is unknown.
	Spacelift	●	There are wetlands along the coast and in the interior of the land range. Wetlands would impact selection of launch location, especially on Santa Rosa Island. Potential launch areas would undergo the standard AF Form 813 review process, which would include evaluation of each launch site from a natural resources standpoint. An anticipated date for a solution is unknown.
	Special Operations	●	There are land use restrictions in or near wetlands. Some restrictions on land use affects aircraft, munitions, and targets, as well as land maneuvers in or near wetlands. The proponent must work with the Natural Resources office during AF Form 813 review to identify available test and training sites and determine what restrictions apply to the proponent’s preferred sites. An anticipated date for a solution is unknown.
	Intelligence, Surveillance and Reconnaissance	●	Same as above.

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Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Falcon Assessment Details



Falcon Assessment Details

Summary Observations					Summary Observations				
<p>The range has improved its infrastructure since 2004 with multiple scoring systems. Falcon Range provides aircrews with two MOUT areas, one of which is laser-scoring capable, and one of which is kinetic-capable. Three electronic warfare threat simulators are available, and realistic self-consuming MANPAD simulators provide additional threat reaction training, while making a very minimal impact on the environment. The MANPAD simulators do not require EOD support and leave no residue. (The range has on-site EOD support, so the range is not closed for EOD cleanup.) Targets are realistic and range from large buildings to small anti-aircraft guns and mannequins. An unmanned moving target allows the full-scale delivery of weapons against a moving target, as well as combat laser employment. There are three laser scoring systems and two kinetic scoring systems available. The primary constraint to the range is the size of the impact area. It limits the employment of inertially-aided munitions due to weapons danger zone (WDZ) restrictions. The Army prohibits the intrusion of any WDZ outside the range areas with a containment or risk of greater than 1:1,000,000. Several doctrinally-accepted weapons deliveries are restricted due to WDZs extending outside the range. The range is working on a drop zone and should have one by 2012. The range also works extensively with Fort Sill environmental agencies and has helped reclaim old dump areas to their original state. Strategic Attack is most affected by the range's size; however, there are very infrequent (less than 2% of annual sorties) strategic attack missions. The majority of missions flown at Falcon Range are Counterland.</p>					<p>The range is part of the Fort Sill range complex. Encroachment is minimal. The Army is currently involved in the purchase of adjoining land in order to provide a larger buffer zone. There are no environmental or cultural shortfalls at the range. Frequency spectrum issues are minimal.</p>				
Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	6.88	6.88	10.00	9.79	Encroachment Scores	9.77	9.77	10.00	10.00
<p>The range has excellent capabilities, although future employment has some limitations. These limitations are not unique to Falcon Range; as inertially-aided weapons are developed and fielded, their WDZs for some weapons parameters prove to be larger than the range boundaries. The range is limited to 1:1,000,000 risk values to manned sites by Army Regulation 385-63. Until 2007, the Army allowed sportsmen to intrude into the impact area when the range was active. This practice has been banned, and now larger WDZ weapons deliveries are allowed. The range has excellent laser scoring capability, and all personnel are highly trained in laser operations. The addition of the GPS-guided moving target allows aircrews to actively fire lasers at a moving target, a capability not found at most other ranges. This capability becomes more critical as weapons like the laser JDAM are developed, and as lead-computing impact point software is employed.</p>					<p>There are no historical issues at Falcon Range for encroachment. The range has not been affected by encroachment; in fact, the range has benefitted from the upgrades at Fort Sill as a result of BRAC 2005. Cultural sites on the range are well clear of any target areas and are set aside from the target arrays in order to preserve their integrity; Fort Sill has an active cultural trust program. The existence of the Wichita Mountains Wildlife Refuge to the north and Fort Sill to the east preclude development nearby. To the south and west of the range there are potential encroachment areas, but the areas are rural and are being purchased by the Army for buffer zones.</p>				

Falcon Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Strategic Attack	●	The range impact area is not large enough to support inertially-aided munitions employment from doctrinal (high) altitudes. Training is minimally affected; most users employ these munitions in a simulated manner anyway. No solution is feasible until the WDZ Tool provides smaller weapons footprints.
Threats	Counterair	●	The HARM threat simulator does not provide more than one threat for SEAD missions. It does not adversely impact training; the nearest HARM-capable user is over 800 nautical miles distant, with nearby access to threat simulators. There is no upgrade requirement.
Infrastructure	Air Drop	●	No drop zone has been established at Falcon Range. This precludes any air drops at an established DZ. The range is currently establishing a DZ within the impact area, which will alleviate this shortfall, with an estimated completion by 2012.

Grand Bay Assessment Details

Summary Observations					Summary Observations				
Grand Bay Range is supporting most basic and intermediate training needs for units assigned to Moody AFB, as well as some tenant and transients units. The one limitation of most importance is the size of Grand Bay Range. The size limitation prevents some simultaneous operations, and larger force exercises and training events. From an encroachment perspective, the Valdosta Metro Area is experiencing steady growth. While not critical at this point, the development of previously agricultural lands may negatively impact range operations without continuous base interaction with the local communities and leadership.					Grand Bay Range is supporting most basic and intermediate training needs for units assigned to Moody AFB, as well as some tenant and transients units. The one limitation of most importance is the size of Grand Bay Range. The size limitation prevents some simultaneous operations, and larger force exercises and training events. From an encroachment perspective, the Valdosta Metro Area is experiencing steady growth. While not critical at this point, the development of previously agricultural lands may negatively impact range operations without continuous base interaction with the local communities and leadership.				
Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	9.58	9.58	9.68	9.91	Encroachment Scores	9.49	9.49	9.49	9.92
The capabilities of Grand Bay Range have increased to support increase training requirements. Also, units like the 93 AGOW are looking to increase utilization of the range. The range staff is continuously working to improve range capabilities in a manner relevant to realistic mission readiness training. Continued future growth of the surrounding area could negatively impact range and restricted airspace usage due to noise complaints, no-fly areas, etc. Range and base environmental officials are working closely with local communities to address issues of concern regarding range operations and future sustainability. Actions range from JLUS implementation to eventual pursuit of land acquisition for a modest range expansion that will enhance training activities and allow ground force training simultaneously with A-G operations.					The capabilities of Grand Bay Range have grown to support increasing training requirements. Also, units like the 93 AGOW are looking to increase utilization of the range. Continued future growth and development of the surrounding area could negatively impact range and restricted airspace usage due to noise complaints, no-fly areas, etc. Range and base environmental officials are working closely to address issues of concern regarding range operations and sustainment. Actions range from JLUS implementation to eventual pursuit of land acquisition.				

Grand Bay Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landscape	Counterland	●	Grand Bay Range is too small to allow large force ground exercise and movement. There is no major impact; large force movement is not needed for assigned units. Plans are being studied to acquire additional acreage east of the range boundary to better support ground exercises and mission support flexibility.
	Strategic Attack	●	Grand Bay Range is too small to allow large force ground exercise and movement. Small force movement and CAS operations can be conducted. Dry operations are conducted underneath MOA airspace for greater flexibility. There is no major impact; large force movement is not needed for assigned units. Plans are being studied to acquire additional acreage east of the range boundary to better support ground exercises and mission support flexibility.

Encroachment Observations

Attributes	Assigned Training Mission	Score	Comments
Adjacent Land Use	Strategic Attack	●	Training can be accomplished on a limited basis, due to the size of Grand Bay Range and proximity of Moody AFB. Some noise restrictions exist around the area that present a small impact the training flexibility. Only small force training can be accomplished. Discussions to restructure the airspace and the possibility of acquiring additional land towards the east are ongoing.
	Counterland	●	Same as above.

Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Graying Assessment Details

Range Mission Description																											
Grayling Range supports ANG flying the of A10 unit 107th FS at Selfridge ANGB MI, and all units in training at Alpena CRTC. The range also supports ground force training of JTACs, security forces, and joint exercises.																											
Capability Data							Encroachment Data																				
Mission Areas	Capability Attributes											Mission Areas	Encroachment Factors														
	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges		MOUT Facilities	Suite of Ranges	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime	Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
Strategic Attack	●	●			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Counterair	●	●			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Counterspace																											
Counterland	●	●			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Countersea																											
Information Operations	●	●			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Electronic Combat Support	●	●			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Command and Control	●	●			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Air Drop	●	●			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Air Refueling	●	●			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Spacelift																											
Special Operations	●	●			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Intelligence, Surveillance, and Reconnaissance	●	●			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Legend	FMC ● PMC ● NMC ●											Legend Minimal ● Moderate ● Severe ●															
Capability Chart and Scores							Encroachment Chart and Scores																				
Summary Observations							Summary Observations																				
No comments.							No comments.																				
Historical Information, Results, and Future Projections							Historical Information, Results, and Future Projections																				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011																		
Capability Scores	9.39	9.39	9.44	9.44	Encroachment Scores	9.49	9.49	9.49	9.49																		
No comments.							No comments.																				

Grayling Detailed Comments

Capability Observations

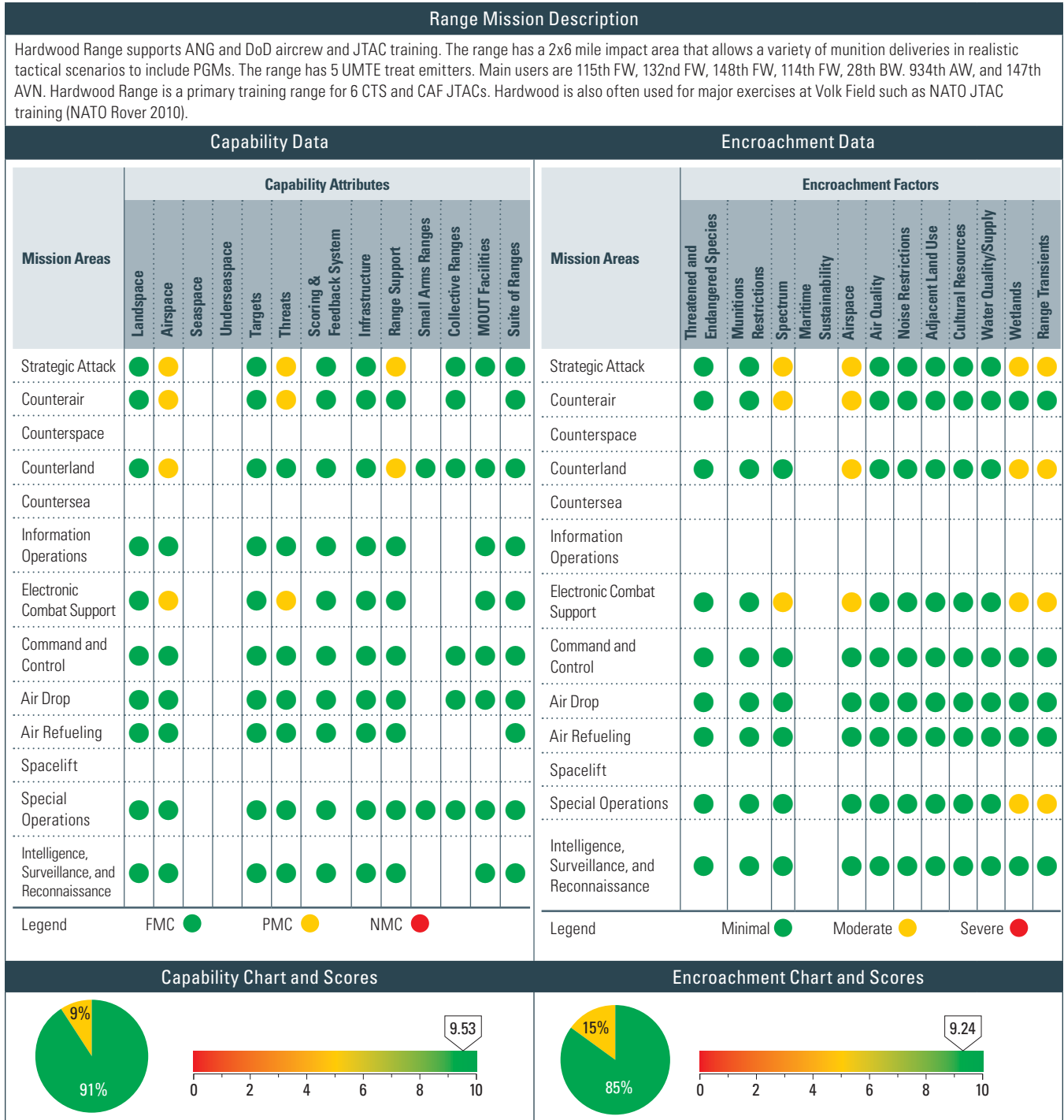
Attributes	Assigned Training Mission	Score	Comments
Airspace	Counterland	●	Airspace limits flexibility for counterland effectiveness.
	Electronic Combat Support	●	Airspace is limited by lateral and vertical limits. Airspace is adequate to accomplish most of the training required, but restricts a small portion of the training required.
	Special Operations	●	Same as above.
Targets	Counterland	●	Currently, the requirement for a moving strafe target are not being met. Range space and target cost have prohibited the ability to develop a moving strafe target.
Threats	Strategic Attack	●	No comments.
Range Support	Strategic Attack	●	Grayling Range staffing does not meet current mission types and requirements for fire support. Range manning is based on one shift. Current training requires approximately 30% of activities to be at night, which has driven the range to cover more time with fewer bodies.
	Counterland	●	Grayling Range staffing does not meet current mission types and requirements for fire support. Requirements for range JTACs, moving targets, and scenario-based CAS training outstrip staffing capabilities.
	Special Operations	●	Grayling Range staffing does not meet current mission types and requirements for fire support. Requirements for range JTACs, moving targets, opposing forces (OPFOR), and scenario-based CAS training outstrip staffing capabilities.
Suite of Ranges	Counterland	●	No comments.
	Special Operations	●	No comments.

Encroachment Observations

Attributes	Assigned Training Mission	Score	Comments
Airspace	Strategic Attack	●	Airspace is limited in size based on older aircraft and their capabilities. The Air Force is working an airspace review to re-work the airspace to meet the needs of current and future aircraft.
	Counterair	●	Same as above.
	Counterland	●	Airspace is limited in size based on older aircraft and their capabilities. CAS is a critical mission for current conflict, and airspace restrictions severely impact realistic training. The Air Force is working an airspace review to re-work the airspace to meet the needs of current and future aircraft.
	Electronic Combat Support	●	Airspace is limited in size based on older aircraft and their capabilities. The Air Force is working an airspace review to re-work the airspace to meet the needs of current and future aircraft.
	Special Operations	●	Airspace is limited in size based on older aircraft and their capabilities. The Air Force is working an airspace review to re-work the airspace to meet the needs of current and future aircraft.
	Intelligence, Surveillance and Reconnaissance	●	Increased need for restricted airspace for UAS training push size and structure requirements.
Noise Restrictions	Strategic Attack	●	Mission types have driven the type of training needed to more populated areas and weapon employment parameters have increased (e.g., LGB, Urban CAS) to push aircraft to the edge of restricted airspace. Although areas surrounding the range were built up in the 1970s and 1980s, well after the range site was established in 1948, training requirements have many residents filing habitual noise complaints and engaging local and State politicians.
	Counterland	●	Same as above.
	Special Operations	●	Mission types have created the need for larger patterns around the impact area. CAS wheels, POD usage, and LGB employment create larger noise issues with encroaching Summer residents.

Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Hardwood Assessment Details



Hardwood Assessment Details

Summary Observations					Summary Observations				
No comments.					No comments.				
Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	9.17	9.17	9.50	9.53	Encroachment Scores	8.99	8.99	9.09	9.24
Volk Field/ WICRTC/ Hardwood Range has taken an aggressive approach to future sustainment and viability by constantly working on the training needs of future missions and public outreach through efforts, such as JLUS. Efforts at Hardwood are improving training and the range overall.					No comments.				

Hardwood Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Airspace	Strategic Attack	●	Airspace is limited by lateral and vertical limits. Airspace is adequate to accomplish most of the training required, but restricts a small portion of the training required. Supersonic flight is not authorized within the current airspace. Airspace rework is underway to meet the needs of future aircraft. This should be accomplished by 2011.
	Counterair	●	Same as above.
	Counterland	●	Same as above.
	Electronic Combat Support	●	Same as above.
Threats	Strategic Attack	●	Next generation weapons systems require more up to date threat simulators and the landspace to properly place them within the airspace. The Air Force is working to acquire more threats and developing agreements to place the threats within the current airspace
	Counterair	●	Same as above.
	Electronic Combat Support	●	Same as above.
Range Support	Strategic Attack	●	Hardwood Range is one of the least manned ranges throughout the NGB. Current mission types and requirements for fire support etc. has placed a need for creative scheduling. Range manning is based on one shift. Current training requires approximately 40% of activities to be at night, which has driven the range to cover more time with fewer bodies.
	Counterland	●	Same as above.

Encroachment Observations

Attributes	Assigned Training Mission	Score	Comments
Spectrum	Strategic Attack	●	The range's location between two busy civilian airports means severe restrictions are placed on chaff and ECM use. Frequencies are tougher to get, based on everything moving to data links and civilian population becoming more electronic centric.
	Counterair	●	Same as above.
	Electronic Combat Support	●	Same as above.
Airspace	Strategic Attack	●	Airspace is limited in size based on older aircraft and their capabilities. Airspace expansion is difficult based on the range's location between two large civilian airports and their associated arrival and departure routes. The range is currently working an airspace review to re-work the airspace to meet the needs of current and future aircraft.
	Counterair	●	Same as above.
	Counterland	●	Same as above.
	Electronic Combat Support	●	Same as above..

Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Hardwood Detailed Comments

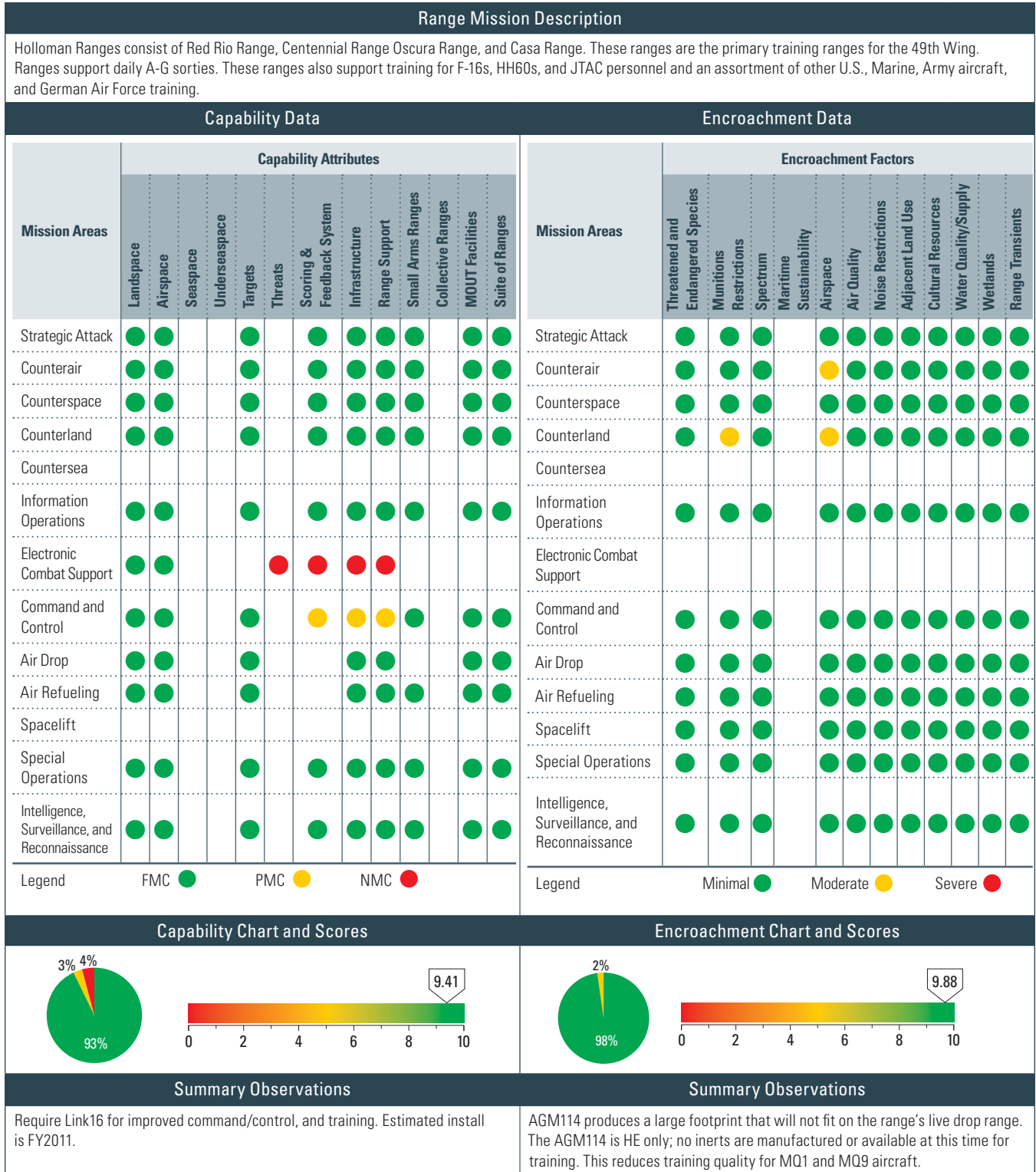
Encroachment Observations

Attributes	Assigned Training Mission	Score	Comments
Wetlands	Strategic Attack	●	The range is located in an area of large quantities of wetlands. Wetland restrictions have restricted the range's ability to construct complete firebreaks, and place new targets. The range is working with the natural resource advisory team. New target development is planned around wetlands on the range.
	Counterland	●	Same as above.
	Electronic Combat Support	●	Same as above.
	Special Operations	●	Same as above.
Range Transients	Strategic Attack	●	The range boundaries are open, but marked appropriately for the activities taking place. Based on more ATV type vehicles, this increases the number of transients across the range. An effort to fence the entire range is underway. The range continually advises the public of the activities taking place through ATV clubs and other relevant outlets. Public awareness is critical. Hardwood Range has land use policies in place and active perimeter checks are done to ensure public safety.
	Counterland	●	Same as above.
	Electronic Combat Support	●	Same as above.
	Special Operations	●	Same as above.

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Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Holloman Assessment Details



Holloman Assessment Details

Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	8.04	8.04	9.41	9.41	Encroachment Scores	8.42	8.42	10.00	9.88
Scores have varied due to changing mission requirements (F117A—F22, addition of MQ1/9).					Scores have varied due to changing mission requirements (F117A—F22, addition of MQ1/9).				

Holloman Detailed Comments

Capability Observations

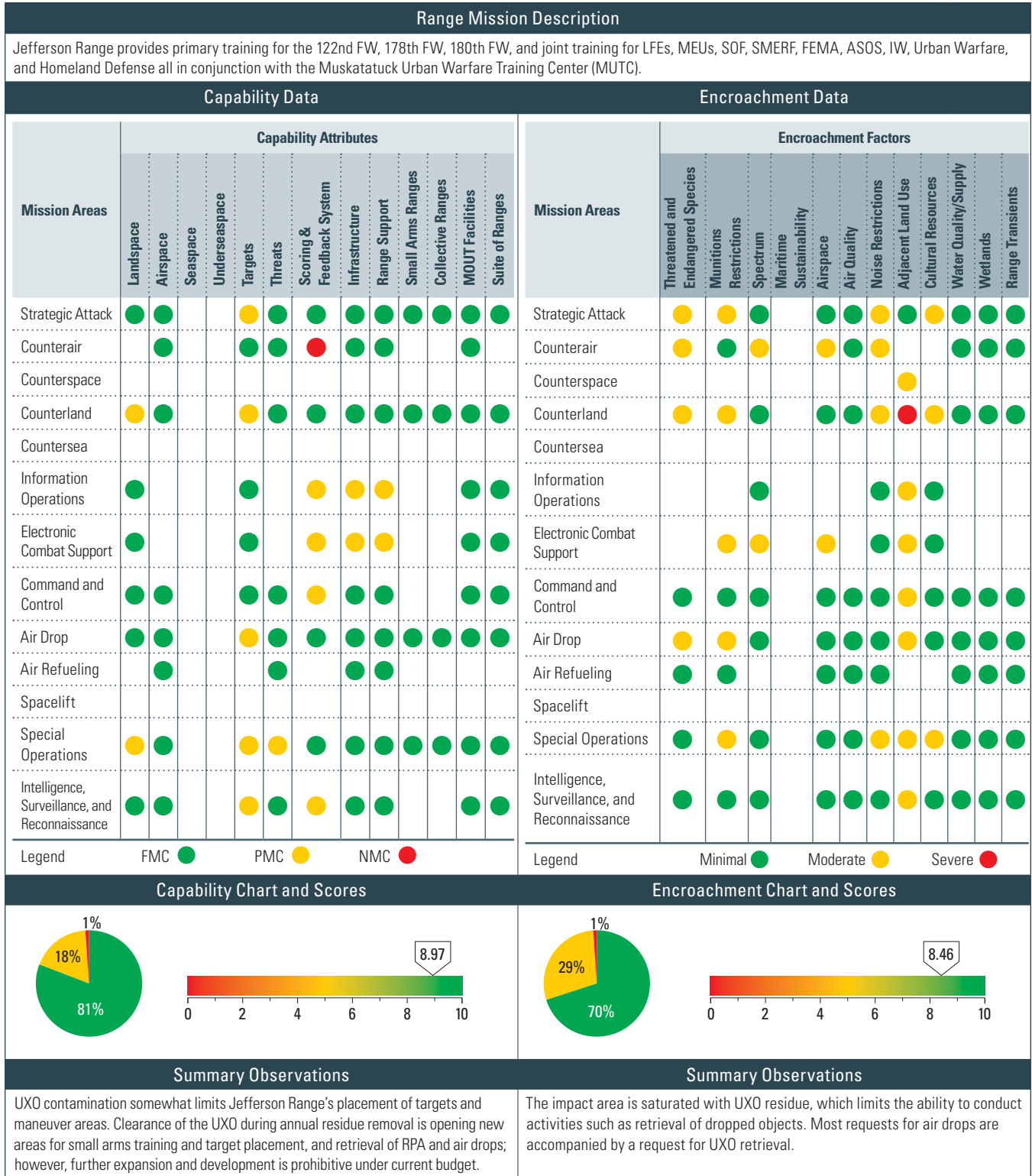
Attributes	Assigned Training Mission	Score	Comments
Threats	Electronic Combat Support	●	There is no electronic combat support; therefore, there is no training capability. There is currently no planned solution.
Scoring & Feedback System	Electronic Combat Support	●	The range is awaiting Link 16; therefore, there is limited training capability. The Link 16 installation is projected for FY2011.
	Command and Control	●	The range is awaiting Link 16; therefore, there is limited training capability. There is currently no solution.
Infrastructure	Electronic Combat Support	●	There is no electronic combat support; therefore, there is no training capability. There is currently no planned solution.
	Command and Control	●	The range is awaiting Link 16; therefore, there is limited training capability. The Link 16 installation is projected for FY2011.
Range Support	Electronic Combat Support	●	There is no electronic combat support; therefore, there is no training capability. There is currently no planned solution.
	Command and Control	●	The range is awaiting Link 16; therefore, there is limited training capability. The Link 16 installation is projected for FY2011.

Encroachment Observations

Attributes	Assigned Training Mission	Score	Comments
Munitions Restrictions	Counterland	●	The AGM114 footprint exceeds range boundaries; therefore, RPVs cannot train with AGM114. This requires the use of M-36 Captive Flight Trainer.
Airspace	Counterair	●	Airspace is a priority for test missions, but is restricted; therefore, training missions must be rescheduled. This requires close coordination between Air Force/Army scheduling activities.
	Counterland	●	Same as above.

Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Jefferson Range Assessment Details



Jefferson Range Assessment Details

Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	8.75	8.75	9.14	8.97	Encroachment Scores	8.66	8.66	8.71	8.46
Overall capabilities of the range complex have been increased by the annual clearance of the UXO. It is a slow process, however, due to the limitations of the EOD assets and the total amount of UXO present in the impact area.					No comments.				

Jefferson Range Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landscape	Counterland	●	The range has approximately 100 acres for development of target arrays under the current permit and MOU.
	Special Operations	●	Same as above.
Targets	Strategic Attack	●	The range is in an Army impact field with a high volume of UXO. The cost for EOD support outside of scrapes and access roads with current budget precludes expansion and development.
	Counterland	●	Same as above.
	Countersea	●	Same as above.
	Air Drop	●	Same as above.
	Special Operations	●	Same as above.
	Intelligence, Surveillance and Reconnaissance	●	Same as above.
Threats	Special Operations	●	The range is in an Army impact field with a high degree of UXO. Cost for EOD outside of scrapes and access roads with current budget precludes expansion and development.
Scoring & Feedback System	Counterair	●	Feedback is currently unavailable for performance; however, a partnership with MUTC is affording opportunities for instrumentation of the range.
	Information Operations	●	Current scoring system does not provide AAR for IAO.
	Electronic Combat Support	●	Current scoring system does not provide AAR for ECS.
	Command and Control	●	Current scoring system does not provide AAR for C&C.
	Intelligence, Surveillance, Reconnaissance	●	Current scoring system does not provide AAR for ICR.
Infrastructure	Information Operations	●	Infrastructure does not support IO.
	Electronic Combat Support	●	Infrastructure does not support ECS.
Range Support	Information Operations	●	Infrastructure does not support IO.
	Electronic Combat Support	●	Infrastructure does not support ECS.

Encroachment Capabilities

Factors	Assigned Training Mission	Score	Comments
Threatened & Endangered Species	Strategic Attack	●	The range has several protected species surrounding the impact areas and under the MOAs.
	Counterair	●	Same as above.
	Counterland	●	Same as above.
	Air Drop	●	Same as above.
Munitions Restrictions	Strategic Attack	●	UXO limits the placement of targets. Yearly residue clearance is opening new areas for target placement.
	Counterland	●	Same as above.
	Electronic Combat Support	●	The range is bordered by CVG, SDF, and IND, which restricts the use of ECS.
	Air Drop	●	UXO limits the placement of targets. Yearly residue clearance is opening new areas for target placement.
	Special Operations	●	Same as above.

Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Jefferson Range Assessment Details

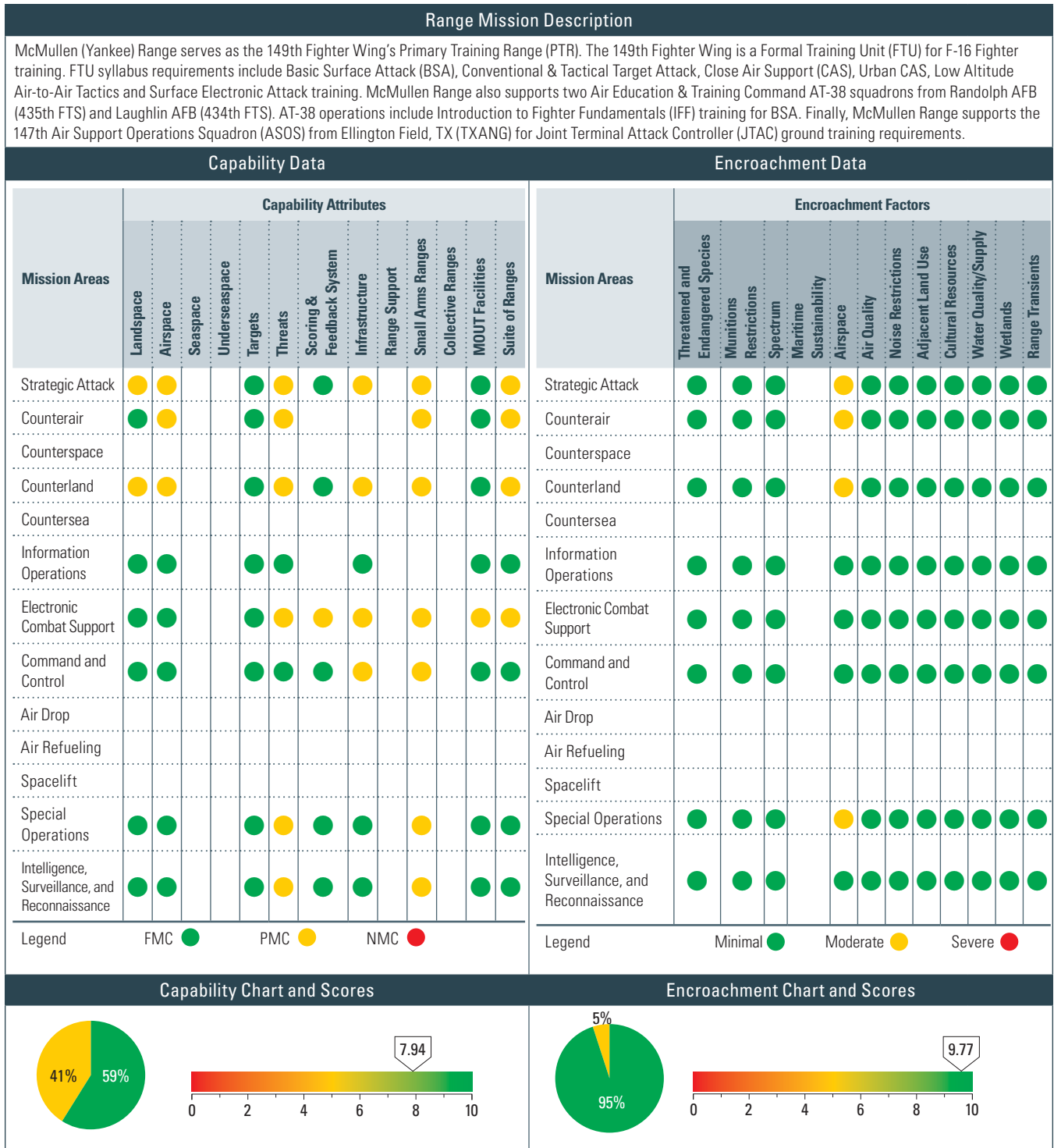
Encroachment Capabilities

Factors	Assigned Training Mission	Score	Comments
Spectrum	Counterair	●	The range is bordered by CVG, SDF, and IND, which restricts the use of potentially jamming spectrums.
	Electronic Combat Support	●	The range is bordered by CVG, SDF, and IND, which restricts the use of ECS.
Airspace	Counterair	●	There is insufficient MOA space for Counterair training.
	Electronic Combat Support	●	The range is bordered by CVG, SDF, and IND, which restricts the use of ECS.
Noise Restrictions	Strategic Attack	●	The EA assessment is limited in noise study and needs to be expanded for future weapons systems.
	Counterair	●	Same as above.
	Counterland	●	Same as above.
	Special Operations	●	Same as above.
Adjacent Land Use	Counterspace	●	Adjacent land is Army-owned and operated by USFWS. USFWS has permit for approximately 49000 acres as compared to our 1100. The Air Force's footprints are authorized outside of the range's permitted area; however, that is all. Also, much of the land is no access due to UXO.
	Counterland	●	Same as above.
	Information Operations	●	Same as above.
	Electronic Combat Support	●	Same as above.
	Command and Control	●	Same as above.
	Air Drop	●	Same as above.
	Special Operations	●	Same as above.
Cultural Resources	Intelligence, Surveillance, Reconnaissance	●	Same as above.
	Strategic Attack	●	Jefferson Range has oversight by BRAC 1988. Conducting operations outside the MOU as established by BRAC would require congressional authorization.
	Counterland	●	Same as above.
	Special Operations	●	Same as above.

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Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

McMullen Assessment Details



McMullen Assessment Details

Summary Observations					Summary Observations				
No comments.					No comments.				
Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	8.42	8.42	6.27	7.94	Encroachment Scores	8.92	8.92	9.81	9.77
No comments.					No comments.				

McMullen Limitation Details

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Strategic Attack	●	Yankee Range Landspace is insufficient for full-up training ops. Current landspace of approximately 4000 acres (with only a 400 acre impact area) precludes live weapon drops and severely limits full-scale inert weapon releases. There are currently no planned actions to remedy this issue.
	Counterland	●	Same as above.
Airspace	Strategic Attack	●	Restricted Area R-6312 over Yankee Range is inadequate for realistic maneuver. It consists of a 5nm radius circle from the surface to FL 230. R-6312 is often capped at 10K due to Houston Center and/or Navy operations. Impact to training includes limited capability for maneuver within airspace. A proposal is in process to create an ATCAA "air-bridge" for ingress to the target area by units assigned Air-to-Air training MOA.
	Counterair	●	Same as above.
	Counterland	●	Same as above.
Threats	Strategic Attack	●	Range is currently authorized and utilizes RWR-Lite threat emitters that are aging and outdated. Threat equipment maintenance and operation requires manpower above current authorizations. Due to age and limited capabilities of RWR-Lite emitters, little significant training can be accomplished with respect to EW threats. Range is continuously seeking alternatives for more robust systems, i.e., AN/VPQ-1 and (JTE) Joint Threat Emitters. No current timeline for alternatives.
	Counterair	●	Same as above.
	Counterland	●	Same as above.
	Electronic Combat Support	●	Same as above.
	Special Operations	●	Same as above.
Infrastructure	Intelligence, Surveillance, Reconnaissance	●	Same as above.
	Strategic Attack	●	Range infrastructure is comprised of portable-style buildings, which are non-permanent in nature. There is minimal communication infrastructure connectivity outside the range. There are no permanent facilities for personnel or equipment used to maintain targets, roads, fire breaks, communications equipment, structural maintenance equipment, and IT connectivity beyond minimal requirements (phone and LAN). Real property must be acquired or a lease in excess of 20 years must be executed in order to erect permanent structures/facilities on the range. No currently planned actions to remedy this issue.
	Counterland	●	Same as above.
	Electronic Combat Support	●	Same as above.
Smalls Arms Ranges	Command and Control	●	Same as above.
	Strategic Attack	●	Range currently lacks funding for a second, full-time Range Control Officer (RCO) and authorizations for additional operators/maintainers. Absences due to health, work, or family situations are a show-stopper for Class A Range operations. Det-1 has pursued funding for a second full-time RCO and personnel through State and NGB channels for several years with no success. No current timeline for a solution.
	Counterair	●	Same as above.
	Counterland	●	Same as above.
	Electronic Combat Support	●	Same as above.
	Command and Control	●	Same as above.
	Special Operations	●	Same as above.
Intelligence, Surveillance, Reconnaissance	●	Same as above.	

Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

McMullen Assessment Details

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
MOUT Facilities	Electronic Combat Support	●	Range is currently authorized and utilizes RWR-Lite threat emitters that are aging and outdated. Threat equipment maintenance and operation requires manpower above current authorizations. Due to age and limited capabilities of RWR-Lite emitters, little significant training can be accomplished with respect to EW threats. The range is continuously seeking alternatives for more robust systems, i.e., AN/VPQ-1 and (JTE) Joint Threat Emitters. No current timeline for a solution.
Suite of Ranges	Strategic Attack	●	The range is limited to a single range for BSA with limited standoff attack capability. It offers no live weapons training, no urban CAS target, limited EW threats, and limited airspace for maneuver. The Air Force has ongoing initiatives to expand airspace, targets, and EW threats, but no projected timeline.
	Counterair	●	Same as above.
	Counterland	●	Same as above.
	Electronic Combat Support	●	Same as above.

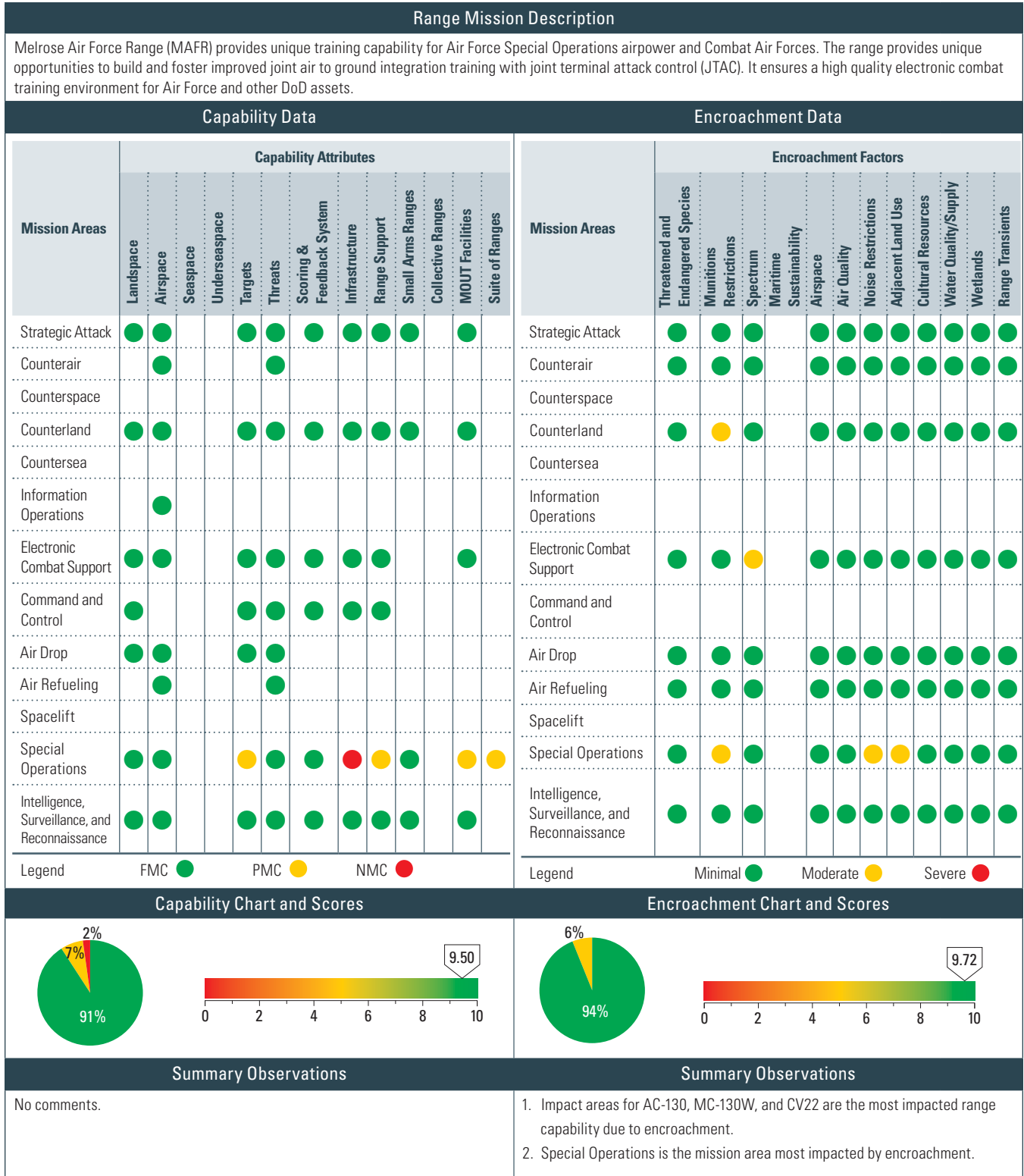
Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Airspace	Strategic Attack	●	Restricted Area R-6312 over Yankee Range is inadequate for realistic maneuver. It consists of a 5nm radius circle from the surface to FL 230. R-6312 is often capped at 10K due to Houston Center and/or Navy operations. The impact to training includes limited capability for maneuver within airspace. There is a proposal in process to create an ATCAA "air-bridge" for ingress to the target area by units assigned Air-to-Air training MOA.
	Counterair	●	Same as above.
	Counterland	●	Same as above.
	Special Operations	●	Same as above.

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Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Melrose Range Assessment Details



Melrose Range Assessment Details

Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	9.05	9.05	10.00	9.50	Encroachment Scores	9.32	9.32	9.75	9.60
No comments.					<p>Melrose Air Force Range has seen an increase in utilization due to changing/growing mission with the re-missioning of the 27th Fighter Wing to the 27th Special Operations Wing. There are three primary encroachment issues/areas of concern:</p> <ol style="list-style-type: none"> 1. Melrose is the primary range for AC-130H training, both operational squadron and Formal Training Unit, but there is only one impact area (JOCKEY) for the AC-130. The problem will be further magnified as the MC-130W becomes fully operational in the Dragon Spear configuration, which will require the use of the same live fire range on a nightly basis. HQ AFSOC and the 27 SOW are working with JFCOM to secure JNTC funding for a second live fire area on Melrose. Initial construction of the SPIRIT impact area is expected started February 2011. Projected utilization is 10 AC-130 live fires per week and 10+ MC-130W live fires per week. MC-130W steady state utilization will increase as the number of qualified crews increase. 2. AC-130 and fighter/bomber integration training and live fire operations. The solution to facilitating practice of TTPs developed in CENTCOM AOR is twofold. First, the land allocation must be restructured to increase the AF exclusive use area. This began in July 2011 as the amount of restricted leased land is reduced and the AF converts an additional 19,000 acres for exclusive use. Once this happens, basic integration can exist on the new SPIRIT impact area mentioned above. Second, to use both impact areas (JOCKEY and SPIRIT), the range support buildings should be moved allowing greater flexibility to use the exclusive use area. The relocation of the buildings will open additional targets for fighter/bombers/CV22 as well as greater flexibility for special operations ground forces during air to ground/joint terminal attack control training and maneuver. The estimated cost of this project is \$15M and is not funded at this time. 3. Increased development of wind turbines surrounding the range. Cannon AFB/Melrose Range senior leadership is fully engaged with local county commissioners to ensure the placement of wind turbines has the least possible conflict with range operations. A Joint Land Use Study (JLUS) is ongoing. If the JLUS is not successful in mitigating wind energy encroachment, the 27 SOW combat training (low-level day/night training routes) will be impacted. 4. Increased potential for wind turbine development surrounding range (AF) property. Cannon AFB/MAJCOM/HAF is cognizant of one proposal, which is being spearheaded by Greenwing Energy. Additional information has been provided in the Adjacent Land Use section below. 				

Melrose Range Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Targets	Special Operations	●	Of the two AC-130 target sites, one is operational, but the second live fire target area is in design/development and is tied to the Environmental Assessment under contract. Current training impacts limit the AC-130 to single ship operations. Scheduled EA completion is January 28, 2011.
Infrastructure	Special Operations	●	Power, water, communications, and roads need to be developed for planned range development. Range Administration, maintenance, and fire department buildings need to be updated and relocated out of the primary impact area. Permanent exercise facilities are needed to facilitate training of SOF forces in a realistic training environment. Training artificialities hinder SOF forces training opportunities due to administrative and travel time with no onsite facility. A development plan is in the works, but implementation is dependent on funding.
Range Support	Special Operations	●	Datalink capabilities do not exist. Bandwidth is limited. No SIPR available. The range is incapable of secure communications. A repair ticket was submitted to 27 SOCS, but no get well date has been given to date.

Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Melrose Range Assessment Details

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
MOUT Facilities	Special Operations	●	MOUT sites are incomplete. This limits ground operations training. Sites are being developed as funds become available.
Suite of Ranges	Special Operations	●	NSAv Landing Zone not built. Current temporary LZ operations are limited by weather. 3 Permanent LZ contract award estimated for 09/20/2010.

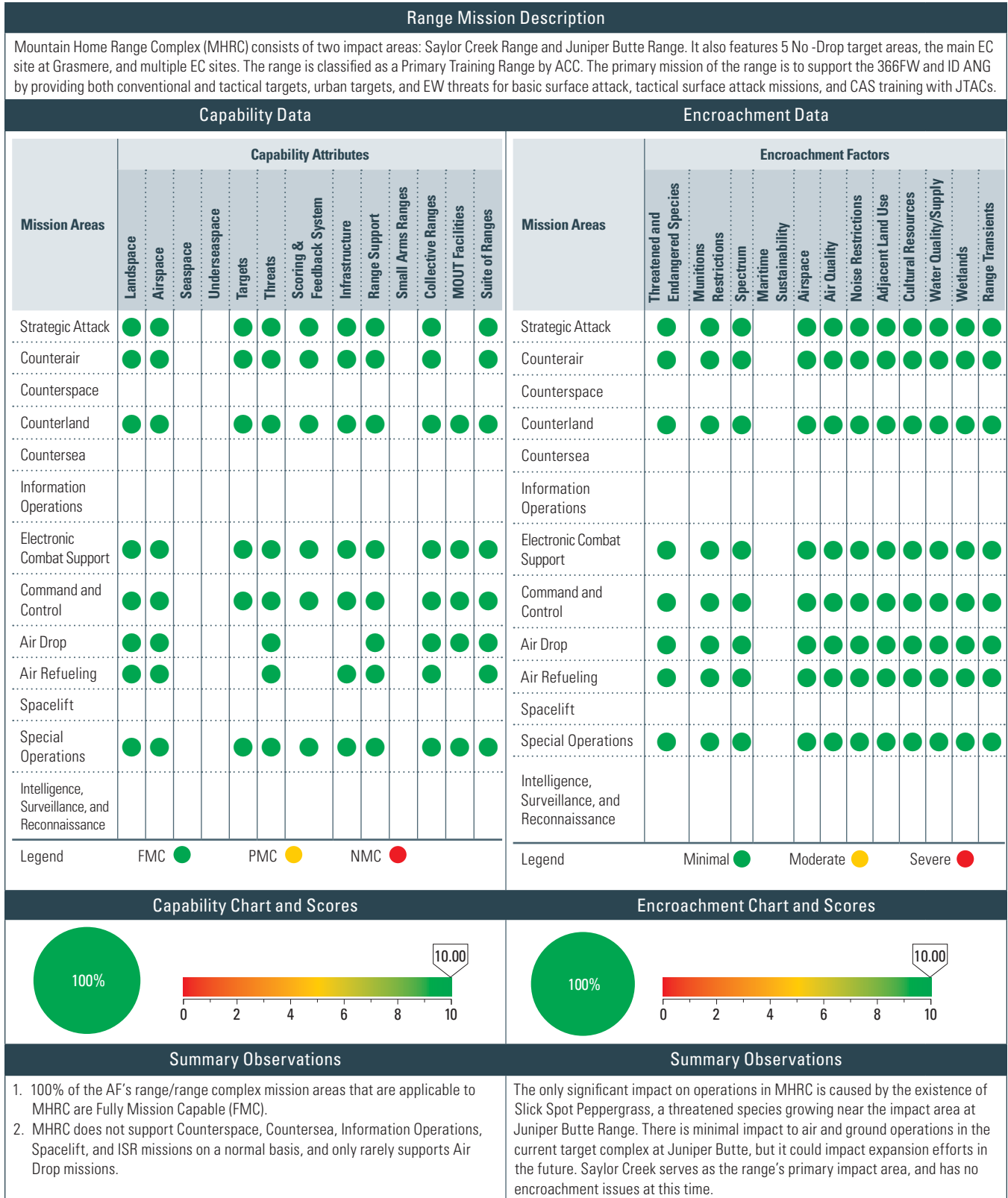
Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Munitions Restrictions	Counterland	●	All weapons approved for the range cannot be employed. This has minimal training impact, however, due to alternate weapons capabilities that meet training requirements. No remedy immediately available.
	Special Operations	●	Structured Targets/Ranges/dirt LZ is funded and in the contracting process. Schedule deconfliction burden is increased resulting in lost training due to availability of resources. Funded projects will alleviate some of deconfliction issues opening up additional training opportunities. Get well date: FY2015.
Spectrum	Electronic Combat Support	●	Four frequencies are not available: 15.4 GHz earth exploration satellite (passive), 3930MHz satellite broadcast, 668, and 878 MHz White Sands Missile Range FCC restriction, per Manual of Regulations and Procedures for Federal Radio Frequency Management, U.S. footnote 246. This has minimal training impact. Workarounds are in place. No immediate remedy available. Restrictions not anticipated to change.
Adjacent Land Use	Special Operations	●	Land use in the adjacent land use area of MAFR continues to be a concern. Encroachment has received increased visibility both in the community and throughout the 27 SOW because of the efforts of the Encroachment Management Team (EMT) and because of the concerns caused by wind turbine farm proposals, both within 27 SOW managed restricted airspace, as well as in the Class E airspace controlled by Cannon RAPCON. Greenwing Energy is currently proposing a project (with two arrays) located within R-5104 which has potential to significantly impact training operations conducted at MAFR. Two of these concerns are the limitations on LZ/DZ Ops and the impact to NV ops (glare from obstruction lights). Cannon EMT conducted a preliminary consultation with the proponent to verify specifics of the proposal and to address preliminary concerns. Cannon EMT is awaiting further info / follow-up meeting with proponent. MAJCOM and HAF are aware of this potential project, but a timeline for solution is unknown at this time.
Cultural Resources	Special Operations	●	There are 232 cultural sites on the range, which require studies/coordination before range development begins. Project sites may have to be moved, which could provide "cramped" training areas due to less than optimal placement. Continued coordination ongoing with 27 SOCE offices during range development planning to alleviate training impacts.

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Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Mountain Home Ranges Assessment Details



Mountain Home Ranges Assessment Details

Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	10.00	10.00	10.00	10.00	Encroachment Scores	9.89	9.89	10.00	10.00
<p>The overall capability score has been steady. The only change in recent years has been the official listing of Slick Spot Peppergrass as a threatened species and the construction of a more robust MOUT target set in keeping with current CAS/JTAC requirements.</p>					<p>The overall encroachment score remains steady at 10. The only change has been the listing of Slick Spot Peppergrass as a threatened species. This may impact future expansion efforts at Juniper Butte Range, should they be attempted. The Air Force is currently in the process of approving strafe at Juniper Butte in addition to BDU-33 practice bombs, which should be approved, despite this listing.</p>				

Mountain Home Ranges Limitation Details

Capability Observations

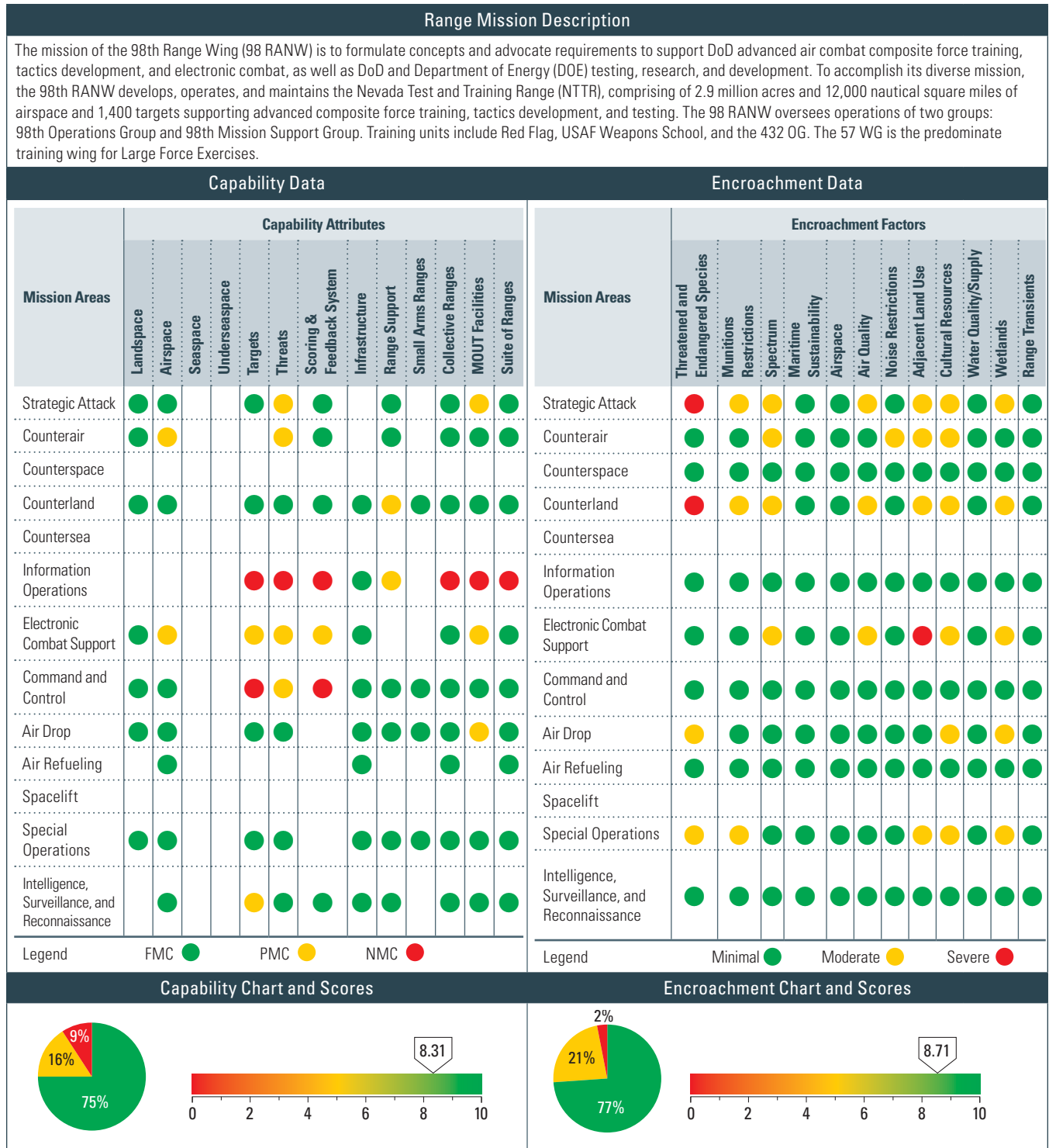
Attributes	Assigned Training Mission	Score	Comments
No comments.			

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
No comments.			

Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Nevada Test and Training Range (NTTR) Assessment Details



Nevada Test and Training Range (NTTR) Assessment Details

Summary Observations					Summary Observations				
<p>The attributes most impacting performance are: Threats, Targets, and Scoring & Feedback System; then Collective Ranges and Suite of Ranges, in this order. Mission areas impacted are: Command and Control and Information Operations. The FY2013 POM will include:</p> <ol style="list-style-type: none"> 1. Threat Relevancy Requirements are “signature representative” and “robustness in density.” Modernize to Double Digit capabilities. 2. Representative Targets including Time Sensitive Targets (TST). 3. Instrumented Battlespace with upgrades for compartmentalized debrief. 4. Throughput on Operational Hours. Extend the NTTR range hour capacity with additional shifts to handle new workload for the F-35 and Test requirements. Include Saturday operations and night shifts. 					<p>Renewable Energy (RE) proposals and project sitings surrounding the NTTR are spectrum interference impacts technically known as RF/EMI compatibility issues (also known as Electro Magnetic Environment [EM] and are of the greatest concern. In addition, land development and subsequent overflight noise issues are increasing under the Desert MOA. The potential to develop the southern ranges in concert with U.S. Fish and Wildlife approvals for co-use of the Desert National Wildlife Range per the MLWA of 1999 may further encroach upon NTTR. Key mission areas impacts include: Electronic Combat for training and test mediums; Strategic Attack mission from both renewable energy projects and in noise complaints; and Counterair and Counterland, both by developmental pressures and land use planning constraints due to Endangered Species Act (ESA), wetlands, or air quality (in Clark County).</p>				
Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	8.22	8.22	8.39	8.31	Encroachment Scores	8.62	8.24	8.26	8.56
<ol style="list-style-type: none"> 1. Small Arms and MOUT experienced minor change in the assessment; reflected in comments. 2. Slight decrease due to MOUT activities addressed during the NTTR RUG held in July 2010 [3] N/A [4]. 98 RANW will request additional programming capabilities in the FY2013 POM input. FY2012 POM input with the ACC PEM at A3AR for PEs 27428 and 27429. Documented these deficiencies as well as the CRP input from 98 RANW to ACC/A3A. SAF/LLP is working the legislative issues with A30-BR, including range-wide studies (Sen. Ensign). ACC/A8 is working NTTR requirements product for 2025 planning. 					<ol style="list-style-type: none"> 1. Threatened and Endangered Species, Airspace, and Noise Restrictions are the three encroachment factors with the greatest impact at NTTR. 2. Sitings of RE proposals are being addressed in cooperative relationships locally with DOI (Bureau of Land Management) and DOE. HAF conducted a Nevada Forum in August 2010 with RE Industry and all federal agencies as well as state and county representatives from Nevada. At HQ ACC/ST, RE impact studies are in work for the 19 parameters known. The AF Scientific Advisory Board (SAB) has reviewed these impacts and has made recommendations on the proposed studies. (AF/A30 -BR and SAF/IEI are all involved at HAF, as well as ACC/A8-2/A3A at the MAJCOM.) Noise implications have to be dealt with in planning with local communities, country commissioners, and in the NTTR public outreach programs. As southern Nevada develops in Eastern Clark County and in Lincoln County, public concerns may increase from the military impacts, especially overflight as the F-22 and F-35 come into the inventory. Mitigation may include re-routing airspace use in the high use corridors that are part of the Desert MOA, as well as navigation buyouts or land use planning restrictions. The unique relationship with USFWS is necessary per the MLWA of 1999 and in the way the 1997 MOU with USFWS was established for joint use of the co-withdrawn lands. 3. 98 RANW will request additional programming capabilities in the FY2013 POM input. FY2012 POM input at the ACC PEM level for PEs 27428 and 27429 documented these deficiencies, as well as the CRP input from 98 RANW to ACC/A3A. SAF/LLP is working the legislative issues with A30-BR to include range-wide studies (Sen. Ensign), RE Clean Energy, and Wildlife Partnerships with local government (Sen. Reid). The economic downturn in Nevada and decreased need for mass expansion in Clark Country has slowed some residential development pressures. 				

Nevada Test and Training Range (NTTR) Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Airspace	Counterair	●	There are increasing restrictions on the range due to noise complaints, urban encroachment, and natural lands. Supersonic, chaff, flare, and overflight restrictions continue to shrink the NTTR airspace. Avoidance Areas—Nellis has established noise sensitive area around communities under the MOA.
	Electronic Combat Support	●	There is limited capability to do full-spectrum jamming. Current FAA chaff restrictions deny employment over NTTR. Avoidance Areas—Nellis has established noise sensitive area around communities under the MOA. Since 2008, an increase in renewable energy wind farms (WGEF) has the potential to impact the range’s ability to operate in a clean electronic environment. This issue is currently in study with the AF Scientific Advisory Board (SAB). Impacts are radar operations with low observable aircraft frames have degradation in analysis for weapons and tactics testing and training.

Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Nevada Test and Training Range (NTTR) Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Targets	Information Operations	●	There are no self-contained Information Operations (IO) targets on NTTR. All IO play is based on the users and the equipment that they bring to the range. There are some means of facilitating IO play, but no organic capability. The range is continuing to work with JIOR to provide a mobile service that can be deployed at the Urban Operations Complex (UOC) on Range 62.
	Electronic Combat Support	●	The range lacks a complete electronic target set. Electronic Attack (EA) platforms do not get real-time feedback on their capabilities and their effects during training. The range will continue to work on the Digital Integrated Air Defense System (DIADS) suite in order a real-time degradation on red systems based on real efforts of jamming platforms.
	Command and Control	●	No Red C2 Targetable Nodes exist on NTTR. Jamming platforms do not get real-time feedback on operations. With DIADS implementation and IO suite, the range should better simulate a degraded C2 system while maintaining safety.
	Intelligence, Surveillance and Reconnaissance	●	NTTR Requires High-Fidelity ISR Targets on the range. ISR is the one of the most heavily tasked functions, but the range has only minimal target support. It will continue to expand ISR targets to include the High Speed Moving Target (HSMT) and IO capabilities.
Threats	Strategic Attack	●	Lack of double-digit SAM capabilities. The range is still multiple years away of allowing users to train on significant double digit SAM threats—ACC tracking JTE with SPO. Workarounds are planned, but do not support full training objectives. Right now, aircrew must train on legacy single-digit SAMs.
	Counterair	●	Same as above.
	Information Operations	●	There are no self-contained IO targets on NTTR. All IO play is based on the users and the equipment that they bring to the range. There are some means of facilitating IO play, but no organic capability. The range is continuing to work with JIOR to provide a mobile service that can be deployed at the Urban Operations Complex (UOC).
	Electronic Combat Support	●	Lack of complete electronic target set. EA platforms do not get real-time feedback on their capabilities and their effects during training. The range will continue to work on DIADS suite to show a real-time degradation on red systems based on real efforts of jamming platforms.
	Command and Control	●	No Red C2 Targetable Nodes exist on NTTR. Jamming platforms do not get real-time feedback on operations. With DIADS implementation and IO suite, the range should better simulate a degraded C2 system while maintaining safety.
Scoring & Feedback Systems	Information Operations	●	The range has no self-contained IO targets on NTTR. All IO play is based on the users and the equipment that they bring to the range. The range has some means of facilitating IO play, but no organic capability. The range is continuing to work with JIOR to provide a mobile service that can be deployed at the UOC.
	Electronic Combat Support	●	Lack of complete electronic target set. EA platforms do not get real-time feedback on their capabilities and their effects during training. The range will continue to work on DIADS suite in order to show a real-time degradation on red systems based on real efforts of jamming platforms.
	Command and Control	●	No Red C2 Targetable Nodes exist on NTTR. Jamming platforms do not get real-time feedback on operations. With DIADS implementation and IO suite, the range should better simulate a degraded C2 system while maintaining safety.
Range Support	Counterland	●	There is limited Blue Force track capability and convoy support. Ground Troops are deploying without high fidelity training. The range is currently working with 99 GCTS to provide training area for robust convoy training with 99 ABW and ACC coordination.
	Information Operations	●	There are no self-contained IO targets on NTTR. All IO play is based on the users and the equipment that they bring to the range. There are some means of facilitating IO play, but no organic capability. The range is continuing to work with JIOR to provide a mobile service that can be deployed at the UOC.
Collective Ranges	Information Operations	●	Same as above.

Nevada Test and Training Range (NTTR) Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
MOUT Facilities	Strategic Attack	●	There are new Area Security Operations (ASO) requirement for GCTS and the range does not have the current capabilities to provide all required. It is currently employing “band-aid” fixes and trains when any time is available with minimum requirements being met. The range is trying to work with HHQ to provide specific funding, manning, and requirements to get higher priority.
	Information Operations	●	There are no self-contained IO targets on NTTR. All IO play is based on the users and the equipment that they bring to the range. There are some means of facilitating IO play, but no organic capability. The range is continuing to work with JIOR to provide a mobile service that can be deployed at the UOC.
	Electronic Combat Support	●	The range is deploying jammable infrastructure at the Urban Operations Center. Crews cannot get robust training in CAS/EA or ISR without a robust electronic threat. Right now, the range uses the UOC as low-threat area, but is working to obtain deployable systems.
	Air Drop	●	Currently, there are five Drop Zones (two area and three circular) near the UOC on Range 62. This is an AMC requirement that is being met. The range does NOT have an operational LZ near the UOC. This is an AMC and SOCOM requirement not being met. Training would be greatly enhanced by having an LZ near the UOC to conduct full ops. The range is working to enhance the current landing strip in the UOC complex to allow rotary wing, C-130, and C-17 assault/bare base operations.
Suite of Ranges	Information Operations	●	There are no self-contained IO targets on NTTR. All IO play is based on the users and the equipment that they bring to the range. There are some means of facilitating IO play, but no organic capability. The range is continuing to work with JIOR to provide a mobile service that can be deployed at the UOC.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Threatened & Endangered Species	Strategic Attack	●	Placement of targets in the southern ranges is constrained by U.S. Fish and Wildlife Service (USFWS) guidance/agreements. The range must comply with ESA (Increase costs or Risks) as the NTTR southern ranges are home to the Desert Tortoise, a threatened species. The range operates under a Biological Opinion (BO) issued by USFWS. In accordance with the BO, it pays a one-time fee per acre and must implement required conditions. USFWS nominated the higher elevations in the Southern Ranges as Wilderness. This severely restricts the range’s ability to place threats or targets at high elevations to provide future capabilities. USFWS recently issued interim guidance on protecting Golden Eagles. It is unknown how these rules will impact the range’s ability to manage range targets. There are no open venues to mitigate these issues for increased capabilities, since ESA compliance and wilderness regulation compliance are based on Public Law. At some point, additional lands to support increase capabilities will be necessary.
	Counterland	●	Endangered Species Act (Increase costs or Risks)—The NTTR southern ranges are home to the Desert Tortoise, a threatened species. The range operates under a BO issued by USFWS. In accordance with the BO, the range pays a one-time fee per acre of \$723 for each acre of “suitable habitat” it disturbs and must implement required conditions. There are no open venues to mitigate these issues for increased capabilities, since ESA compliance and wilderness regulation compliance are based on Public Law. At some point, additional lands to support increase capabilities will be necessary.
	Air Drop	●	Placement of drop zones in the southern ranges must follow USFWS guidance/agreements. The BO is the driver behind drop zone limitations. There are no open venues to mitigate these issues for increased capabilities, since ESA compliance and wilderness regulation compliance are based on Public Law. At some point, additional lands to support increase capabilities will be necessary.
	Special Operations	●	In the lower elevations of the southern range, Special Operations ground movements are restricted due to USFWS Desert Tortoise habitat and the BO requirements. The southern ranges at higher elevations received a Wilderness Areas designation, which prevents vehicle use for ground movements. USFWS recently issued interim guidance on protecting Golden Eagles. It is unknown how these rules will impact the range’s ability to manage range targets. There are no open venues to remedy these issues, considering ESA compliance and wilderness regulation compliance.

Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Nevada Test and Training Range (NTTR) Detailed Comments

Encroachment Observations			
Factors	Assigned Training Mission	Score	Comment
Munitions Restrictions	Strategic Attack	●	Placement of live and inert targets on the Southern Ranges must follow USFWS guidance/agreements. In the lower elevations of the southern range, target placement is constrained due to USFWS Desert Tortoise habitat. The southern range's higher elevation's Wilderness Areas designation eliminates this area from being used for target placement. USFWS recently issued interim guidance on protecting Golden Eagles. It is unknown how these rules will impact the Air Force's ability to manage range targets. There are no open venues to remedy these issues; ESA compliance and wilderness regulation compliance are mandatory.
	Counterland	●	Same as above.
	Special Operations	●	Placement of live and inert targets on the Southern Ranges must follow USFWS guidance/agreements. In the lower elevations of the southern range, target placement is constrained due to USFWS Desert Tortoise habitat. The southern range's higher elevation's Wilderness Areas designation eliminates this area from being used for target placement. USFWS recently issued interim guidance on protecting Golden Eagles. It is unknown how these rules will impact the Air Force's ability to manage range targets. There are no open venues to mitigate these issues for increased capabilities; ESA compliance and wilderness regulation compliance are based on Public Law. At some point, additional lands to support increase capabilities will be necessary.
Spectrum	Strategic Attack	●	Current and future renewable energy projects in and around NTTR and the associated MOAs will negatively impact the EM environment required for sensitive testing at the NTTR. Specifically, the Wilson Creek Wind Farm would substantially increase EM "noise" in the northern part of the Reveille MOA, which will negatively affect A-A targeting radars and A-G mapping sensors, if constructed as planned. In addition, the Crescent Dune Solar project, northwest of Tonopah, NV, will produce substantial IR spectrum overlap with many ground-based and airborne sensors, when construction is completed. (The MET is in progress with BLM.) When addressed separately, the encroachment of individual renewable energy projects might fall below the threshold. However, when addressed in combination, it is clear that the many alternative and renewable energy projects will negatively affect the viability of NTTR in the immediate and long-term. The AF Scientific Advisory Board (SAB) recognized the impacts as irrevocable to the test parameters, but substantiated the balance between renewable goals and AF TE mission.
Air Quality	Strategic Attack	●	Nellis has received several Notices of Violation (NOV) due to excessive dust emissions from the Southern Ranges. Violations could have included fines up to \$10,000/day/violation. Funding has been requested through multiple sources to pave primary roads. Paving would also reduce wear and tear on vehicles. For the Northern Ranges, Best Practical Methods must be used at all times for any quantity of disturbance (e.g., paving, watering, revegetation, chemical stabilization, phased construction). The Title V Operating Permit has a supplemental Surface Area Disturbance Permit, # 9711-1233, which establish terms of compliance. For the Southern Ranges, Clark County rules apply. Best Available Control Methods must be used at all times for any quantity of soil disturbance, including traffic on unpaved roads (e.g., watering, dust palliative). A visible dust plume cannot exit the property or extend over 100 ft. within the property boundary. Dust permits must be purchased prior to construction if a project disturbs more than 1/4 acre of soil (including access road, storage area, parking during construction), involves mechanized trenching of greater than or equal to 100 ft. in length, or mechanical demolition of structure smaller than 1,000 square ft..
	Counterland	●	Same as above.
	Electronic Combat Support	●	Same as above.
Noise Restrictions	Counterair	●	Increased urban development in traditional rural areas surrounding NTTR has resulted in an increase in noise complaints from Alamo, Hiko, Caliente, Las Vegas, and Pahrump. The access from Nellis to NTTR is seeing increased pressure from development. Aircraft flight corridors from Nellis are seeing proposals for growth that will require review by Nellis and NTTR for their impacts on military operations. Nellis has an active Outreach Program. The Outreach Program includes several 99 ABW, 57 WG and 98 RANW personnel.

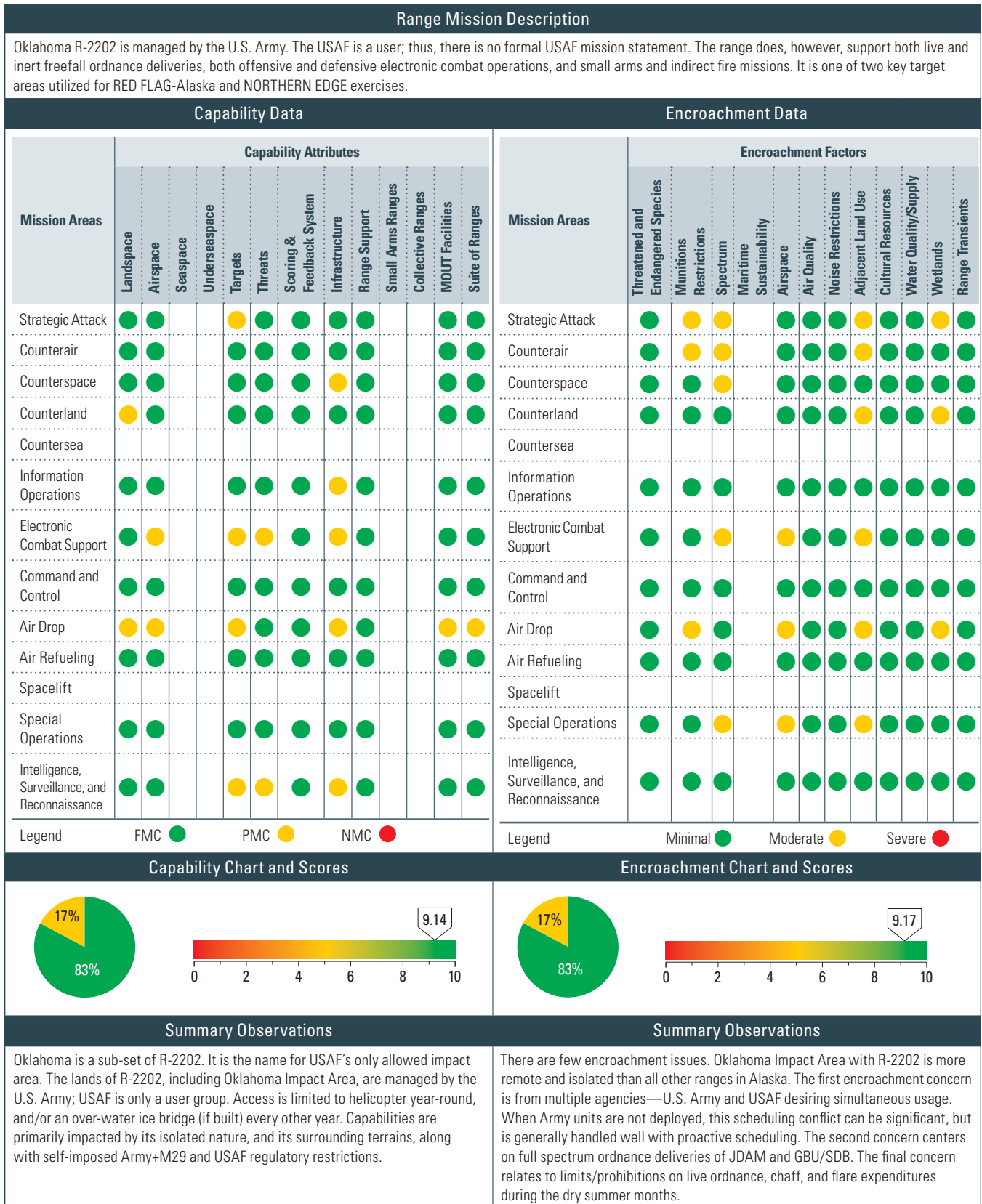
Nevada Test and Training Range (NTTR) Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Adjacent Land Use	Strategic Attack	●	Increased development of renewable energy projects in outlying rural areas adjacent to NTTR has the potential to impact the ability to operate in a relatively clean electronic environment. The combination of radar operations, employment of low observable technologies and need for unhampered feedback to the radars makes wind turbines incompatible with several critical USAFWC mission areas to include: weapons system certification, tactics validation, advanced weapon system training, realistic threat representation, and large force exercises. Nellis has an active Outreach Program. The Outreach Program includes several 99 ABW, 57FW and 98 RANW personnel.
	Counterair	●	Same as above.
	Counterland	●	Same as above.
	Electronic Combat Support	●	Same as above.
	Special Operations	●	There are numerous renewable energy projects under or adjacent to NTTR. There is also increased urban development under the MOAs (e.g., Coyote Springs, BLM Land Sales). The range is in continuous contact with federal, state, and community land managers striving for compatible development. NTTR needs an Air Staff policy directive and a update to AFI 13-201, para 6.6., that addresses all renewable energy.
Cultural Resources	Strategic Attack	●	Seventeen tribes have cultural affiliation to the 2.9 million acre NTTR. Cultural resources create avoidance areas, prohibit certain training, and increase operation costs. NTTR has 215 acres of archaeological avoidance areas. Most of the cultural sites are outside the OPAREAs for most ground activities. Personnel are briefed to avoid the cultural sites with ground disturbing activities. However, upon planning site-specific, mission-essential activities, cultural resources will be recorded.
	Counterair	●	Same as above.
	Counterland	●	Cultural resources affect target and threat placement on NTTR. It can take up to a year to accomplish the appropriate NEPA and NHPA consultation, and Native American coordination. The only attempt to remedy this is planning or timely identification of the need. There is no known long term solution.
	Electronic Combat Support	●	Seventeen tribes have cultural affiliation to the 2.9 million acre NTTR. Cultural resources create avoidance areas, prohibit certain training, and increase operation costs. NTTR has 215 acres of archaeological avoidance areas. Most of the cultural sites are outside the operating areas for most ground activities. Personnel are briefed to avoid the cultural sites with ground disturbing activities. However, upon planning site-specific, mission-essential activities, cultural resources will be recorded.
	Air Drop	●	Same as above.
	Special Operations	●	Same as above.
Wetlands	Strategic Attack	●	NTTR has more than 120 seeps and springs. While not classified as true "404 wetlands," they are areas range personnel should not disturb. Several are cultural sites; others are significant watering points for antelope, bighorn sheep, deer, and numerous small mammals, birds, and reptiles. Some of these sites support the Nellis Wild Horse herd. The significant sites are fenced to exclude inadvertent ground activities. Most of the springs and seeps are outside the OPAREAs for most ground activities. Personnel are briefed to avoid the seeps and springs with ground disturbing activities, when practical.
	Counterland	●	Same as above.
	Electronic Combat Support	●	Same as above.
	Air Drop	●	Same as above.
	Special Operations	●	Same as above.

Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Oklahoma Range Assessment Details



Oklahoma Range Assessment Details

Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	7.31	7.31	9.19	NA	Encroachment Scores	9.09	9.09	8.88	NA
No comments.					No comments.				

Oklahoma Range Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Counterland	●	Oklahoma is isolated from live ground maneuver capability most of the year. Access in the summer requires helicopter lift. In winter, access is only via ice bridge (if built). JCAS operation can be conducted if JTACS are flown into the range. Ground maneuver is simulated.
	Air Drop	●	Oklahoma Impact Area (within R-2202) does not have an LZ/DZ; it is simply an impact area. There is no remedy. If including some of the surrounding restricted lands of R-2202, there are adequate DZ/LZs. The main LZ/DZ is lies within Donnelly Training area, approximately 20 miles east of Oklahoma Impact Area.
Airspace	Electronic Combat Support	●	Same as above.
	Air Drop	●	Same as above.
Targets	Strategic Attack	●	Poor range access (winter-only if ice bridge built) limits the type of targets/materials. The range is unable to achieve EOD in 7 month winter periods. The short EOD and target build season conflicts with summer flight operations. There is sensitive tundra in most areas surrounding existing target sets. There is very good target variety, but the range is still limited in target replenishment/expansion capability. There is no remedy.
	Electronic Combat Support	●	Due to the isolated nature and fact that Oklahoma is designated as an Impact Area only, threats are emplaced in land/air spaces surrounding the impact area—there is no significant degradation to training.
	Air Drop	●	There is no LZ/DZ in the Oklahoma Impact Area. The range relies on eastern R-2202 training lands.
	Intelligence, Surveillance and Reconnaissance	●	Due to its isolated nature and fact that Oklahoma is designated as an Impact Area only, temporary C4ISR targets are generally not emplaced. They can be, but at high logistical costs.
Threats	Electronic Combat Support	●	Due to its isolated nature and fact that Oklahoma is designated as an Impact Area only, threats are emplaced in land/air spaces surrounding the impact area. There is no significant degradation to training, other than systems are generally unmanned and are older/less sophisticated in nature.
	Intelligence, Surveillance and Reconnaissance	●	Due to its isolated nature and fact that Oklahoma is designated as an Impact Area only, temporary C4ISR targets are generally not emplaced. They can be, but at high logistical costs.
Infrastructure	Counterspace	●	Due to Oklahoma Impact Area's isolated nature, limited infrastructure in its classic sense exists. All systems requiring power are provided by remote operated generators. Communications are via microwave. There is no rail access; road access is via winter ice bridge (if built).
	Information Operations	●	Same as above.
	Electronic Combat Support	●	Same as above.
	Air Drop	●	Same as above.
	Intelligence, Surveillance and Reconnaissance	●	Same as above.
MOUT Facilities	Air Drop	●	There is no LZ/DZ in Oklahoma Impact Area. The range relies on eastern R-2202 training lands.
Suite of Ranges	Air Drop	●	Same as above.

Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Oklahoma Detailed Comments

			Encroachment Observations
Factors	Assigned Training Mission	Score	Comment
Munitions Restrictions	Strategic Attack	●	Though robust in size, R-2202 remains a challenge to employ full spectrum JDAM/SDB and some deliveries of GBU munitions. Occasional scheduling conflicts between Army/USAF hampers training. Solutions include more detailed and accurate WDZ footprints, allowing more realistic ordnance deliveries as well as better coordination with R-2202 range managers aiding scheduling conflicts. Summer ordnance restrictions (via BLM directives) in place to limit fire hazards preclude large numbers of live ordnance training events. There is no known remedy.
	Counterair	●	There is no capability to employ live air-to-air missiles. There is some capability for employment of forward firing 20mm cannon. There is no known remedy to these limitations.
	Air Drop	●	Oklahoma Impact Area (within R-2202) does not have an LZ/DZ; it is simply an impact area. There is no known remedy. If including some of the surrounding restricted lands of R-2202, there are adequate DZ/LZs.
Spectrum	Strategic Attack	●	The remote nature of range limits threat spectrum to lower fidelity unmanned threats; there is no known remedy. See also Electronic Combat Support immediately below.
	Counterair	●	Same as above.
	Counterspace	●	There are severe GPS jamming restrictions. These are not crippling, if planned and scheduled well in advance.
	Electronic Combat Support	●	Limitations to use of spectrum hampers threat engagement and C4ISR training; the range is unable to exercise full systems usage. A remedy to this limitation is detailed and persistent application procedures and processes through AFFMA in order to garner more spectrum approvals. Some gains have been made to allow use of two previously non-allowed systems.
	Special Operations	●	Due to the isolated nature and limited infrastructures, there is no SATCOM or special waveforms resident year-round. Units are required to provide their own accesses. Otherwise, there are no limits to this spectrum usage.
Airspace	Command and Control	●	The Oklahoma Impact Area is a relatively small restricted area. It is too small for large scale exercises with multiple platforms/weapons. If combined with other surrounding restricted spaces and MOA airspaces, the area would be more than adequate. There is no remedy.
	Air Drop	●	There is no air drop DZ available in the Oklahoma Impact Area. The fact it is an Impact Area only (right now), and that it is isolated, limits air drop capability.
	Special Operations	●	Same as Electronic Combat Support.
Adjacent Land Use	Strategic Attack	●	Eastern lands are Army military land off-limits to USAF. Western lands are state/federal and private in-holdings. Large tracks of western lands are prime hunting areas. Without a greater restricted area buffer of Oklahoma Impact Area, full spectrum ordnance deliveries are hampered.
	Counterair	●	Same as above.
	Counterland	●	Same as above.
	Electronic Combat Support	●	Same as above.
	Air Drop	●	There is no DZ/LZ in Oklahoma Impact Area. The main LZ/DZ is in Eastern R-2202 and is bordered by civilian flyway and a main highway to its west, Ft. Greeley, and its airfield to the north, and sensitive and culturally significant lands to the south.
	Special Operations	●	Same as Strategic Attack.
Wetlands	Strategic Attack	●	There are sensitive tundra areas in and around range. The range is unable to emplace realistic targets and/or EC training equipment. There is no remedy.
	Counterland	●	Same as above.
	Air Drop	●	There is no DZ/LZ in Oklahoma Impact Area. Due to sensitive tundra areas in and around range, it is difficult to develop any. There is no remedy.

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Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Patrick Assessment Details

Range Mission Description																											
Given that most of the training types identified in the call do not occur here, the Air Force has answered the questions asked within the framework of whether Patrick Range could support training of the types shown. The other difference from the previous year's submittal is that the Air Force has looked at munitions from an MMRP perspective, rather than an operational perspective.																											
Capability Data							Encroachment Data																				
Mission Areas	Capability Attributes											Mission Areas	Encroachment Factors														
	Landscape	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges		MOUT Facilities	Suite of Ranges	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime	Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
Strategic Attack														Strategic Attack													
Counterair														Counterair													
Counterspace														Counterspace													
Counterland														Counterland													
Countersea														Countersea													
Information Operations														Information Operations													
Electronic Combat Support														Electronic Combat Support													
Command and Control														Command and Control													
Air Drop														Air Drop													
Air Refueling														Air Refueling													
Spacelift	●	●	●	●	●	●	●	●	●	●	●	●	●	Spacelift	●	●	●	●	●	●	●	●	●	●	●	●	●
Special Operations														Special Operations													
Intelligence, Surveillance, and Reconnaissance														Intelligence, Surveillance, and Reconnaissance													
Legend	FMC ● PMC ● NMC ●											Legend	Minimal ● Moderate ● Severe ●														
Capability Chart and Scores							Encroachment Chart and Scores																				
Summary Observations							Summary Observations																				
Aging utility infrastructure is a major concern.							Spectrum encroachment is a growing concern on TM spectrum availability. Normal environmental processes related to endangered species and cultural sites are workable.																				
Historical Information, Results, and Future Projections							Historical Information, Results, and Future Projections																				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011																		
Capability Scores	NA	NA	NA	9.62	Encroachment Scores	NA	NA	NA	7.08																		
No comments.							No comments.																				

Patrick Detailed Comments

Capability Observations

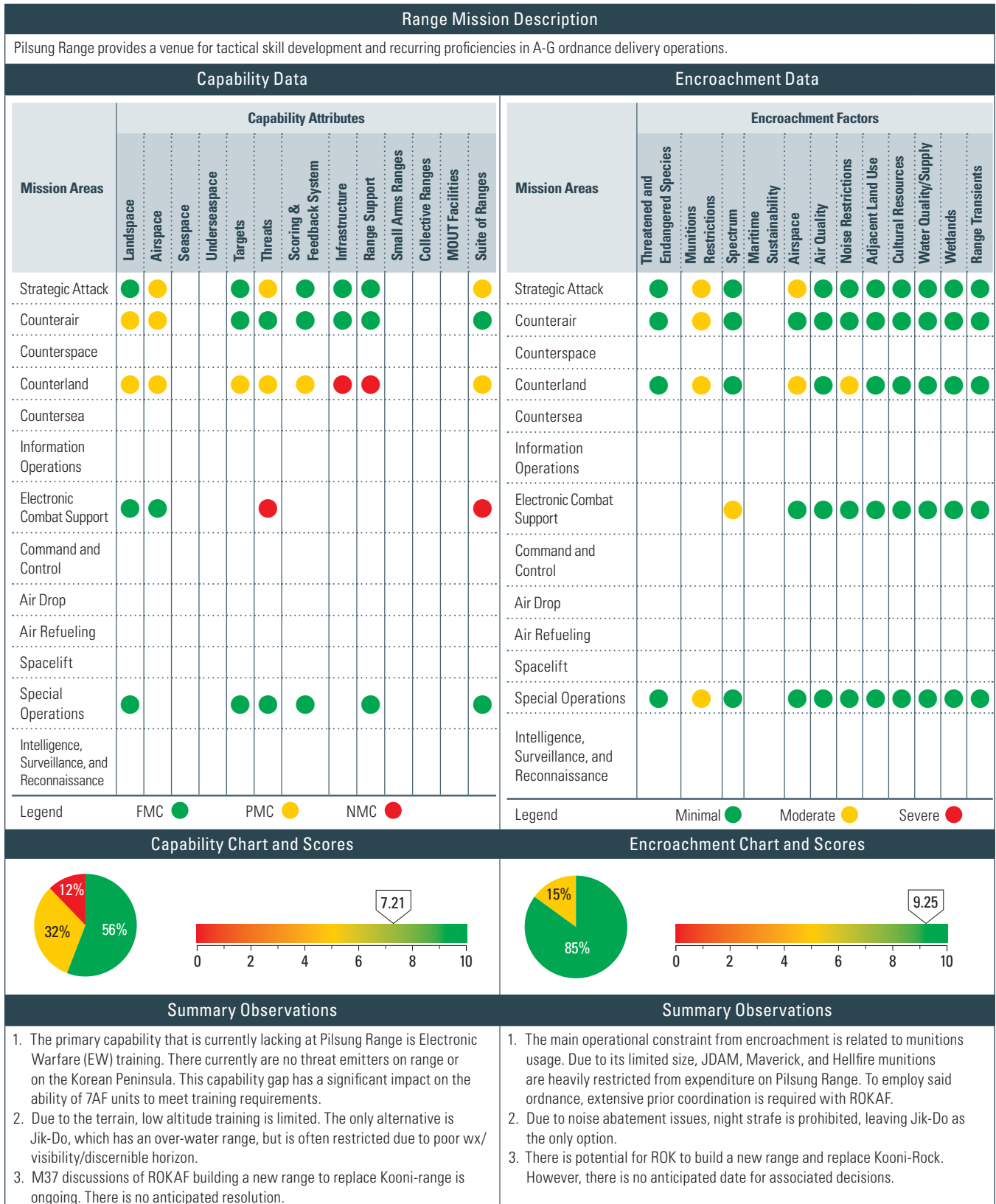
Attributes	Assigned Training Mission	Score	Comments
Infrastructure	Spacelift	●	Aging utility infrastructure impacts day to day processing for spacelift operations. There is potential for electrical and water outages. A waterline replacement project is in works. New electrical transformers have been installed and/or ordered. High voltage electrical distribution system is under review for contracted maintenance.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Threatened & Endangered Species	Spacelift	●	There are 15 listed endangered species on the range, which requires continuous species monitoring. USAF recommends terrain avoidance and species analysis with no anticipated remedy or end date.
Spectrum	Spacelift	●	There is spectrum encroachment via windmills on NEXRAD weather systems, and on telemetry and communication transmitters. There have been two recent executive decisions to open up more spectrum for public use that can impact TM systems. Also, there is spectrum encroachment on the FM band, primarily impacting availability to support spacelift operations, due to frequency conflict with flight termination signals. There is currently no anticipated remedy or end date.
Noise Restrictions	Spacelift	●	There are impacts due to rocket noise on marine mammals. This requires special monitoring and potential mitigation due to regulatory requirements. There is currently no anticipated end date or remedy for this issue.
Cultural Resources	Spacelift	●	Cultural resources present basewide restrictions, causing delays and avoidance. This may require SHPO consultation and monitoring/mitigation. There is currently no anticipated remedy or end date.
Water Quality/Supply	Spacelift	●	Industrially-generated wastewater from launch operations must be managed and disposed of in accordance with Federal and State permits and regulations, incurring costs for compliance. There is currently no anticipated remedy or end date.
Wetlands	Spacelift	●	There are several wetlands containing endangered species. This requires time consuming mitigation and permitting. There is currently no anticipated end date for this issue.
Range Transients	Spacelift	●	Range transients enter into restricted safety zones prior to launch. This can cause launch scrubs, resulting in several hundred thousand dollar recycle costs. Remedy requires training, surveillance, and risk assessment and mitigation.

Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Pilsung Assessment Details



Pilsung Assessment Details

Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	7.12	7.12	7.12	NA	Encroachment Scores	9.34	9.34	9.34	NA
No comments.					No comments.				

Pilsung Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Counterair	●	Target Valley Training Complex limits low-level maneuvering, and vegetation on range drives fire codes too high for most ordnance usages. F-16s low altitude training is limited; fire codes often limit training to cold spots only (not scorable at night). Discussions of request for ROKAF to build a new U.S.-only range to replace Kooni are ongoing; no anticipated date of resolution.
	Counterland	●	Same as above.
Airspace	Strategic Attack	●	Airspace is small for B-52; it requires coordination with adjacent MOAs, taking training opportunities away from other units (7AF and ROKAF) who normally use the airspace. There is no planned resolution.
	Counterair	●	Adjoining MOAs are required to operate Opposed SAT; resulting in competition for airspace time with other units. There is no planned resolution.
	Counterland	●	Restricted Area is surrounded by MOAs requiring aircraft to enter low of “fly the line” dividing MOAs; this increases coordination required to enter range, and can impact total time on range. There is no planned resolution.
Targets	Counterland	●	There is not a target in the live ordnance area and there is no moving target for moving target strafe; this limits fidelity of realistic training for live ordnance. 7AF/A3A can coordinate upon request for inert weapons on tactical targets in the Target Valley Training Complex.
Threats	Strategic Attack	●	No EW emitter; therefore, no EW training is available on Korean Peninsula. ROKAF system planned for 2011.
	Counterland	●	Smokey SAMs are often limited by fire code; this limits threat reaction training. No planned solution.
	Electronic Combat Support	●	Same as Strategic Attack.
Scoring & Feedback System	Counterland	●	Lack of fire response at night leads to “cold-spot” BDUs only; there is no IR camera installed to score “cold-spot” BDUs, so there is no night scoring. Only night scoring is available at Jik-Do, which is not sufficient to meet 7 AF annual requirements. The range is considering a request for ROK to build new range to replace Kooni. No anticipated date of resolution.
Infrastructure	Counterland	●	There is no fire break around the live ordnance area. This often leads to fires after live ordnance employment, shutting down the range until on-scene ROKAF fire department can extinguish. No planned solution.
Range Support	Counterland	●	Range management of brush near targets drives fire codes higher. There is no fire response after 1600L (winter), and 1700L (summer). Higher fire codes result in “cold spot” only procedures, which are not scoreable at night. The range is considering a request for ROK to build new range to replace Kooni. No anticipated date of resolution.
Suite of Ranges	Strategic Attack	●	Airspace is small for B-52s; requires coordination of adjacent MOA’s taking training away from other units (7AF and ROKAF) who normally use the airspace. No planned solution.
	Counterland	●	Fire codes lead to drop restrictions. Higher fire codes result in “cold spot” only procedures which are not scoreable at night. The range is considering a request for ROK to build new range to replace Kooni. No anticipated date of resolution.
	Electronic Combat Support	●	No EW emitter, therefore, no EW training is available on Korean Peninsula. A ROKAF system is planned for 2012.

Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Pilsung Detailed Comments

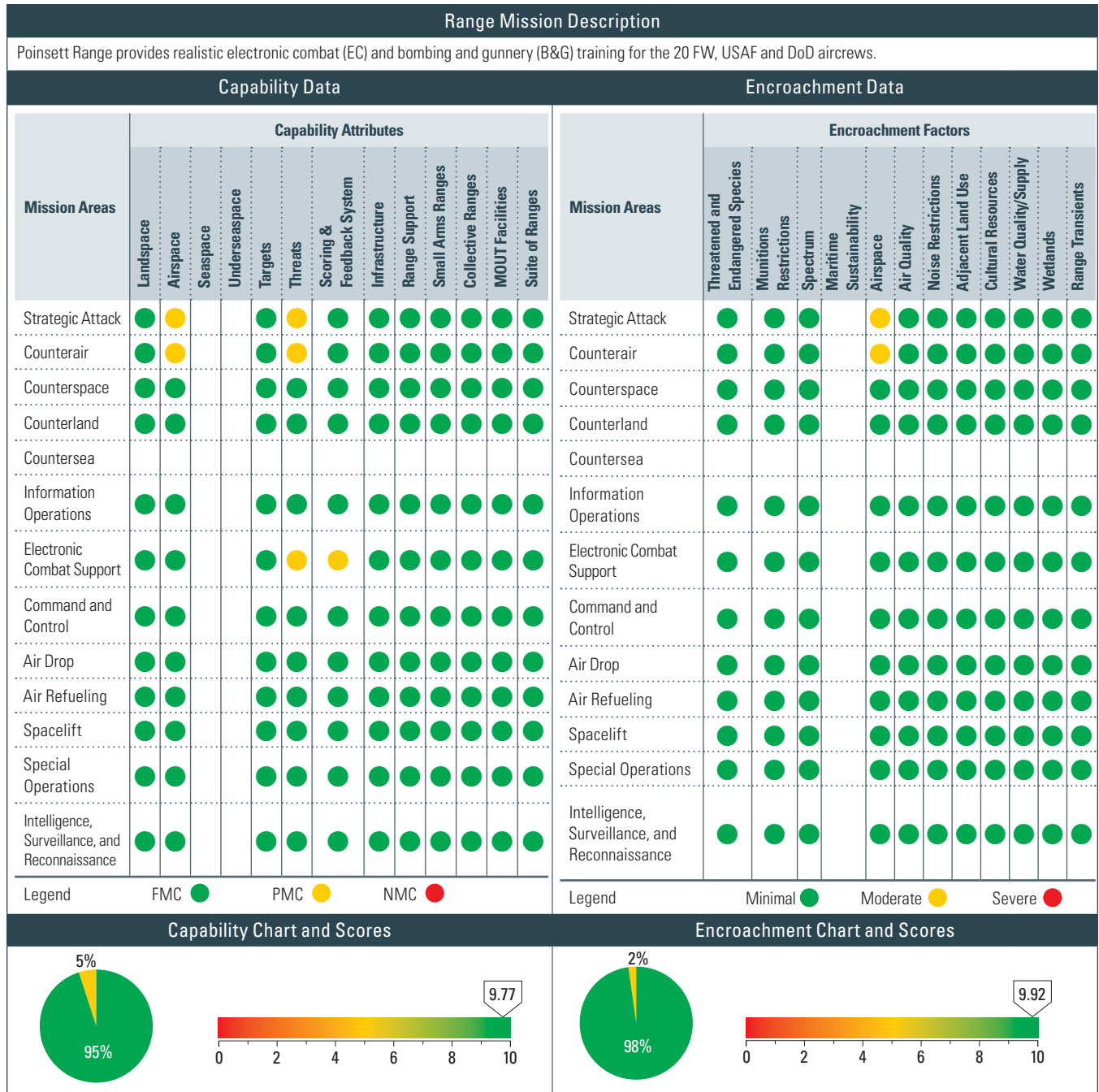
Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Munitions Restrictions	Strategic Attack	●	Small range space limits live weapons deliveries. i.e., no JDAM, Hellfire, or Maverick. Inert JDAM and live Hellfire can be employed at Jik-Do with extensive prior coordination with ROKAF. No Maverick available on ROK. Training impact is primarily to A-10s with goal of one Maverick every three years/pilot. There is consideration to request permission to build a new range to replace Kooni-Rock. No anticipated date of resolution.
	Counterair	●	Same as above.
	Counterland	●	Same as above.
	Special Operations	●	Same as above.
Spectrum	Electronic Combat Support	●	As with all robust economies, use of available spectrum for commercial (non-military) uses has increased dramatically in the past several years, with availability for threat systems and electronic attack activities being severely restricted. Hosts for maintaining limited training capabilities resulted in elimination of EC training in CY2005/2006, denying aircrews ability to complete EA events on-station. In response to Realistic Training Review Board (RTRB) submissions, PACAF/A3OZ is re-evaluating use of the Joint Deployable Electronic Warfare Range (JDEWR) from RED FLAG Alaska to Korea on temporary or semi-permanent basis. A total of 13 assignments are being requested and appears at least 7 will be approved and accommodations will be made to relocate the systems in FY2012.
Airspace	Strategic Attack	●	Surrounding MOAs limit use by B-52. Requires coordination with adjacent MOAs, taking training away from other units (7AF and ROKAF) who normally use the airspace. No planned actions.
	Counterland	●	Terrain limits low level usage. Impact to training is primarily to F-16s and their low altitude requirements. Jik-Do is primary alternative; however, it is also often limited due to poor weather/visibility/discernible horizon when over-water.
Noise Restrictions	Counterland	●	Noise complaints restrict night strafing and strafing during ROK holidays. Primary training impact is to A-10s, which have night strafe requirements. Jik-Do is the only alternative, which has less scheduled time allocated to U.S. (30%) and is often impacted by civilian boat incursions. Best solution is for ROK to build a new U.S.-only range to replace Kooni. No anticipated date of resolution.

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Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Poinsett Assessment Details



Poinsett Assessment Details

Summary Observations					Summary Observations				
1. Gamecock D airspace is geographically too small to do any opposed training, but is the best airspace with respect to the quantity of threat emitters. It is usable airspace as long as the Poinsett Transition Area (PTA) is active, but the PTA is too restrictive with respect to maneuvers within PTA and the lack of ability for fighters to release ordnance on R-6002 and return to Gamecock D. 2. The best SEAD airspace is W177/161 over water, which contains no actual threat emitters. The airspace is usable for SEAD with the ability of the F-16 to create a training simulation; however, there is no ability to be targeted from simulated threats to allow for threat reactions. 3. Bulldog airspace has a high altitude shelf that does not allow for descent in the case of weather or to PID threat emitters with DEAD training limiting training. The elimination of this shelf or the addition of more threat emitters in the all altitude portion of Bulldog airspace would eliminate this problem.					1. W177B and 161B airspace is routinely restricted to less than its published altitude of 30,000 ft., leaving significantly less airspace for high altitude tactics.				
Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	10.00	10.00	9.81	9.77	Encroachment Scores	10.00	10.00	9.92	9.92
1. There is no proposed action to allow fighters to defensively threat react within PTA or release weapons inside R-6002, due to a LOA between Jacksonville Center and Shaw AFB. 2. There is a plan in place with no current timeline to put some threat emitters along the coast. Three locations have been identified and site surveys to be conducted 1st quarter of FY2011. 3. The elimination of this shelf or the addition of more threat emitters in the all altitude portion of Bulldog airspace would eliminate this problem; however, there is no proposed capability to eliminate the shelf. There is a proposed plan to add additional threat emitters into Bulldog airspace. Currently, two additional sites are in the leasing process with construction planned for FY2011.					There is no planned action/capability to prevent ATC from capping the airspace.				

Poinsett Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Airspace	Strategic Attack	●	Gamecock D airspace is geographically too small to do any opposed training, and that is also the best airspace with respect to the quantity of threat emitters. It is usable airspace as long as PTA is active, but PTA is too restrictive with respect to maneuvers within PTA, and the lack of ability for fighters to release ordnance on R-6002 and return to Gamecock D. There is no proposed action to allow fighters to defensively threat react within PTA nor release weapons inside R-6002 due to a LOA between Jacksonville Center and Shaw AFB.
	Counterair	●	Same as above.
Threats	Strategic Attack	●	The best SEAD airspace is W177/161 over water, which contains no actual threat emitters. The airspace is usable for SEAD with the ability of the F-16 to create a training simulation; however, there is no ability to be targeted from simulated threats to allow for threat reactions. There is a plan in the works with no current timeline to put some threat emitters on the coast. Bulldog airspace has a high altitude shelf that does not allow for descent in the case of weather or to PID threat emitters with DEAD training limiting training. The elimination of this shelf or the addition of more threat emitters in the all altitude portion of Bulldog airspace would eliminate this problem. There are no proposed capabilities to eliminate the shelf. There is a proposed plan to add additional threat emitters into Bulldog. Currently, two additional sites are in the leasing process with construction planned for FY2011.
	Counterair	●	Same as above.
	Electronic Combat Support	●	Same as above.
Scoring & Feedback System	Electronic Combat Support	●	The current system to provide aircrew feedback is inadequate for EC missions. This does not allow 20 FW pilots to accurately debrief SEAD and DEAD missions with actual emitter "truth" data. ACC/A3AR is aware of the problem and an EW Server have been discussed. This server would provide emitter data directly to aircrews for ICADS playback. ECD: TBD

Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Poinsett Detailed Comments

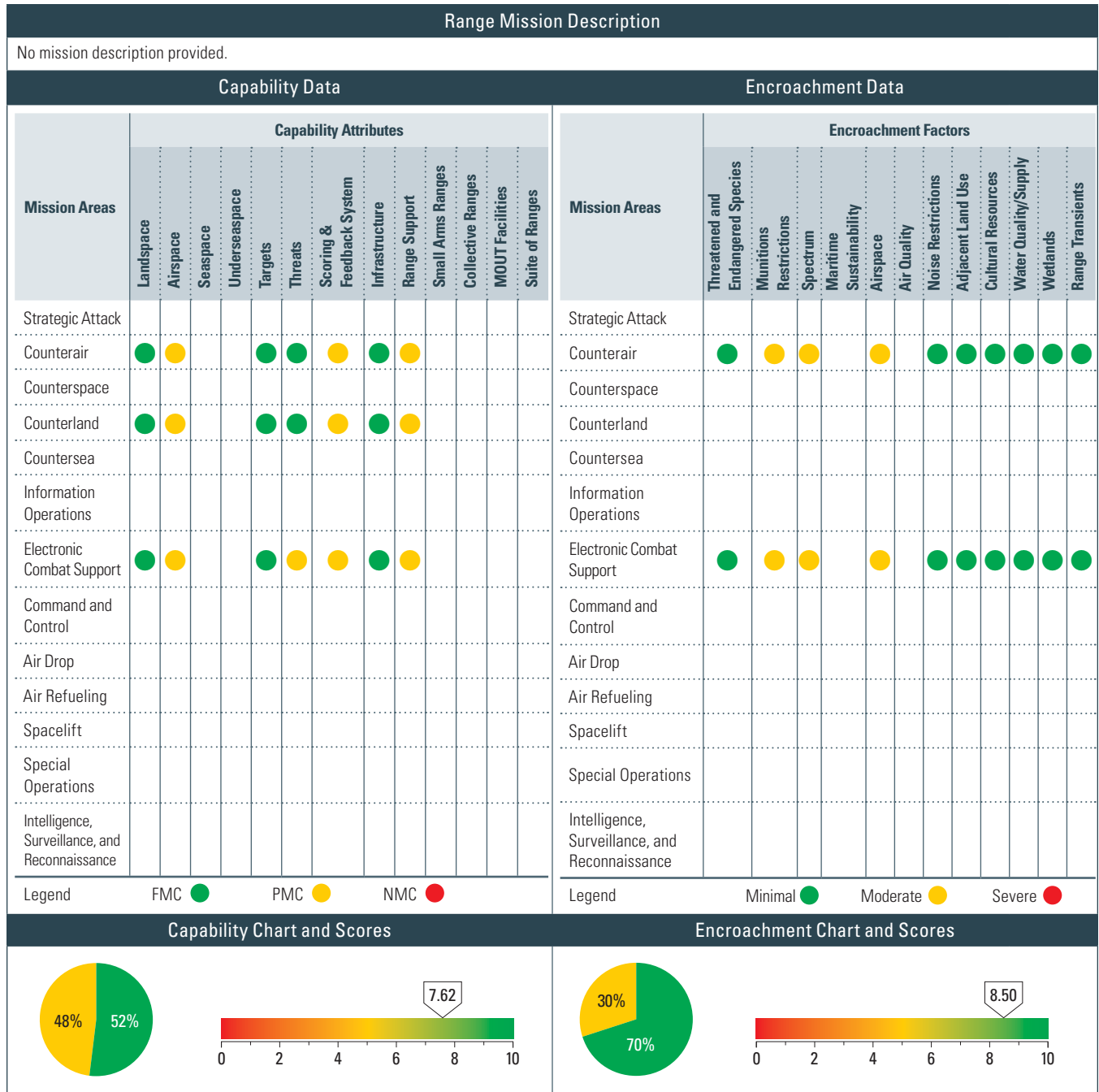
Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Airspace	Strategic Attack	●	W177B and 161B airspace is given less than 50% of the time up to the normal altitude of 30,000 ft. leaving significantly less airspace for high altitude tactics. There is no planned action/capability to prevent ATC from capping the airspace.
	Counterair	●	Same as above.

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Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Polygone Assessment Details



Polygone Assessment Details

Summary Observations					Summary Observations				
The greatest impact is to the available frequency spectrum. The use of radio and radar threat simulators is becoming more time constrained for authorization with reduced operating areas. The next greatest impact is the increase of surrounding civilian airways and lack of dedicated Military OPAREA for aircrew training against surface threats IAW realistic TTP's. All mission areas are equally impacted by the frequency authorization issues. The Counterland missions are most impacted by the airspace limitations. Further limitations occur in the areas operating EW threat simulators throughout Europe and increased cost for deployments to areas with appropriate airspace.					The greatest impact is to the available frequency spectrum. The use of radio and radar threat simulators is becoming more time constrained for authorization with reduced operating areas. The next greatest impact is the increase of surrounding civilian airways and lack of dedicated Military OPAREA for aircrew training against surface threats IAW realistic TTPs. All mission areas are equally impacted by the frequency authorization issues. The Counterland missions are most impacted by the airspace limitations. Further limitations occur in the areas operating EW threat simulators throughout Europe and increased cost for deployments to areas with appropriate airspace.				
Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	4.38	4.38	NA	7.62	Encroachment Scores	5.25	5.27	NA	8.50
No comments.					No comments.				

Polygone Detailed Comments

Capability Observations			
Attributes	Assigned Training Mission	Score	Comments
Airspace	Counterair	●	There are extensive scheduling issues attributed to high demand and profound weather impacts. The availability of training is consequently limited; corrective actions are not planned to address the issues.
	Counterland	●	There is high demand for range use (U.S. and international partners) and profound weather impacts present scheduling challenges. The availability of training is consequently limited; corrective actions are not planned to address the issues.
	Electronic Combat Support	●	Scheduling challenges result from high range demand and problematic weather conditions. The availability of training is consequently limited; corrective actions are not planned to address the issues.
Threats	Electronic Combat Support	●	Two of the available threat simulators are outdated and can be used for CJ training only; the rest are aging and approaching irrelevance. EW training is limited to single-digit SAM simulation in an autonomous acquisition scenario. There is no capability to provide training against the newer real-world threats or integrated IADS scenario. Current capability is sufficient for 80% of the customer training requirements. Improvements are only possible at the current rate of next generation EW simulator production. Joint Threat Emitter (JTE) is behind milestone development. The range would like to acquire double digit capability (XMS-11 or similar), but availability and funding are current constraints.
Scoring & Feedback System	Counterair	●	Near real-time feedback does not exist at the range. Installation of the new P5 CTS in USAFE over the next year will enhance this integration, but necessitates integration of emitter data at a higher fidelity than currently available for analysis during debrief. Aircrew EW training will suffer if range results can't be integrated. Installation of the P5 RUU and EW server is scheduled to occur in Summer 2011 timeframe. The plan is to leverage the CTS backbone to provide the means of integrating threat data. The range will require the engineering of a solution for getting digitized system data from threats/simulators back to PCC for real-time feedback integration.
	Counterland	●	Same as above.
	Electronic Combat Support	●	Same as above.
Range Support	Counterair	●	Communication network/engineering support is not resident at Polygone. The O&M contractor does not have an engineering flight. As a GSU, Polygone must rely on HHQ comm/engineering support for design and installation of needed upgrades/enhancements. Expertise/familiarity with PCC operations by supporting CE/ COMM is nonexistent. Status as a GSU leads to limited or no support from Ramstein. Under the WPC, support has improved; however, further increases in needed support are anticipated. Installation of the new P5 CTS in USAFE over the next year will necessitate integration of emitter data for analysis during debrief. The plan is to leverage the CTS backbone to provide the means of integrating threat data. The range will need to engineer a solution for getting digitized system data from threats/simulators back to the PCC. Without this solution in place, the range will not be capable of fully exploiting any DMO/LVC initiative for integration of Polygone Range data. Aircrew EW training will suffer if range results can't be integrated. With the inclusion of Polygone in the P5 CTS upgrade, plans are in place to leverage engineering/comm expertise to establish a working group dedicated to solving the feedback problem and follow on LVC capability by linking up with the DMO portal located at the WPC, Einsiedlerhof AS.
	Counterland	●	Same as above.
	Electronic Combat Support	●	Same as above.

Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Polygone Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Munitions Restrictions	Counterair	●	Use of Chaff and flares is restricted in Germany. This has a negative aircrew training, which lack the inability to train as they would in fight. No planned action—as the Air Force doesn't "own" any airspace and must abide by host nation restrictions.
	Electronic Combat Support	●	Same as above.
Spectrum	Counterair	●	Authorizations for required frequency bands are, at times, not attainable in several European countries: The Air Force is unable to support customer requests for EW threat training, which affects training capability <10% of the time. Spectral management is becoming more restrictive as commercial spectrum requirements increase. There is no fix in sight.
	Electronic Combat Support	●	Same as above.
Airspace	Counterair	●	Problematic weather, and high demand for range use cause scheduling challenges. Training availability is negatively impacted. Corrective actions are not currently planned to address the issue.
	Electronic Combat Support	●	Extensive scheduling issues and attributed to high demand and profound weather impacts. The availability of training is consequently limited. Corrective actions are not planned to address the issues.

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Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Razorback Assessment Details

Range Mission Description																											
No mission description provided.																											
Capability Data							Encroachment Data																				
Mission Areas	Capability Attributes											Mission Areas	Encroachment Factors														
	Landspace	Airspace	Seaspace	Underspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges		MOUT Facilities	Suite of Ranges	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime	Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
Strategic Attack	●	●			●	●	●	●	●			●	●	Strategic Attack	●	●	●		●	●	●	●	●	●	●	●	
Counterair	●	●			●	●	●	●	●			●	●	Counterair	●	●	●		●	●	●	●	●	●	●	●	
Counterspace														Counterspace													
Counterland	●	●			●	●	●	●	●	●	●	●	●	Counterland	●	●	●		●	●	●	●	●	●	●	●	
Countersea														Countersea													
Information Operations	●	●				●		●	●			●		Information Operations	●	●	●						●			●	●
Electronic Combat Support	●	●			●	●	●	●	●			●		Electronic Combat Support	●	●	●		●		●	●	●	●	●	●	●
Command and Control	●	●			●	●		●	●	●		●		Command and Control	●	●	●		●		●	●	●	●	●	●	●
Air Drop	●	●			●	●	●	●	●			●	●	Air Drop	●	●	●		●	●	●	●	●	●	●	●	●
Air Refueling		●				●								Air Refueling													
Spacelift														Spacelift													
Special Operations	●	●			●	●	●	●	●	●	●	●	●	Special Operations	●	●	●		●	●	●	●	●	●	●	●	●
Intelligence, Surveillance, and Reconnaissance	●	●			●	●	●	●	●			●	●	Intelligence, Surveillance, and Reconnaissance	●	●	●		●	●	●	●	●	●	●	●	●
Legend	FMC ● PMC ● NMC ●											Legend	Minimal ● Moderate ● Severe ●														
Capability Chart and Scores							Encroachment Chart and Scores																				
Summary Observations							Summary Observations																				
No comments.							No comments.																				
Historical Information, Results, and Future Projections							Historical Information, Results, and Future Projections																				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011																		
Capability Scores	9.88	9.88	9.52	9.52	Encroachment Scores	9.78	9.78	9.73	9.73																		
No comments.							No comments.																				

Razorback Detailed Comments

Capability Observations

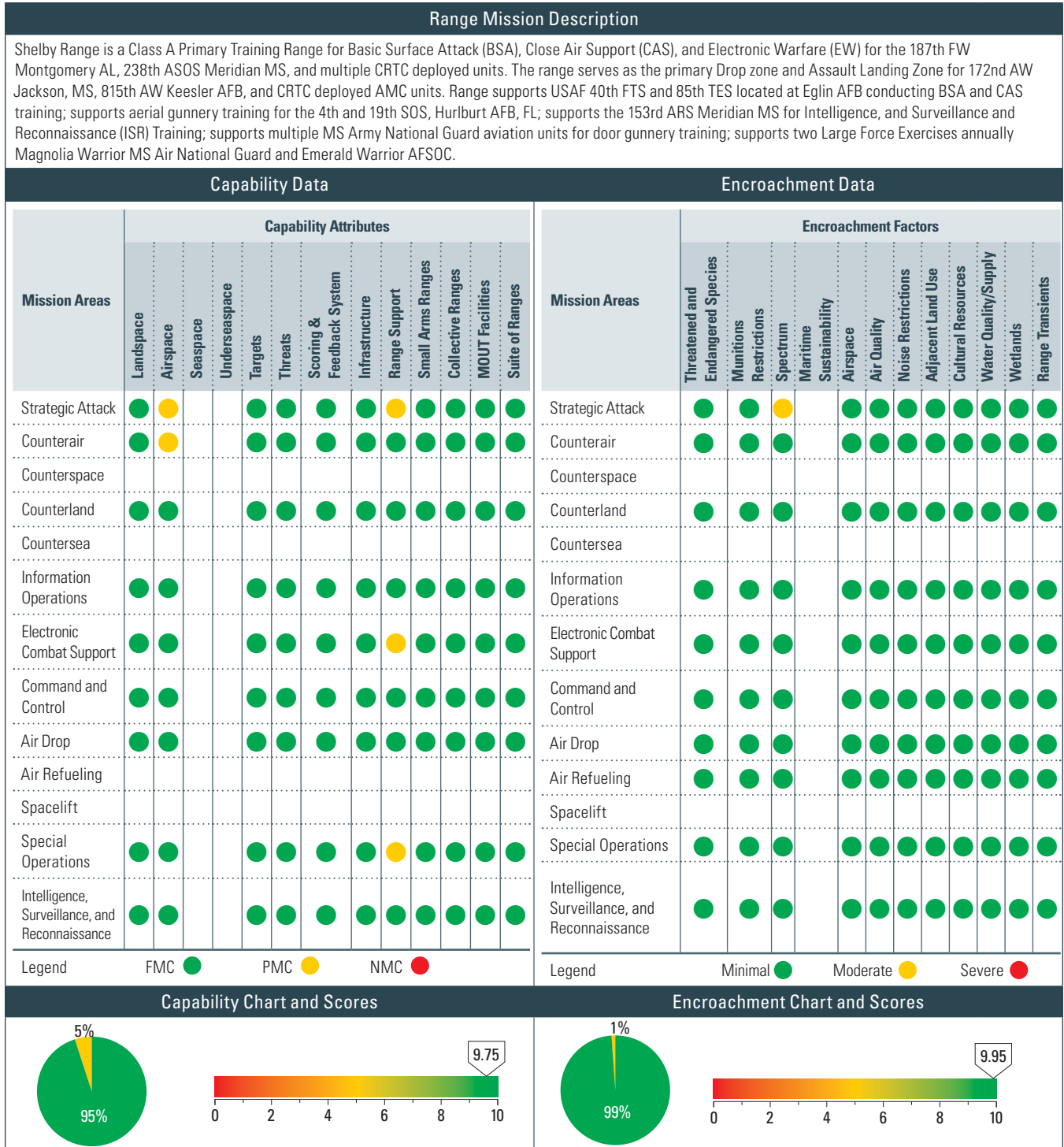
Attributes	Assigned Training Mission	Score	Comments
Landspace	Counterland	●	Small landspace restricts allowable precision guided weapon deliveries.
Airspace	Air Refueling	●	Airspace is too small for air refueling operations; adjoining MOA is used for air refueling.
Threats	Electronic Combat Support	●	The current threat simulator has limited range and cueing capabilities.
	Air Drop	●	The range has no stimulator for IR self protection flares.
Infrastructure	Counterland	●	The range is awaiting funding for range residue holding area construction.
Range Support	Counterland	●	Limited by manpower and O&M funding. Additional RCO has been requested. The range cannot support 2-shift operations.
	Command and Control	●	The range's current telephone line is unreliable. Connectivity to Air Force systems is often not available. Range pursuing the installation of new fiber optic lines. The situation is improving due to the guard-wide GSU connectivity initiative.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Munitions Restrictions	Strategic Attack	●	Live munitions not allowed
	Counterair	●	Same as above.
	Counterland	●	Same as above.
	Special Operations	●	Same as above.
Adjacent Land Use	Counterland	●	Army Surface Danger Zones from adjacent small arms ranges frequently limit minimum altitude deliveries or prevent mission entirely.

Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Shelby Ranges Assessment Details



Shelby Ranges Assessment Details

Summary Observations					Summary Observations				
No comments.					No comments.				
Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	8.04	8.04	9.90	9.75	Encroachment Scores	8.90	8.90	9.80	9.95
No comments.					No comments.				

Shelby Ranges Detailed Comments

Capability Observations

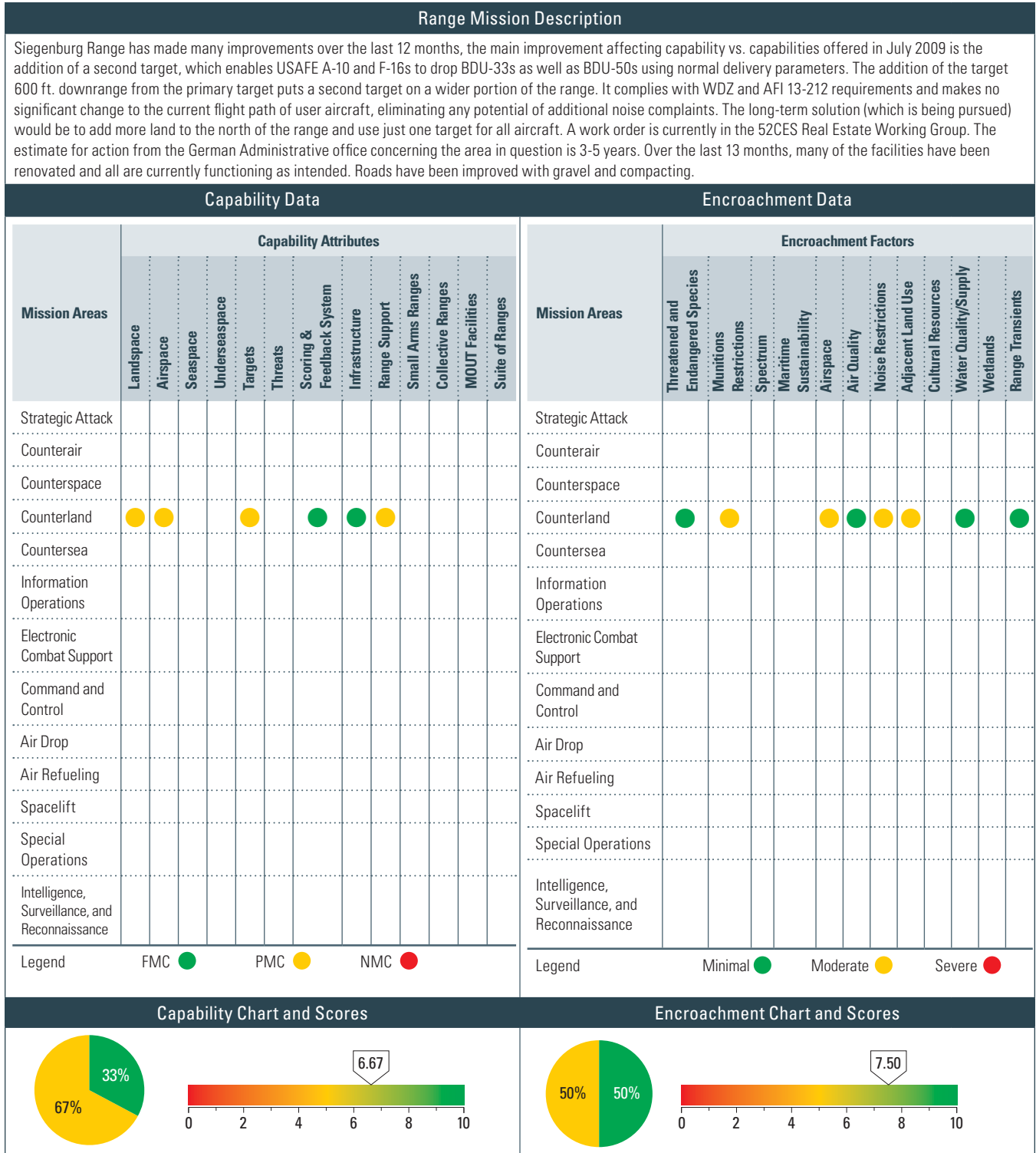
Attributes	Assigned Training Mission	Score	Comments
Airspace	Strategic Attack	●	There is inadequate airspace volume, both vertically and horizontally. This limits the number of aircraft and types of maneuvers allowed. An airspace proposal is in the works to increase vertical airspace in Desoto MOA I and II.
	Counterair	●	Same as above.
Range Support	Strategic Attack	●	There are limited authorized manpower levels. This limits the amount of operations that can take place, and limits the amount and type of target area maintenance and improvement that can be conducted. An upcoming manpower study, date TBD, may alleviate this issue.
	Electronic Combat Support	●	There are limited authorized manpower levels. This limits the amount of operations that can take place. Electronic AFSC personnel are currently stretched thin, and the addition of new EW threats will place an even larger workload on these troops. An upcoming manpower study, date TBD, may alleviate this issue.
	Special Operations	●	Same as above.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Spectrum	Strategic Attack	●	Proximity to Eglin and Tyndall training areas causes overlap in frequency assignments. Threat Emitter frequency authorizations are limited and subject to a lengthy approval process. This limits SADL operations, and results in occasional A-G and A-A frequency overlaps. SADL use must be coordinated with the Joint Gulf Spectrum Manager prior to use, with limited frequencies and power settings. Radio frequency overlaps are coordinated with the NGB Spectrum Manager for frequency reassignment.

Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Siegenberg Assessment Details



Siegenberg Assessment Details

Summary Observations					Summary Observations				
Siegenberg Range provides a functional and scoreable A-G range for NATO aircraft. It also provides a demolition training area for the German Army EOD (7.5 kg max) and USAFE EOD personnel (50 lb max). There is limited ground training on range. The infrastructure in its current state supports operations; however, the ageing phone lines are starting to cause communication problems.					Siegenberg Range complies with safe/accepted standards and operations. Weapons Safety zones have been reviewed and are in compliance with WDZ and AFI 13-212. The airspace limitation is a hindrance, but does not impact the main mission of Siegenberg, which is to provide NATO aircraft with a score able A-G bombing range.				
Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	4.03	4.03	6.67	6.67	Encroachment Scores	5.52	5.52	7.50	7.50
Siegenberg Range has made many improvements over the last 12 months. The main improvement affecting capability vs. capabilities offered in July 2009 is the addition of a second target. The second target enables USAFE A-10 and F-16s to drop BDU-33s as well as BDU-50s using normal delivery parameters. The addition of the target 600 ft. downrange from the primary target puts a second target on a wider portion of the range. It complies with WDZ and AFI 13-212 requirements and makes no significant change to the current flight path of user aircraft, eliminating any potential of additional noise complaints. The long-term solution (which is being pursued) would be to add more land to the north of the range and use just one target for all aircraft. A work order is currently in the 52CES Real Estate Working Group. The estimate for action from the German Administrative office concerning the area in question is 3-5 years. Over the last 13 months, many of the facilities have been renovated and all are currently functioning as intended. Roads have been improved with gravel and compacting.					Over the last year, there have been improvements to the encroachment factors. Amendments to the range regulation will make it more user friendly for USAFE A/C and will not impact noise abatement procedures. During the last environmental survey (Spring 2009), it was noted and documented that the care of the land mass that is Siegenberg Range by 52OSS personnel (in coordination with the assigned Forester) supports many diverse plants and animals, to include some endangered species of both. The ability to strafe would enhance the use of Siegenberg Range and increase usage; however, the range in its current condition does support the range's main mission A-G bombing, along with the ability to score the shots.				

Siegenberg Detailed Comments

Capability Observations

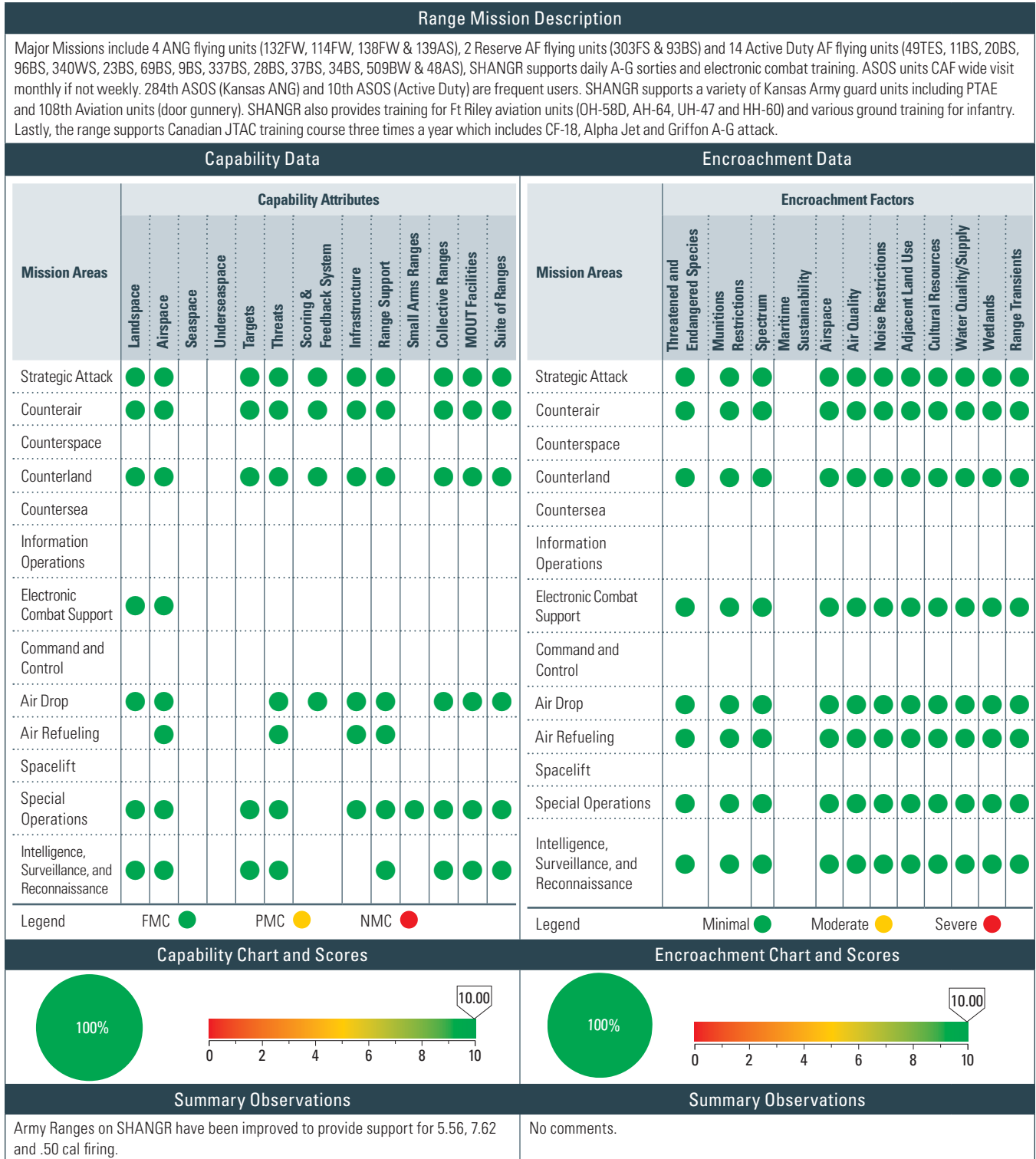
Attributes	Assigned Training Mission	Score	Comments
Landspace	Counterland	●	Landspace restrictions curtail the scope of available training. Aircrews are unable to train with PGMs or live munitions. 52 CES Real Estate Working Group is working to purchase land north of the range.
Airspace	Counterland	●	Range is in close proximity to German Airport, Manching. A/C making bombing passes must be on a 235 heading for deliveries and make immediate left turnouts after release. No corrective actions available, RCO and ATC facility maintain close coordination while range is active to eliminate safety of flight issues.
Targets	Counterland	●	The range only supports point targets and not a tactical array. This does not support training beyond basic surface attack. Efforts to purchase additional land remain ongoing.
Range Support	Counterland	●	Deteriorating phone line from main building to range complex. Limitation on bandwidth from range complex to adjacent facilities. 52CES is trying to solve the problem through workarounds/patches. The eventual/long-term solution is to install fiber optic cable and make the change from analog to digital throughout facilities.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Munitions Restrictions	Counterland	●	Munitions restrictions preclude live munitions and PGMs. There are restricted delivery headings due to the footprint. The restrictions limit aircrew familiarity with fuzing and exposure to PGMs and live munitions. Corrective actions are not feasible without land purchases (currently being pursued by 52 CES).
Airspace	Counterland	●	The range is in close proximity to German Airport, Manching. A/C making bombing passes must be on a 235 heading for deliveries and make immediate left turnouts after release. No corrective actions available. RCO and ATC facility maintain close coordination while range is active to eliminate safety of flight issues.
Noise Restrictions	Counterland	●	Missions need to navigate (zig-zag) around small towns in the area. For instance, USAFE A/C making 30+ degree passes optimum base turn would be on the southern end of the town of Siegenberg vs. before or after the town. The range proposes making an adjustment/amendment to the range regulation showing a hard base of 4500' above the town of Siegenberg along with the advisory to avoid overflying it if possible. This will allow USAFE A/C to make standard patterns. If there is an increase in noise complaints from the town, it will be removed. This does not affect GAF Tornados as they fly a different delivery pattern and avoid the town of Siegenberg.
Adjacent Land Use	Counterland	●	There are several towns and protected forests surround the area. The limited size does not meet the requisite for PGMs, precluding training with these munitions. Remedies are not available.

Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Smoky Hill Assessment Details



Smoky Hill Assessment Details

Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	9.85	9.85	9.85	10.00	Encroachment Scores	10.00	10.00	10.00	10.00
Army Ranges on SHANGR have been improved to provide support for 5.56, 7.62 and .50 cal firing.					No comments.				

Smoky Hill Detailed Comments

Capability Observations

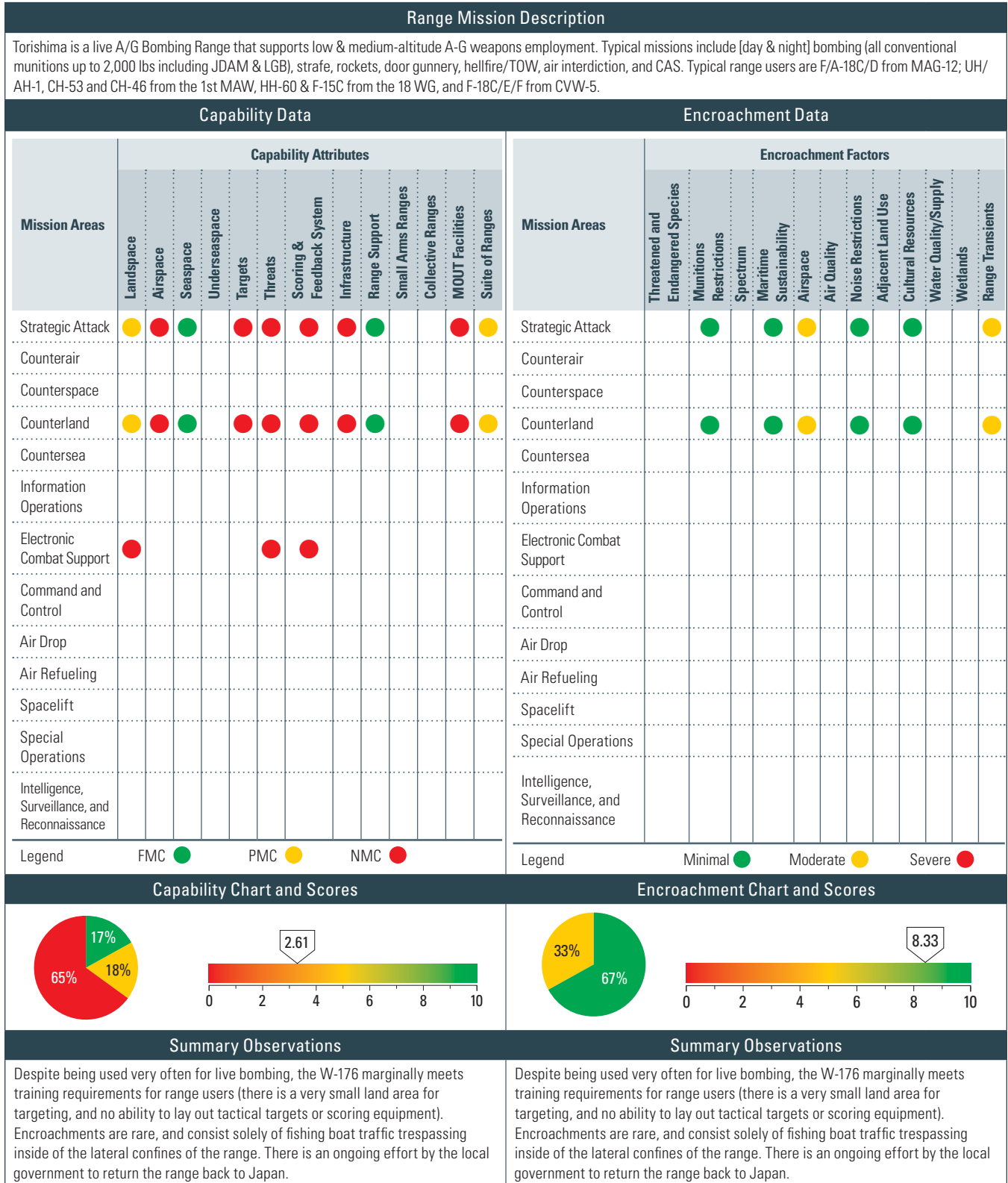
Attributes	Assigned Training Mission	Score	Comments
No comments.			

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
No comments.			

Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Torishima Assessment Details



Torishima Assessment Details

Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	2.0	2.0	4.09	NA	Encroachment Scores	7.5	7.5	7.5	NA
No comments.					Boat encroachments are rare in Torishima, thanks to efforts of the Okinawa Defense Bureau (ODB). The range is a series of islands of rock and sand with varying land area based on tidal conditions.				

Torishima Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Strategic Attack	●	Land size is very small; therefore, aircrews have little to target of tactical significance. There is no feasible action to remedy this situation.
	Counterland	●	Same as above.
	Electronic Combat Support	●	There is no way to put EW emitters on the range due to the small land area, and no power sources; therefore, aircrews cannot train to electronic warfare. There is no feasible action to remedy this situation.
Airspace	Strategic Attack	●	The airspace is extremely small for modern standards; therefore, aircraft are severely limited in attack profiles and weapon employment. The airspace is defined by bi-national agreements from 1972 that are unlikely to change.
	Counterland	●	Same as above.
Targets	Strategic Attack	●	The small land area, tidal conditions, relative remoteness, rough terrain, UXO danger, and typhoon-prone area prevent permanent equipment/targets from being installed. Range users have nothing of tactical significance to target. There is no planned fix for this problem.
	Counterland	●	Same as above.
Threats	Strategic Attack	●	Same as above.
	Counterland	●	Same as above.
	Electronic Combat Support	●	Same as above.
Scoring & Feedback System	Strategic Attack	●	Same as above. In addition, no power sources are available to operate cameras, range-finders, and hit detectors.
	Counterland	●	Same as above.
	Electronic Combat Support	●	Same as above.
Infrastructure	Strategic Attack	●	Same as above.
	Counterland	●	Same as above.
MOUT Facilities	Strategic Attack	●	Same as above.
	Counterland	●	Same as above.
Suite of Ranges	Strategic Attack	●	Same as above. In addition, the range minimally supports current AF use but does not fully support sister Service needs in region nor next generation aircraft requirements. These restrictions are primarily due to range land size and airspace size.
	Counterland	●	Same as above.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Airspace	Strategic Attack	●	The airspace is extremely small for modern standards; therefore, aircraft are severely limited in attack profiles and weapon employment. The airspace is defined by bi-national agreements from 1972 that are unlikely to change.
	Counterland	●	Same as above.
Range Transients	Strategic Attack	●	Though rare, the greatest issue with the range is transient boat traffic preventing ordnance use. Since this is a Class C remote island range, it is nearly impossible to police the area to keep boats out. Users are required to cease fire if a boat enters the 3 nm impact area. The range mitigates this risk by putting out notices to mariners to remain clear of the area, and by working with ODB and booking a backup range (W-174) in case the range can not be fired on, so users can quickly switch without significant training loss. Note: If the range is being used as a simulated range only, this does not impede range use.
	Counterland	●	Same as above.

Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Townsend Assessment Details

Range Mission Description																										
No mission description provided.																										
Capability Data							Encroachment Data																			
Mission Areas	Capability Attributes										Mission Areas	Encroachment Factors														
	Landspace	Airspace	Seaspace	Underspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges		Collective Ranges	MOUT Facilities	Suite of Ranges	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime	Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands
Strategic Attack	●	●			●	●	●	●	●			●	Strategic Attack	●	●	●		●	●	●	●	●	●	●	●	●
Counterair	●	●			●	●	●	●	●			●	Counterair	●	●	●		●	●	●	●	●	●	●	●	●
Counterspace													Counterspace													
Counterland	●	●			●	●	●	●	●	●		●	Counterland	●	●	●		●	●	●	●	●	●	●	●	●
Countersea													Countersea													
Information Operations	●	●			●	●	●	●	●			●	Information Operations	●	●	●		●	●	●	●	●	●	●	●	●
Electronic Combat Support	●	●			●	●	●	●	●			●	Electronic Combat Support	●	●	●		●	●	●	●	●	●	●	●	●
Command and Control	●	●			●	●	●	●	●	●		●	Command and Control	●	●	●		●	●	●	●	●	●	●	●	●
Air Drop													Air Drop													
Air Refueling	●	●				●		●	●				Air Refueling	●	●	●		●	●	●	●	●	●	●	●	●
Spacelift													Spacelift													
Special Operations	●	●			●	●	●	●	●			●	Special Operations	●	●	●		●	●	●	●	●	●	●	●	●
Intelligence, Surveillance, and Reconnaissance	●	●			●	●	●	●	●			●	Intelligence, Surveillance, and Reconnaissance	●	●	●		●	●	●	●	●	●	●	●	●
Legend	FMC ●		PMC ●		NMC ●						Legend	Minimal ●		Moderate ●		Severe ●										
Capability Chart and Scores							Encroachment Chart and Scores																			
Summary Observations							Summary Observations																			
No comments.							No comments.																			
Historical Information, Results, and Future Projections							Historical Information, Results, and Future Projections																			
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011																	
Capability Scores	9.85	9.85	9.72	9.72	Encroachment Scores	9.72	9.72	9.55	9.55																	
No comments.							No comments.																			

Townsend Detailed Comments

Capability Observations

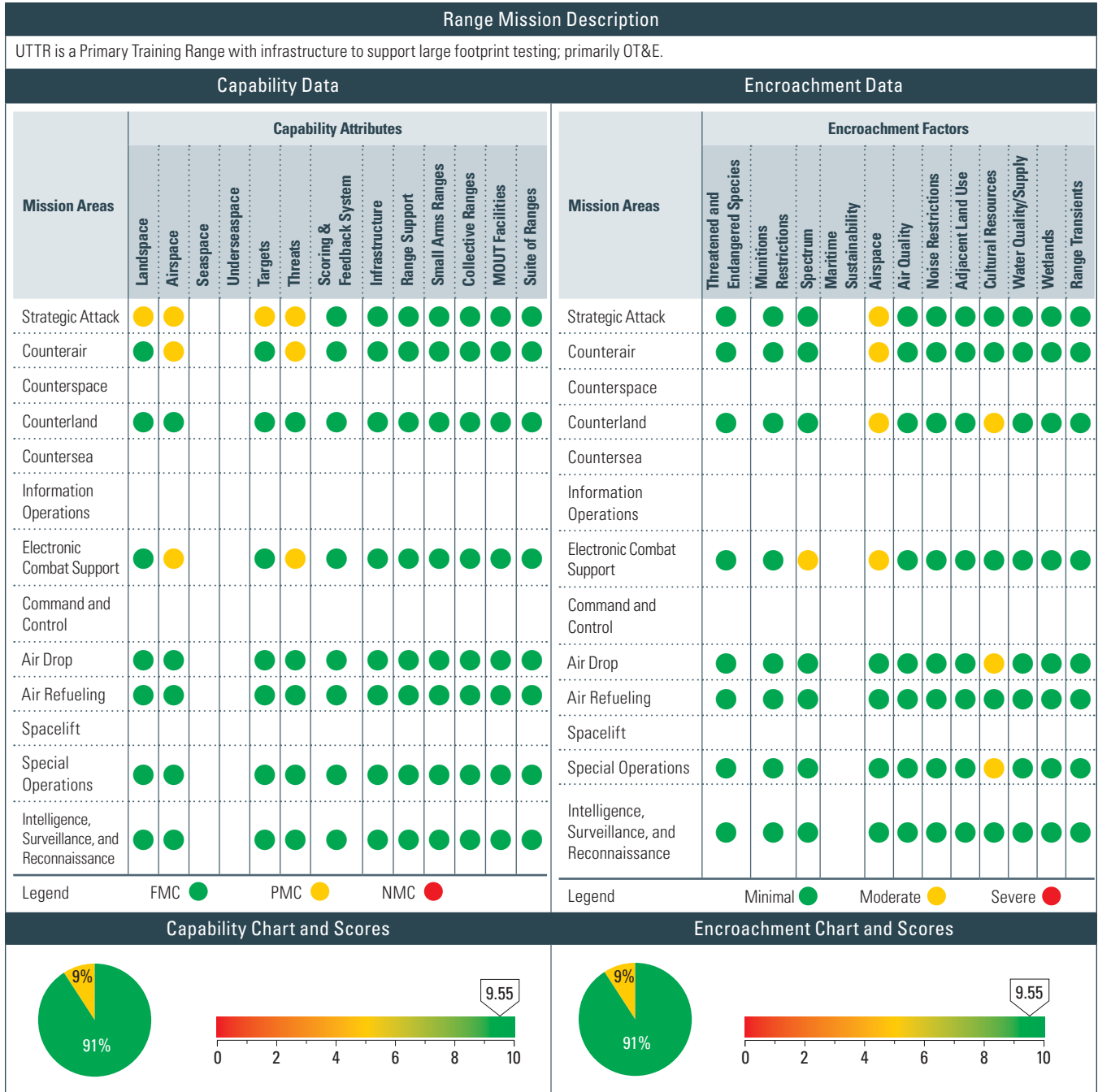
Attributes	Assigned Training Mission	Score	Comments
Landspace	Strategic Attack	●	No comments.
Airspace	Strategic Attack	●	No comments.
	Counterair	●	No comments.
	Air Refueling	●	No comments.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Munitions Restrictions	Strategic Attack	●	No comments.
	Command and Control	●	No comments.
Airspace	Strategic Attack	●	No comments.
	Counterair	●	No comments.
	Air Refueling	●	No comments.
	Intelligence, Surveillance, Reconnaissance	●	No comments.
Noise Restrictions	Strategic Attack	●	No comments.
	Counterland	●	No comments.
	Spacelift	●	No comments.
	Special Operations	●	No comments.

Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Utah Test and Training Range (UTTR) Assessment Details



Utah Test and Training Range (UTTR) Assessment Details

Summary Observations					Summary Observations				
1. 91% of UTTR's range/range complex mission areas are Fully Mission Capable (FMC). 2. Airspace Support is impacted as a direct result of the U.S. Army expansion of Dugway Proving Ground (DPG) beyond operations as a Chem/Bio MRTFB into the realm of Unmanned Aerial Systems (UAS). The majority of these issues can be controlled through cooperative scheduling among DoD users, but continued uncontrolled Army UAS mission expansion will have dire impacts to all mission areas involving UTTR airspace. Additional limitations are also placed on airspace support during cruise missile, WSEP testing. 388 FW is forced to use White Elk ATCAA, which does not support Strategic Attack or Electronic Combat. 3. Landspace support may also be impacted as the Army further restricts Air Force operation on DPG property, which underlies UTTR airspace. 4. Targets and Threats are not available to support next generation aircraft and weapons (F-22, JSF).					1. 91% of the range/range complex mission is free from encroachment factors 2. Overall external encroachment for UTTR is minimal. However, internal encroachment is a direct result of the U.S. Army expansion of DPG beyond operations as a Chem/Bio MRTFB into the realm of UAS. The majority of these issues can be controlled through cooperative scheduling among DoD users, but continued uncontrolled Army UAS mission expansion will have dire impacts to all mission areas involving UTTR airspace. 3. Cultural Resources Encroachment involves a few very small archeological sites, which require avoidance. 4. UTTR has one jurisdictional wetland area of 16,000 acres. It is located in the buffer zone to UTTR, on the western boundary of the range, and has not created encroachment because of its close proximity to the boundary.				
Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	9.89	9.89	9.89	9.55	Encroachment Scores	9.83	9.83	9.83	9.55
No comments.					No comments.				

Utah Test and Training Range (UTTR) Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Strategic Attack	●	Landspace and all associated operations may be severely restricted or eliminated as the Army further restricts Air Force operation on DPG property, which underlies UTTR airspace. Primary impact is to ground operations and AF target complexes on DPG property underlying UTTR airspace.
Airspace	Strategic Attack	●	Operations can be limited during cruise missile WSEP testing, forcing 388th to use White Elk ATCAA, which does not support surface attacks.
	Counterair	●	Same as above.
	Electronic Combat Support	●	Operations can be limited due to rapidly increasing Army UAS usage and, to a lesser degree, during cruise missile. WSEP testing, forcing 388th to use White Elk ATCAA, which does not support surface attacks. The Air Force is aggressively pursuing cooperative scheduling processes; however, continued Army UAS mission expansion is expected to push beyond the limits of efficient scheduling.
Targets	Strategic Attack	●	Landspace and all associated operations may be severely restricted or eliminated as the Army further restricts Air Force operations on DPG property, which underlies UTTR airspace. Primary impacts are to ground operations and AF target complexes on DPG property underlying UTTR airspace.
Threats	Strategic Attack	●	Threat systems and all associated operations may be severely restricted or eliminated as the Army further restricts Air Force operations on DPG property which underlies UTTR airspace. The primary impact will be reduced threat availability. The range is presently coordinating with the Army and seeking alternative threat locations on AF property.
	Counterair	●	Same as above.
	Electronic Combat Support	●	Same as above.

Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Utah Test and Training Range (UTTR) Detailed Comments

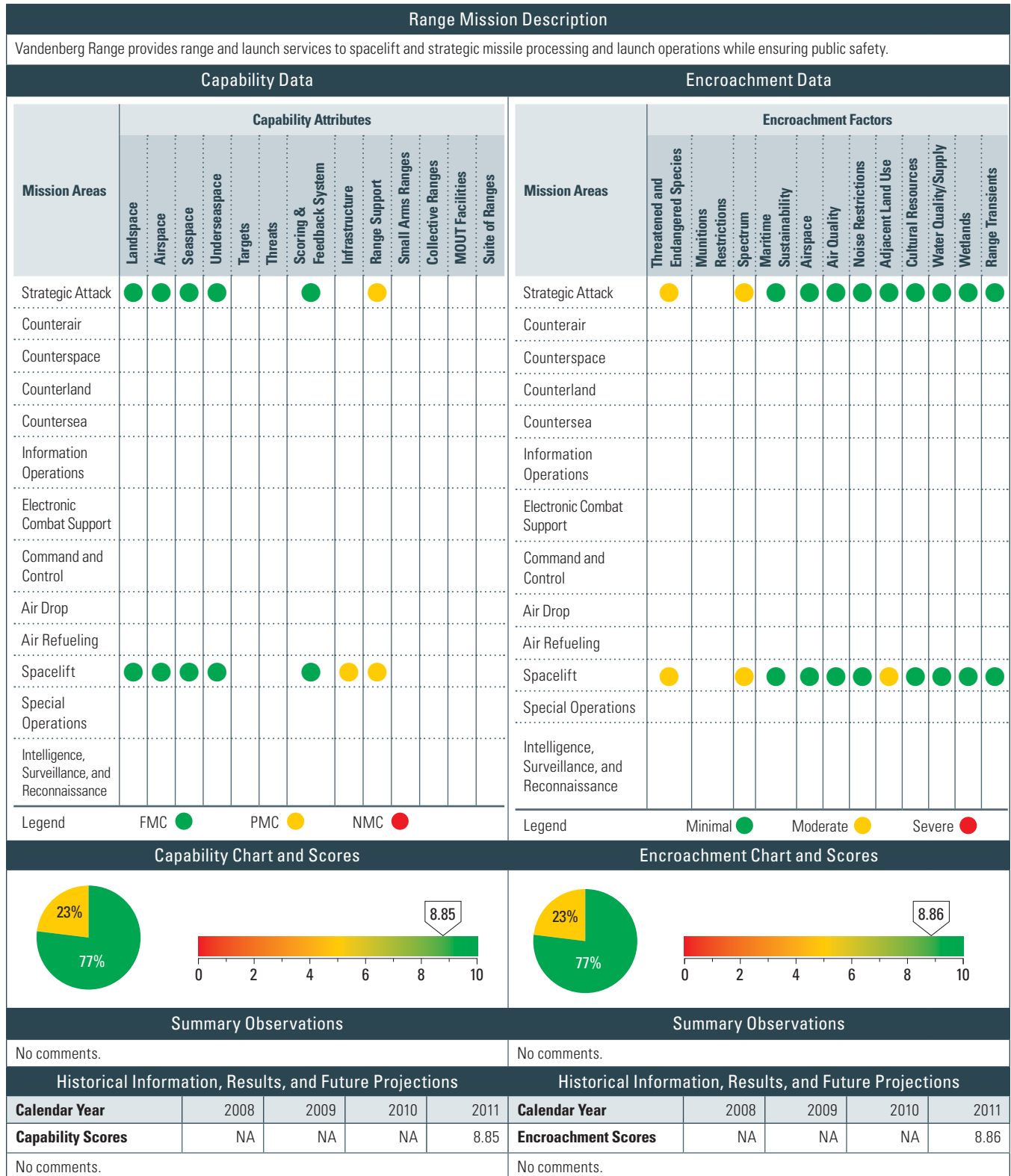
Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Spectrum	Electronic Combat Support	●	Competing frequency spectrum usage from adjoining U.S. Army DPG requires ever greater vigilance to ensure non-interference. Army users typically schedule frequency usage by days or weeks instead of specific hourly requirements, which greatly limits utilization. Increases in the density of spectrum dependent equipment operating in the same bands result in increased operational conflict and a higher potential for interference. A DoD-wide prioritization would be beneficial. Additionally, public and private development, to include energy initiatives, are increasingly utilizing COTS wireless equipment. This is beginning to cause spectrum encroachment issues, which will only increase in future years.
Airspace	Strategic Attack	●	Competing airspace usage from adjoining U.S. Army DPG requires ever greater vigilance to ensure non-interference. Army usage has greatly increased limiting utilization by other users. The expanding mission of DPG outside the scope of its MRTFB Chem/Bio T&E capabilities will significantly impact UTTR operations.
	Counterair	●	Same as above.
	Counterland	●	Same as above.
Cultural Resources	Electronic Combat Support	●	Same as above.
	Counterland	●	Archeological sites require avoidance. This avoidance has not and is not expected to limit access to training, because they are very small areas within the UTTR and avoidance is easily achieved.
	Air Drop	●	Same as above.
	Special Operations	●	Same as above.

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Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Vandenberg Assessment Details



Vandenberg Detailed Comments

Capability Observations

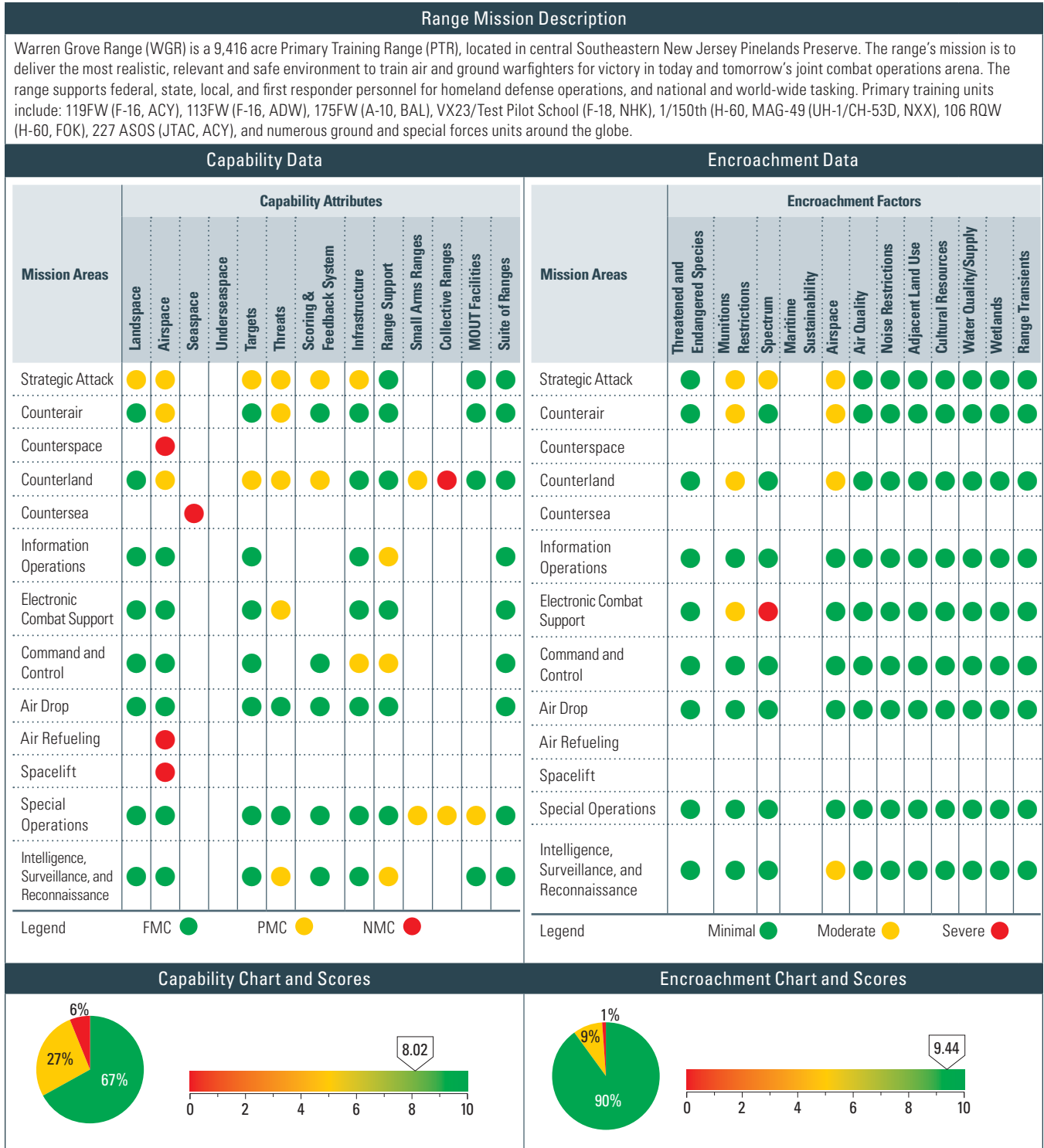
Attributes	Assigned Training Mission	Score	Comments
Infrastructure	Spacelift	●	No comments.
Range Support	Strategic Attack	●	No comments.
	Spacelift	●	No comments.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Threatened & Endangered Species	Strategic Attack	●	No comments.
	Spacelift	●	No comments.
Spectrum	Strategic Attack	●	No comments.
	Spacelift	●	No comments.
Adjacent Land Use	Spacelift	●	No comments.

Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Warren Grove Assessment Details



Warren Grove Assessment Details

Summary Observations					Summary Observations				
1. Munitions restrictions and airspace limits are the largest factors affecting WGR’s ability to provide best training environment in given areas. 2. A no-drop scoring/feedback system would eliminate restrictions imposed by munitions restrictions. 3. Outstanding MOUT facility is tremendous asset in indicated areas (4). WGR does not have a suite of ranges, so does not provide added benefit to these areas, but does not detract as it is not a competing issue.					No comments.				
Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	NA	NA	9.81	8.02	Encroachment Scores	NA	NA	9.74	9.44
No comments.					No comments.				

Warren Grove Range Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Strategic Attack	●	Evaluating if range-owned land is large enough to permit use of IAMS weapons. Currently, the range has limited use of LGBs. Actively pursuing additional land acquisition via REPI and partnerships with local conservation organizations IAW RAICUZ. Ongoing.
Airspace	Strategic Attack	●	Limited airspace restricts types and tactics of Strategic Attack (SA) training. A high altitude expansion initiative of R-5002 airspace is currently under FAA review. When the expansion is approved, this will greatly enhance the type and tactics of SA training available to meet the needs of current and future aircraft.
	Counterair	●	Same as above.
	Counterspace	●	There is insufficient airspace to conduct any Counterspace training. There is no feasible solution proposed.
	Counterland	●	Limited airspace restricts types and tactics of Counterland training. A high altitude expansion initiative of R-5002 airspace is currently under FAA review. When the expansion is approved, it will greatly enhance the type and tactics of Counterland training available to meet the needs of current and future aircraft.
	Air Refueling	●	There is insufficient airspace to conduct any Air Refueling training.
	Spacelift	●	There is insufficient airspace to conduct any Spacelift training.
Seaspace	Countersea	●	There is no Seaspace at WGR; it is an exclusive land range; therefore, the range cannot conduct Countersea training.
Targets	Strategic Attack	●	The range does not possess targets with fidelity sufficient for 5th generation aircraft training.
	Counterland	●	The requirement for a moving strafe target is currently not being met. Target costs have prohibited the ability to develop a moving strafe target. A moving target of local design is currently under development and the efficacy of the design should be validated by late CY2010/early CY2011.
Threats	Strategic Attack	●	There is a lack of available frequency authorization, which limits the ability of WGR to present tactical threat array for threats present in these areas. There is no known date for a solution.
	Counterair	●	Same as above.
	Counterland	●	Same as above.
	Electronic Combat Support	●	Same as above.
	Intelligence, Surveillance and Reconnaissance	●	Same as above.
Scoring & Feedback System	Strategic Attack	●	A lack of IR scoring capability limits the ability to score night weapon impacts or provide valid aircrew feedback. The range is awaiting funding for night/IR WISS scoring capability.
	Counterland	●	Same as above.

Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Warren Grove Range Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Infrastructure	Strategic Attack	●	The lack of a target fabrication facility limits the range’s ability to construct a multitude of targets for extensive Strategic Attack training. This limits fabrication and versatility of the target array. A package has been submitted to the base civil engineer for construction of a target fabrication facility, but the facility is currently unfunded.
	Command and Control	●	The current main tower and communications suite is antiquated and in need of replacement by a building of greater functional configuration, visibility, and cost-effective construction. A package was submitted to the base civil engineer for construction of a new main tower, but construction of the facility is currently unfunded.
Range Support	Information Operations	●	WGR is not currently connected to DTOC, limiting the ability to train in the Decide and Assess areas of the war fighting cycles. The range is pursuing SADL/Gateway connectivity, but remedy date is unknown.
	Command and Control	●	Same as above.
	Intelligence, Surveillance and Reconnaissance	●	Same as above.
Small Arms Ranges	Counterland	●	WGR does not currently have a Small Arms range, although one is in development. The lack of range limits training opportunities of ground force employment.
	Special Operations	●	Same as above.
Collective Ranges	Counterland	●	WGR is not a collective range; there is no land mass to accommodate a collective range.
	Special Operations	●	WGR is not a collective range; there is no land mass to accommodate large unit level battlefield operations. The range has the ability to train team size JTAC units for battlefield operations.
MOUT Facilities	Special Operations	●	MOUT targets are outstanding from the air, but are not the best for special operations forces. New area for ground forces is under development. The targeted construction completion date is summer FY2011.

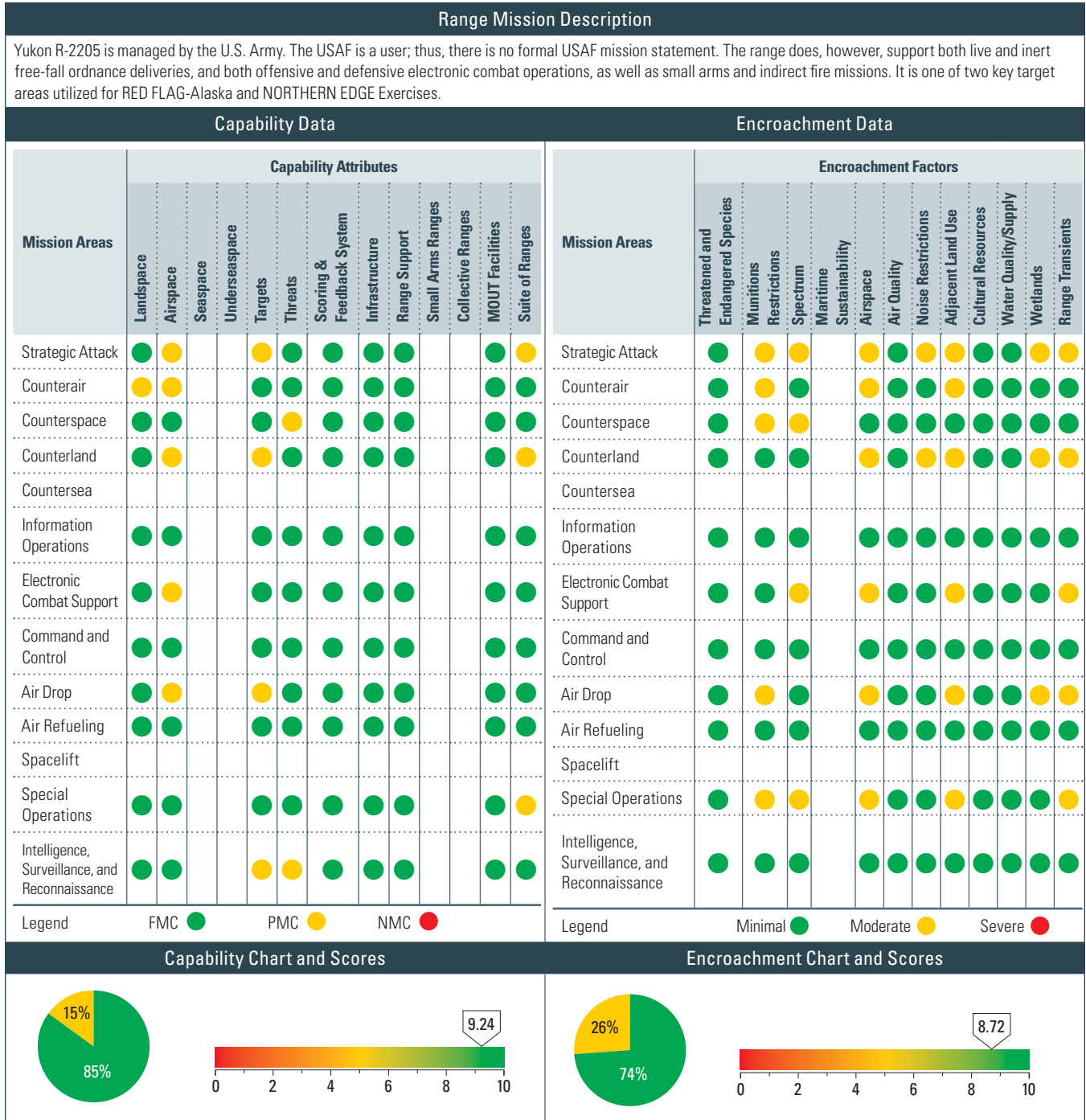
Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Munitions Restrictions	Strategic Attack	●	The ability to expend weapons with marking charges may be restricted in the future, restricting the type of training munitions available for Strategic Attack, Counterair, and Counterland training.
	Counterair	●	Same as above.
	Counterland	●	Same as above.
	Electronic Combat Support	●	Chaff is not permitted. Aircrews are unable to expend chaff during self-protect maneuvering. No relief anticipated.
Spectrum	Strategic Attack	●	Based on the size of restricted airspace and proximity to high volume civil airways, chaff is not permitted. Aircrews are unable to expend chaff during self-protect maneuvering. No relief anticipated.
	Electronic Combat Support	●	The lack of approved WGR temporary or permanent frequency authorization limits the range’s ability to execute EC (EA or EP) training. The range cannot provide threat simulations for aircrew. There is no known relief date.
Airspace	Strategic Attack	●	The vertical and horizontal limits to R-5002 airspace limit the ability to provide a tactical training environment for operations. A high altitude expansion initiative of R-5002 airspace is currently under FAA review. When the expansion is approved, it will greatly enhance type and tactics of SA training available to meet the needs of current and future aircraft.
	Counterair	●	Same as above.
	Counterland	●	Same as above.
	Intelligence, Surveillance and Reconnaissance	●	Same as above.

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Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Yukon Assessment Details



Yukon Assessment Details

Summary Observations					Summary Observations				
<p>The Capability of Yukon - R-2205 to meet its missions can be summarized into three main areas of concern: (1) its size, (2) scheduling/usage conflicts, and (3) the nature of terrain (vegetation/topography/climate) and resulting ordnance restrictions. R-2205 lays within remote arctic mountains, tundra plains, and steep valleys. As such, developing and maintaining road access is logistically challenging. Therefore, targets, infrastructures, and threats can be confined. The second limiting factor is the U.S. Army and the Air Force desiring use at the same time. Rarely is joint use granted. If it is, it is rarely in a cohesive joint training manner as the Air Force is only a user group and does not manage the lands. The impact areas of R-2205 may be sensitive to forest fires, and/or the nearness to FAA terminals may impact expendable usages.</p>					<p>Encroachment in its classic sense has an overall minimal impact on R-2205. It is bordered on the west by other military lands, and to the south and east by rugged and remote terrains. These rugged and remote lands are still accessible by the civilian population, but require aircraft, boats, and/or ATVs to access. The land immediately to the north is rugged, but only provides a modest buffer. There is civilian build up 5-10 miles north and northwest, but it is not much of an impact. The range is road-accessible and can see heavy civilian access during hunting seasons. Chaff can be restricted when winds aloft drift chaff plumes into FAA-controlled airspaces. Flares can be severely restricted during dry summer months. The most prevalent encroachment issue centers on the two main Services, the Army and the Air Force, and their desires to use these small restricted spaces (air/ground) simultaneously and without mutually inclusive goals. Training events rarely are joint in nature and, as such, conflict in overall compatibilities and use of the range.</p>				
Historical Information, Results, and Future Projections					Historical Information, Results, and Future Projections				
Calendar Year	2008	2009	2010	2011	Calendar Year	2008	2009	2010	2011
Capability Scores	9.17	9.17	9.24	NA	Encroachment Scores	8.90	8.90	8.88	NA
No comments.					No comments.				

Yukon Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Counterair	●	The landspace does not necessarily correspond to effective Counterair training and is too small for large scale operations. There is no remedy.
	Strategic Attack	●	The range has excellent targets sets, but they are in confined areas. The land/air spaces are too small to support large-scale operations. Small unit tactics of 4-ships or less is possible. If combining with surrounding MOA airspaces, then the range is more than adequate for said operations. Dual use with Army range managers is still a challenge without a foreseeable solution.
Airspace	Counterair	●	Same as above.
	Counterland	●	Same as above.
	Electronic Combat Support	●	There is small restricted airspace for large-scale exercises with multiple platforms; chaff is limited by restrictions as noted in observations. Dual use with Army land managers is challenging. There is no current solution, but the Air Force continues to work with the Army to improve dual use issues.
	Air Drop	●	The Airspace is too small on its own to support large scale operations. If combining with surrounding MOA Airspaces, then it is more than adequate for said operations. Dual use with Army range managers is still a challenge without a foreseeable solution.
Targets	Strategic Attack	●	Poor road conditions and range access limit type of targets/materials. The range is unable to achieve EOD in 7 month winter periods, so there is a short target build season that conflicts with summer flight operations. There is a sensitive tundra in most areas surrounding existing target sets; hence, there is limited target variety/replenishment/expansion capability. There is no remedy.
	Counterland	●	Same as above.
	Air Drop	●	Same as above.
	Intelligence, Surveillance, and Reconnaissance	●	Same as above.
Threats	Counterspace	●	GPS jamming is severely restricted.
	Intelligence, Surveillance, and Reconnaissance	●	The range offers high O&M/manpower intensive IR/mobile threats and excellent EW/EC threats. The Air Force continues to procure easier/more modular IR/EO/mobile threat systems.
Suite of Ranges	Strategic Attack	●	There is an overall limitation on the size of areas available for current weapon types, which limits full spectrum ordnance deliveries. The Air Force continues to work WDC products via ACC to refine footprint accuracy, and with the Army for realistic imposed restrictions.
	Counterland	●	Same as above.
	Special Operations	●	Same as above.

Figure 3-39 Air Force Capability and Encroachment Assessment Detail (continued)

Yukon Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Munitions Restrictions	Strategic Attack	●	Chaff and flare are limited by restrictions as noted in observations. Significant ordnance restrictions due to Army-directed footprint overlayment of manned threat sites and range infrastructure. This limits full spectrum self defense EC procedures and/or forward firing and free-fall munitions training. There is no remedy.
	Counterair	●	The small size of R-2205 limits full spectrum counterair training. Tactics and training are limited to small numbers. No live air-to-air ordnance deliveries. There are moderate chaff and flare restrictions in summer months.
	Counterspace	●	GPS jamming is highly restricted.
	Air Drop	●	There are limited air land/air drop zones, which restricts variety and presents tactical challenges. There is no remedy.
	Special Operations	●	There are restricted door gunnery patterns and highly restricted personnel movements for OPFOR during simultaneous JCAS/live fire/free-fall ordnance delivery events, which limits realistic TTP practice. There is no remedy.
Spectrum	Strategic Attack	●	Limited spectrum is available for IO and IW warfare. There is no remedy.
	Counterspace	●	GPS jamming is highly restricted.
	Electronic Combat Support	●	There are limitations to the use of spectrum hampers threat engagement and C4ISR training. The range is unable to exercise full systems usage. The solution to this is detailed and persistent application procedures and processes through AFFMA to garner more spectrum approvals. Some gains have been made to allow use of two previously non-allowed systems.
	Special Operations	●	Limited spectrum is available for unique communications needs. There is no resident SATCOM or GPS-burst capability.
Airspace	Strategic Attack	●	There is a relatively small restricted area for large-scale exercises with multiple platforms/weapons with no remedy. This is suitable if combining R-2205 with surrounding MOA airspaces. There are good target sets once inside airspace.
	Counterair	●	Same as above.
	Counterland	●	Same as above. In addition, the range can be optimized for JCAS operations, but is limited to 4-ships if no MOA airspaces.
	Electronic Combat Support	●	There is a relatively small restricted area for large scale exercises with multiple platforms/weapons; no remedy.
	Air Drop	●	There is limited tactical airlift/airdrop capability due to limited airspaces. This requires the surrounding MOA activations to provide enough maneuver spaces. There may be conflicts if Army UAV operations are ongoing for specified DZ/LZs.
	Special Operations	●	Same as above.
Noise Restrictions	Strategic Attack	●	The Fairbanks population is near the western border of area. There is no remedy.
	Counterland	●	Same as above.
Adjacent Land Use	Strategic Attack	●	The Fairbanks area, MOA edge, and airways border the western and northern borders. The southern border is a critical flyway for waterfowl and civilian aviation. There is no remedy.
	Counterair	●	Same as above.
	Counterland	●	Same as above.
	Electronic Combat Support	●	Same as above.
	Air Drop	●	Same as above.
	Special Operations	●	Same as above.
Wetlands	Strategic Attack	●	There are sensitive tundra areas in and around the range, limiting emplacement of realistic targets and/or EC training equipment to small impact areas. There is no remedy.
	Counterland	●	Same as above.
	Air Drop	●	Same as above.
Range Transients	Strategic Attack	●	Army restrictions on USAF/other Joint personnel movements/siting on-range inhibits or hampers realistic training. In addition, civilian access during hunting season impacts usage of equipment and ordnance expenditures.
	Counterland	●	Same as above.
	Electronic Combat Support	●	Same as above.
	Air Drop	●	Same as above.
	Special Operations	●	Same as above.

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Table 3-13 Air Force Range Capability and Encroachment Assessment Comparison

Range Name	Capability Score	Encroachment Score
Adirondack	7.27	8.94
Airburst	8.90	10.00
Atterbury	9.29	8.23
Avon Park	8.81	9.57
Barry M. Goldwater Range	8.77	9.13
Blair Lake	8.43	8.86
Bollen	8.77	9.15
Cannon	5.09	9.11
Claiborne	6.67	10.00
Dare County Ranges	10.00	10.00
Draughon	5.65	7.58

Table 3-13 Air Force Range Capability and Encroachment Assessment Comparison (continued)

Range Name	Capability Score	Encroachment Score
Edwards Ranges	8.83	8.43
Eglin Ranges	8.07	8.49
Falcon	9.79	10.00
Grand Bay	9.91	9.92
Grayling	9.44	9.49
Hardwood	9.53	9.24
Holloman	9.41	9.88
Jefferson	8.97	8.46
McMullen	7.94	9.77
Melrose	9.50	9.72
Mountain Home Ranges	10.00	10.00

Table 3-13 Air Force Range Capability and Encroachment Assessment Comparison (continued)

Range Name	Capability Score	Encroachment Score
NTTR	8.31	8.71
Oklahoma	9.14	9.17
Patrick	9.62	7.08
Pilsung	7.21	9.25
Poinsett	9.77	9.92
Polygone	7.62	8.50
Razorback	9.52	9.73
Shelby Ranges	9.75	9.95
Siegenburg	6.67	7.50
Smoky Hill	10.00	10.00
Torishima	2.61	8.33

Table 3-13 Air Force Range Capability and Encroachment Assessment Comparison (continued)

Range Name	Capability Score	Encroachment Score
Townsend	9.72	9.55
UTTR	9.55	9.55
Vandenberg	8.85	8.86
Warren Grove	8.02	9.44
Yukon	9.24	8.72

3.3 Summary and Conclusion

DoD and the Military Services have continued to improve their ability to evaluate the status of training ranges in a consistent and reliable manner that is comparable over time, thereby enhancing informed decision making. Decision makers, planners, and analysts can use the capabilities and encroachment data to develop strategies to mitigate range and training area shortfalls, bring required capabilities to standards, and address negative impacts from encroachment. These benefits will help improve range sustainment plans and investment priorities.

The ability to aggregate data in a common framework across Military Service mission areas will allow OSD and the Military Services to analyze range data in a number of ways and at various levels, which will help decision makers identify trends and assess range sustainability. DoD will continue to provide necessary guidance to improve assessment methods, data quality, and reliability, and to exercise its oversight responsibilities to ensure ranges and operational areas meet training requirements.

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4

Department of Defense's Comprehensive Training Range Sustainment Plan

NDA Section 366(a)(1) requires DoD to develop a comprehensive training range sustainment plan. DoD has established a complete range planning and management program under its SRI, which addresses this requirement.

The SRI is a multi-faceted program that has reorganized the way DoD identifies and responds to increasing constraints on realistic training.¹³ The SRI focuses directly on training, policy, people, and resource needs by employing the concept of sustainability as a guiding principle. DoD reinvigorated existing relationships and initiated new collaborative partnering and outreach efforts with a wide array of stakeholders, including communities surrounding its ranges and installations; state and federal regulatory, planning, and infrastructure agencies; Native American tribes; and non-governmental organizations (NGOs).

The SRI provides a flexible and adaptive planning framework that guides continuing, cooperative, and coordinated range sustainment efforts between DoD and the Military Services, as well as mechanisms that facilitate interaction with local, state, regional, and other federal agencies and NGOs. The program includes an array of policy, organizational, programming, outreach, legislative, and related efforts to address near-term training requirements and long-term range and installation sustainability. This broad-based framework:

- ▶ Describes individual and joint range requirements and needs
- ▶ Identifies Military Service-specific and DoD-wide encroachment and range sustainability issues
- ▶ Evaluates the availability, accessibility, and usability of existing range resources

- ▶ Develops overarching program goals, articulates the actions and activities necessary to achieve them, and establishes milestones to validate progress
- ▶ Initiates legislative, regulatory, and outreach program activities, as required

This chapter of the FY2012 Sustainable Ranges Report (SRR) addresses FY2003 NDA Sections 366(a)(4)(c) to report on such sustainable range initiatives.

4.1 Management Structure

Both OSD and the Military Services have key roles in implementing the SRI to create a comprehensive approach to training range sustainability. Those key roles, framed in large part by the requirements of U.S.C. Title 10, are described in Sections 4.1.1 and 4.1.2 of this report.

4.1.1 Office of the Secretary of Defense (OSD)

ODUSD(P&R) has lead responsibility for developing and overseeing implementation of DoD's comprehensive training range sustainment plan. To ensure that the full spectrum of readiness issues are considered, ODUSD(P&R) works with the Senior Readiness Oversight Council (SROC). This is the DoD decision-making body and advisory board for matters pertaining to readiness. The SROC's responsibilities include reviewing range sustainment policies and issues, overseeing readiness-

¹³ Although this report only focuses on the training aspects of test ranges, the SRI is concerned with both training and test aspects of all ranges.

related activities, providing recommendations to the Secretary of Defense on readiness policy matters, and providing reports on current and projected readiness issues.¹⁴

The Sustainable Ranges Overarching Integrated Product Team (OIPT) reports to the SROC on range sustainment issues. This OIPT operates on two levels: The OIPT and Working IPT (WIPT). The OIPT coordinates and helps develop range sustainment strategies. The WIPT, co-chaired by the Office of the Deputy Assistant Secretary of Defense for Readiness (ODASD(R)), the Office of the Deputy Under Secretary of Defense for Installations and Environment (ODUSD(I&E)), and the Office of the Director, Operational Test and Evaluation (DOT&E), meets regularly to discuss relevant issues, develop actions, and report to the OIPT. Both the OIPT and WIPT work collaboratively with other DoD and Military Service organizations on range sustainability issues.

4.1.2 The Military Services

While the DUSD(P&R) is responsible for establishing fundamental training policy and oversight of DoD-wide training range sustainment activities, the Military Services implement most sustainable range initiatives. Each Military Service has one (or more) headquarters-level office responsible for overseeing the development and operational implementation of Military Service-specific range sustainment policies and programs. Table 4-1^{15,16} lists the offices responsible for training ranges within OSD and the Military Services.

4.2 Goals, Actions, and Milestones

DoD has used a set of shared goals and milestones since the 2006 SRR. These goals and milestones were, at the time, intended to guide range sustainability activities through FY2011. By using a common framework, DoD and the Military Services were able to make meaningful comparisons and measurements of past performance and progress towards achieving their training and range sustainability objectives. DoD determined during FY2009 that many of the goals and milestones used in previous reports had either been overcome by other events or outlived their relevance.

The 2010 SRR established new goals that are measurable, attainable, and more closely aligned to the seven sustainable ranges IPT focus areas. The following graphic reflects the new goals.

Using these goals as a common framework, each Military Service developed a set of milestones and actions to achieve common objectives. Tables 4-2 through 4-8 show the current status of the milestones. Based on annual assessment data,

2012 Goals	
Goal 1	Mitigate encroachment pressures on training activities from competing operating space (land, air, sea, space, and cyber) uses.
Goal 2	Mitigate frequency spectrum competition.
Goal 3	Meet military airspace challenges.
Goal 4	Manage increasing military demand for range space.
Goal 5	Address impacts from new energy infrastructure and renewable energy impacts.
Goal 6	Anticipate climate change impacts.
Goal 7	Sustain excellence in environmental stewardship.

Table 4-1 Responsible Training Range Offices within OSD and the Military Departments

Milestones	Actions Taken to Achieve the Milestone
Office of the Secretary of Defense (OSD)	Office of the Under Secretary of Defense for Personnel and Readiness Deputy Assistant Secretary of Defense (Readiness) Director, Training Readiness and Strategy
Army	Office of the Deputy Chief of Staff, G-3/5/7, Training Directorate Training Support Systems Division (DAMO-TRS) Assistant Chief of Staff for Installation Management (ACSIM)
Marine Corps	Commanding General, Training, and Education Command Range and Training Area Management Division ¹⁴ Range Modernization and Investment Range Operation and Maintenance Deputy Commandant for Installations and Logistics Facilities and Services Division ¹⁵ Environmental Encroachment
Navy	Office of the Chief of Naval Operations, Materiel Readiness, and Logistics (N4) Fleet Readiness Division (N43) Range Modernization and Investment (N433) and Range Operation and Maintenance (N433) Environmental Readiness Division (N45) Operational Environmental Readiness Planning Branch (N456) Commander, Naval Installations Command (CNIC)/ Ashore Readiness Division (N46)
Air Force	Deputy Chief of Staff for Operations, Plans, and Requirements HQ USAF Bases, Ranges and Airspace/A30-BAR

programmatic goals and milestones will be reviewed and updated annually to ensure the SRI continues to effectively address potential future training requirements and constraints.

¹⁴ Guidance for FY2006 – FY2011 Sustainable Ranges Programs, memorandum from the Under Secretary of Defense for Personnel and Readiness, 26 June 2003.

¹⁵ Executive Agent for Marine Corps Ranges

¹⁶ Executive Agent for Marine Corps Installations

Table 4-2 Encroachment Actions and Milestones

Goal Mitigate Encroachment Pressures on Training Activities from Competing Operating Space (land, air, sea, space, and cyber issues)

Actions	Milestones	Status	Additional Service Comments
Army			
Review and maintain Installation Range Complex Master Plans (RCMPs)	▶ Finalize 100% of RCMPs for required installations by 4th Quarter FY2011	Completed	Completed in 2011
	▶ Review and update RCMPs annually for required installations	Ongoing	100% of installation RCMPs were updated and approved in 4th Quarter FY2011.
Execute the Army Compatible Use Buffer Zone Program to protect the military mission and offset training restrictions.	▶ Implement ACUBs at installations to protect training, testing, and operations from encroachment effects, permanently protecting acreage of land from incompatible land uses. Transition management of the ACUB program from environmental to operations by 2nd Quarter FY2012	Ongoing	As of 2011, ACUBs have been implemented at 30 locations and more than 130,000 acres of land have been protected from incompatible use
	▶ Continue programming validated environmental requirements to support ACUBs during POM 14-18		
	▶ Document a consistent and clearly defined ACUB strategy, including metrics for program success and prioritization measures by 4th Quarter FY11	Ongoing	The HQDA ACUB Coordinator position was filled 2nd quarter FY2011; the timeline for developing this strategy is dependent upon finalization of an Army Audit Agency (AAA) audit and to date the AAA audit has not been finalized
Implement a focused community research process to: provide the Army with a research-based understanding of community views regarding operational and perceived impacts of Army installations and training activities; and demonstrate an interest in public opinions, making the public part of the decision-making process.	▶ Complete two additional installation community research efforts by 4th Quarter FY2011	Completed	Community research efforts were conducted at Fort Sill, OK and Fort Stewart, GA in 2011
	▶ Complete two additional installation community research efforts by 4th Quarter FY2012	Ongoing	
	▶ Draft and implement an on-going strategy to continually update community research findings at major training installations by 3rd Quarter FY2012	Slipped	The timeline for drafting and implementing this strategy slipped due to lack of funding for strategy development
Execute State Legislative Initiatives	▶ Conduct reviews with stakeholders, through the Army Office of Environmental and Government Affairs to discuss adverse impacts of incompatible land uses near military installations and gain their support to address these issues	Ongoing	
Marine Corps			
Continue to analyze and assess encroachment, quantitatively and qualitatively, at the installation, regional, and Service levels	▶ Include encroachment analysis in Regional Range Complex Management Plans (RCMPs)	Ongoing	One of three RCMPs have been completed. One has slipped, and another is presently being planned. Details are included by region
	▶ Marine Corps Installations (MCI) -West	Ongoing	
	▶ MCI-East (planned FY 2012)	Slipped	Factors influencing re-scheduled plan to initiate regional RCMP include pending institutional reorganizations, pending development of modified metrics for range assessment, and funding priorities
	▶ MCI-PAC (planned FY2012)	Ongoing	
	▶ Execute Encroachment Control Plans (ECPs)	Ongoing	Eight of 15 ECPs have been completed. Five ECPs are ongoing and two are in the planning stages

Table 4-2 Encroachment Actions and Milestones (continued)

Goal Mitigate Encroachment Pressures on Training Activities from Competing Operating Space (land, air, sea, space, and cyber issues)

Actions	Milestones	Status	Additional Service Comments
Marine Corps (continued)			
Continue to analyze and assess encroachment, quantitatively and qualitatively, at the installation, regional, and Service levels (continued)	ECPs completed: <ul style="list-style-type: none"> ▶ Marine Corps Air Station (MCAS) Yuma ▶ Marine Corps Air Ground Combat Center (MCAGCC) Twentynine Palms ▶ Marine Corps Base (MCB) Quantico ▶ MCAS Cherry Point ▶ MCAS Beaufort/Townsend Range ▶ MCB Camp Lejeune/MCAS New River ▶ Blount Island Command ▶ MCLB Albany 	Complete	
	ECP in progress: <ul style="list-style-type: none"> ▶ Joint (Navy/Marine Corps) Guam ▶ MCB Camp Pendleton ▶ MCAS Miramar ▶ MCI-WEST ▶ MCB Hawaii 	Ongoing	In progress during FY2012
	ECPs planned: <ul style="list-style-type: none"> ▶ Marine Corps Mountain Warfare Training Center Bridgeport ▶ MCLB Barstow 	Planned	Planned for FY2012
	Facilitate/support regional inter-agency and inter-governmental partnerships: <ul style="list-style-type: none"> ▶ Western Regional Partnership ▶ Southeast Regional Partnership for Planning and Sustainability 	Ongoing	
Continue to evaluate, plan for, and execute encroachment partnering opportunities per 10 U.S.C. § 2684a	<ul style="list-style-type: none"> ▶ Execute buffer lands acquisition 		Partnership identified in the updated information is result of ongoing regional inter-agency coordination, in furtherance of the objectives of the REPI program, and in coordination with the SERPAS initiative
	MCI—National Capital Region <ul style="list-style-type: none"> ▶ Quantico (302 acres [ac]) MCI—EAST <ul style="list-style-type: none"> ▶ MCAS Beaufort (1,622 ac) ▶ Townsend Range (22,841 ac) ▶ MCAS Cherry Point (1,495 ac) ▶ Camp Lejeune (1,793 ac) ▶ Piney Island Range (3,185 ac) MCI—WEST <ul style="list-style-type: none"> ▶ Camp Pendleton (1,291 ac) ▶ Twentynine Palms (958 ac) 	Complete	32 Total complete to date
	<ul style="list-style-type: none"> ▶ Initiated partnership with U.S. Fish and Wildlife Service and State of North Carolina to manage endangered species on acquired buffer land to increase species population off-base to reduce training restrictions on-base 	Updated	
	<ul style="list-style-type: none"> ▶ Evaluate opportunities in all Continental United States MCI regions 	Ongoing	

Table 4-2 Encroachment Actions and Milestones (continued)

Goal Mitigate Encroachment Pressures on Training Activities from Competing Operating Space (land, air, sea, space, and cyber issues)

Actions	Milestones	Status	Additional Service Comments
Navy			
Employ proactive interaction with all Services to sustain installation and range capabilities	<ul style="list-style-type: none"> Interact with other Service to identify long-term solutions for range support to Naval Special Warfare training. Identify near-term solution to USMC Chocolate Mountain Aerial Gunnery Range support to Naval Special Warfare Group One by FY2013 	Updated	
Continue to analyze and assess encroachment, quantitatively and qualitatively at the installation and regional levels	<ul style="list-style-type: none"> Update six (recently awarded) Encroachment Action Plans (EAPs) and complete an assessment of encroachment pressures and their impacts on the same Navy training ranges using parallel processes by FY2013 Utilize and develop the Navy Community Liaison and Plans Officer program to continuously engage communities where the potential encroachment of installations and ranges may arise 	Ongoing	
Continue to evaluate, plan for, and execute partnering opportunities per 10 U.S.C. Section 2684a	<ul style="list-style-type: none"> Use parallel processes to update applicable EAPs and identify all encroachment partnering opportunities for associated Navy training ranges 	Ongoing	Jacksonville EAP completed in 2011
Air Force			
Develop the Center Scheduling Enterprise (CSE) system and integrate flight scheduling systems with other scheduling systems	<ul style="list-style-type: none"> Created a modified range and airspace utilization reporting process to make it more effective 	Complete	Completed in FY2010
	<ul style="list-style-type: none"> Developed modified information operations activities for consistent application for standard open air range operations 	Complete	Completed in FY2010
	<ul style="list-style-type: none"> Modify utilization reports to provide a complete and accurate account of airspace and range usage (FY2011-2012) 	Slipped	Progress continuing into 2012
	<ul style="list-style-type: none"> Use enterprise architecture to institute a streamlined version of CSE (FY2009-FY2012): 	Ongoing	
	<ul style="list-style-type: none"> Developed a common system for units to schedule Air Force assets; BETA (FY2009); Version 1.0 	Complete	Completed in FY2010
	<ul style="list-style-type: none"> Established CSE architecture 	Complete	Completed in FY2010
	<ul style="list-style-type: none"> Deploy CSE system throughout the Air Force (FY2010–FY2012) 	Ongoing	
	<ul style="list-style-type: none"> Standardize terms, practices, and procedures used for scheduling and utilization reporting at all Air Force ranges to ensure true comparison of assets (FY2012) 	Ongoing	
	<ul style="list-style-type: none"> Provide a quantitative basis for defending current requirements and developing future needs (FY2011– FY2012) 	Ongoing	
	<ul style="list-style-type: none"> Integrate CSE with Federal Aviation Administration system to allow seamless machine-to-machine data transfer of airspace schedules, activations, and release 	Complete	Completed in FY2011
<ul style="list-style-type: none"> Develop and interface between CSE and the Army/Marine Corps Range Facility Management Support System (FY2011- FY2012) 	Ongoing		

Overall Trend Analysis

The Military Services continue to make progress towards achieving this goal and great strides have been made in preventing and/or mitigating incompatibilities. Institutional challenges to overall goal achievement remain, however, such as evolving organizational structures and competing priorities.

Table 4-3 Frequency Spectrum Actions and Milestones

Goal Mitigate Frequency Spectrum Competition

Actions	Milestones	Status	Additional Service Comments
Army			
Execute an ACUB to protect spectrum at Fort Huachuca, home of the Electronic Proving Ground.	▶ Complete Phase III and IV of the Fort Huachuca ACUB proposal	Ongoing	Ongoing subject to the availability of funding. To date 20,700 acres have been conserved and over \$8M in funding has been executed
	▶ Monitor and assess the ACUB at Fort Huachuca through the biennial review process	Ongoing	A biennial review was conducted in Summer 2011; the next biennial review is targeted for 2013
Design new ranges to minimize spectrum competition.	▶ Complete the installation of fiber optic cabling to support a wireless network and control targetry in order to minimize spectrum and interference on ranges by FY2017	Ongoing	
Marine Corps			
Analyze and assess frequency spectrum issues potentially impacting training capabilities at range complexes	▶ Assess operational impacts of frequency encroachment at the range complex level (planned FY2012)	Slipped	Frequency spectrum encroachment analysis is being incorporated into the Range Complex Management plan and the Encroachment Control Plan processes, as RCMPs and ECPs are prepared, reviewed and/or revised
	▶ Incorporate frequency spectrum encroachment analysis and potential mitigation measures into planned ECPs; incorporate updates to existing ECPs	Ongoing	See Table 4-2 for schedule
Navy			
Analyze and assess frequency spectrum issues potentially impacting training capabilities at the range complex and regional level	▶ Update the RCMPs and EAPs to identify and assess frequency spectrum conflicts, shortfalls, and the impacts on Navy training, by end of FY2012	Updated	
	▶ Advocate for the protection of military frequencies that could be affected by frequency re-allocation and/or the National Broadband Plan	Ongoing	Military frequency band 1755-1850 Khz has been assessed for migration costs in terms of time and resources required
Air Force			
Improve frequency/spectrum considerations in AF basing decision-making	▶ Incorporate frequency/spectrum as a key and quantifiable factor in the AF corporate basing process	Slipped	Progress continuing into 2012

Overall Trend Analysis

Military Service methods to mitigate spectrum completion have varied over the past few fiscal years. Some Military Services have approached the problem by attempting to establish physical buffers between themselves and the incompatibility, while others have been studying the extent of the problem and including mitigation measures in ECPs and other planning documents.

Table 4-4 Airspace Actions and Milestones

Goal Meet Military Airspace Challenges

Actions	Milestones	Status	Additional Service Comments
Army			
Develop an Unmanned Aircraft System (UAS) Army Strategy and define Army use of UAS through 2035.	▶ Publish the Army's Roadmap for UAS through 2035	Completed	
	▶ Program sustainment of UAS training facilities at 28 locations in POM FY2012-2016	Completed	Programmed and resourced facility sustainment
	▶ Program additional facility upgrades of UAS training facilities at 28 locations in POM FY2013-2017	Ongoing	Programmed facility upgrade requirements were accepted as valid, but not resourced due to funding constraints
	▶ Initiate 2 pilot project environmental assessments to adjust special use airspace in support of UAS training at major training and testing installations	New	New action and milestone; environmental assessments are underway at Fort Bliss (initiated 3rd Quarter FY2011) and Fort Polk (initiated 4th Quarter FY2011)
	▶ Coordinate with the FAA to complete environmental assessments at Forts Bliss and Polk; and refine the Army's process for training airspace adjustment by 4th Quarter FY2012	New	New action and milestone
Marine Corps			
Define future requirements for military airspace, current and projected airspace shortfalls, and possible courses of action to mitigate shortfalls at installation, range complex, regional, and Service levels	▶ Include airspace analysis in Regional Range Complex Management Plans (RCMPs)	Ongoing	See Table 4-2 for schedule
	▶ Assess airspace requirements and shortfalls in preparation of and submission for Regional Airspace Plans (FY2012)	Ongoing	Preparing the Regional Airspace Plans is an annual requirement (OPNAV INST 3770.2K) for Marine Corps Regional Airspace Coordinators; the change in date from 2011 to 2012 simply reflects the fact that these documents are prepared annually
	▶ Complete strategic-level assessment of range requirements and shortfalls regarding training land and airspace	Ongoing	Presently at 4-Star decision level
	▶ Continue airspace expansion planning for Marine Corps Air-Ground Combat Center Twentynine Palms (Final EIS 2nd Qtr FY2012)	Slipped	Preparation of the EIS continued in FY2011, with modifications of scheduled based to further accommodate review and comment of complex NEPA documentation. Status of EIS for Land and Airspace Expansion at MCAGCC (per DON-approved schedule): Draft EIS-June 2011; Final EIS-January 2012; Record of Decision-April 2012
	▶ Continue to track airspace issues and FAA initiatives potentially affecting military activities	Ongoing	

Table 4-4 Airspace Actions and Milestones (continued)

Goal Meet Military Airspace Challenges

Actions	Milestones	Status	Additional Service Comments
Navy			
Define future requirements for military airspace, current and projected airspace shortfalls, and possible courses of action to mitigate shortfalls at installation, range complex, regional, and Service	▶ Use RCMPs and EAPs to assess future Navy special use airspace requirements based on projected force structure changes and new weapon systems and missions; recommend possible courses of action consistent with Regional Airspace Plans; identify potential shortfalls in land and sea space for each Navy range complex level (by end of FY2012)	Ongoing	
	▶ Ensure the common aspects of this goal and the goal of addressing "Impacts from New Energy Infrastructure and Renewable Energy Impacts" coordinate with and compliment each other	Ongoing	
Air Force			
Improve airspace considerations on AF basing decision-making	▶ Incorporate airspace as a key and quantifiable factor in the AF corporate basing process	Slipped	Progress continuing into 2012

Overall Trend Analysis

The Military Services' approaches to countering the effects of airspace incompatibilities continues to mature.

Table 4-5 Range Space Actions and Milestones

Goal Manage Increasing Military Demand for Range Space

Actions	Milestones	Status	Additional Service Comments
Army			
Assess overall range capabilities in support of Army Force Generation (ARFORGEN), as part of the Army Training Support System Assessment	▶ Canvass four Continental United States (CONUS) installations to ensure Mission Essential Requirements (MERs) are met for ranges by 1st Quarter FY2011	Complete	Completed as part of the Army Training Summit I (2nd Quarter FY2011). Three case-studies of Training Support System (TSS) capabilities, including ranges and training land were conducted to inform the MER - Fort Lewis, WA (Active Component), East-Central Region (Army National Guard), and Fort McCoy, WI (US Army Reserve)
Execute "Theater In-Process Reviews (IPRs)" to review range capabilities against Mission Essential Requirements (MER).	▶ Conduct Theater IPR in Europe, CONUS, and Pacific to assess range capabilities to support ARFORGEN during 3rd-4th Quarter FY2011	Complete	Pacific IPR was conducted 4th Quarter FY2011; Europe IPR was conducted 1st Quarter FY2012; CONUS IPR was cancelled due to constrained resources
	▶ Apply results from the Theater IPRs to POM 14-18	Ongoing	
Implement the Range and Training Land Strategy (RTLS) to prioritize Army training land investments and provide a framework to address training land shortfalls through land acquisition, compatible use buffering, sustainable management, and use of other federal land.	▶ Finalize review and revision of the RTLS by 4th Quarter FY2011	Ongoing	Progress on revising the RTLS has been delayed due to staffing shortfalls and hiring delays in FY2011; revision will be completed in FY2012 (pending availability of staff and resources)
	▶ Implement a two-year review and update process for the RTLS by 4th Quarter FY2011	Ongoing	Progress on revising the RTLS has been delayed due to staffing shortfalls and hiring delays in FY2011; revision will be completed in FY2012 (pending availability of staff and resources)

Table 4-5 Range Space Actions and Milestones (continued)

Goal Manage Increasing Military Demand for Range Space

Actions	Milestones	Status	Additional Service Comments
Army (continued)			
Execute Training Land Acquisitions to offset the nearly 5 million acre shortfall in training land assets.	<ul style="list-style-type: none"> ▶ Fort Irwin/National Training Center (NTC), CA — Open the Western and Southern Expansion Areas (WEA and SEA) for training 	Updated	<p>Opening of the WEA has been put on hold (possibly indefinitely) due to significant on-going delays and costs related to endangered species (desert tortoise) management and mitigation. Progress to open the SEA is pending the completion of these outstanding actions:</p> <ul style="list-style-type: none"> ▶ USFWS Biological Opinion (BO) ▶ Translocation of Desert Tortoise in the SEA. <p>USFWS completed an initial Draft BO for Army review 4th Quarter FY2011; NTC is currently consulting with USFWS on a final BO with anticipated completion 2nd Quarter FY2012; completion of SEA Desert Tortoise translocation anticipated in 3rd Quarter FY2012; anticipate SEA open for training by 2nd Quarter FY2013 (assuming no additional legal challenges or delays)</p>
	<ul style="list-style-type: none"> ▶ Fort Polk/Joint Readiness Training Center (JRTC), LA — U.S. Army Corps of Engineers (USACE) complete title work and appraisals of property located in priority expansion areas and initiate formal negotiations with land owners by 2nd Quarter FY2011 	Updated	<p>USACE has completed necessary title work and appraisals; negotiations for the first acquisition parcel started in 2nd Quarter FY2011; closed on the purchase of first acquisition parcel in 2nd Quarter FY2012; negotiations to acquire additional parcels started in 1st Quarter FY2012 and are ongoing</p>
Execute Training Land Acquisitions to offset the nearly 5 million acre shortfall in training land assets. (continued)	<ul style="list-style-type: none"> ▶ South Texas Training Site, TX — Complete the Environmental Impact Statement (EIS) to study proposed areas for training land acquisition by 2nd Quarter FY2012 	Updated	<p>Public scoping was completed 2nd Quarter FY11 and Draft EIS is anticipated to be published by 4th Quarter FY2012</p>
	<ul style="list-style-type: none"> ▶ Fort Benning, GA — Complete the Environmental Impact Statement (EIS) to study proposed areas for training land acquisition by 4th Quarter FY2011 	Updated	<p>Completion of the Final EIS and Record of Decision (ROD) has been delayed due to pending Army force structure decisions, revisions to institutional training requirements, and the need to conduct additional analysis to address significant community and Congressional concerns related to socio-economic and environmental impacts from the land acquisition; decision to proceed with land acquisition will be made following announcement of army force structure decisions; USACE real estate planning studies completed 4th Quarter FY2011; USACE to complete title work and appraisals pending ROD to proceed</p>
Use non-DoD sites for Army Training (Savannah River Site)	<ul style="list-style-type: none"> ▶ Complete the draft Environmental Assessment (EA) to facilitate full training use of Savannah River Site by 2nd Quarter FY2011 	Complete	<p>Draft EA to support training use of Savannah River site published in 4th Quarter FY2011; public meetings conducted 4th Quarter FY2011; final EA was signed 1st Quarter FY2012</p>

Table 4-5 Range Space Actions and Milestones (continued)

Goal Manage Increasing Military Demand for Range Space

Actions	Milestones	Status	Additional Service Comments
Marine Corps			
Define future requirements for land ranges and other areas to support training, current and projected land shortfalls, and possible courses of action to mitigate shortfalls at range complex-, regional- and Service-levels	▶ Include range requirements analysis in regional Range Complex Management Plans (RCMPs)	Ongoing	See Table 4-2 for schedule
	▶ Facilitate enhanced cross-service utilization of range areas in Regional RCMPs	Ongoing	
	▶ Initiate strategic-level assessment of range requirements and shortfalls re: training land and airspace (initiate FY2010)	Ongoing	Preliminary assessment prepared in FY 2011; additional studies in furtherance of strategic assessment objectives are ongoing, including OSD-directed Pacific Training Analysis, and Marine Corps assessments of training land requirements in the Pacific region
	▶ Continue range expansion planning for MCAGCC Twentynine Palms (Final EIS 2nd Qtr FY2012)	Slipped	Preparation of the EIS continued in FY2011, with modifications of scheduled based to father accommodate review and comment of complex NEPA documentation. Status of EIS for Land and Airspace Expansion at MCAGCC (per DON-approved schedule): Draft EIS-June 2011; Final EIS-January 2012; Record of Decision-April 2012
	▶ Continue range expansion planning for Townsend Bombing Range	Updated	Draft EIS is expected in 3rd Qtr FY2012
	▶ Conduct strategic land requirements analysis	Ongoing	Currently at 4-Star decision level
Navy			
Define future requirements for land ranges and other areas to support training, current and projected land shortfalls, and possible courses of action to mitigate shortfalls at Navy range complexes	▶ Update and complete RCMPs to assess future requirements for Navy air, sea, and land ranges based on force structure change, and new weapon systems and missions by FY2012; Complete range requirements in Navy service-level Planning, Programming, Budgeting, and Execution	Slipped	Review of RCMPs are currently in review, initial assessments were not supportable by POM2013. Validated shortfalls in range capabilities will be adjudicated in POM2014 and POM2015
Air Force			
Improve range space considerations on AF basing decision-making	▶ Incorporate range space as a key and quantifiable factor in the AF corporate basing process	Slipped	Progress continuing into 2012
Develop range configuration to support urban training	▶ Develop Melrose Range, an urban training complex with a mountainside village and a target complex with hillside tunnels; transform Cannon Air Force Base (AFB), NM to support the Air Force Special Operations Command mission (FY2011-2012)	Slipped	Progress continuing into 2012

Overall Trend Analysis

The Military Services' approach to addressing the increased need for range space continues to evolve.

Table 4-6 Energy Actions and Milestones

Goal Address Impacts from New Energy Infrastructure and Renewable Energy Impacts

Actions	Milestones	Status	Additional Service Comments
Army			
Assess on-going Army energy security projects for impact on mission	▶ Issue Army policy on review and coordination process for internal energy projects to ensure projects do not impact on the training/testing mission	Complete	Continuing coordination with Army G-3/5/7 to minimize and mitigate impacts on the training/testing mission
	▶ Identify central Army portal for all external energy projects having a potential training or environmental impact at Army installations	Complete	Deputy Assistant Secretary of the Army for Energy and Sustainability is the central Army point of contact; Army G-3/5/7 provides training assessment for all projects; coordination is ongoing
	▶ Participate on the DoD Energy Subcommittee and assess strategic implications of infrastructure policy on Army training equities	Ongoing	DoD Energy Siting Clearinghouse has been established; Army coordination is ongoing
Marine Corps			
Support Office of the Secretary of Defense (OSD)-directed energy infrastructure policy and assessments	▶ Support OSD initiatives to assess supportability of renewable energy development projects in vicinity of military installation, per NDAA 2011	Ongoing	
Implement Marine Corps Interim Policy on Conduct of Compatibility Assessments for Energy Infrastructure Development	<ul style="list-style-type: none"> ▶ Establish criteria for assessing potential impacts of energy infrastructure development on military training ranges and airspace ▶ Fully support energy infrastructure development to the extent compatible with military training ▶ Establish Mission Compatibility Working Groups at MCI commands to monitor proposed energy infrastructure development in vicinity of Marine Corps installations and military training airspace ▶ Execute formal outreach and engagement programs with all governmental, non-governmental, and private and commercial stakeholders of energy development programs relevant to Marine Corps activities ▶ Implement formal energy infrastructure compatibility assessment program at installation, MCI, and Headquarters levels 	New	New action and milestone
Implement the Marine Corps Expeditionary Energy Strategy (2011)	<ul style="list-style-type: none"> ▶ USMC Expeditionary Energy Office (E2O) (established 2009) ▶ Plan and execute strategy to substantially reduce energy footprint of operational forces (e.g., 50% reduction in fossil fuel use by operating forces by 2025) 	New	New action and milestone
Implement Marine Corps Installations Energy Conservation Strategy	▶ Implement Marine Corps Installations Energy Conservation Strategy	New	New action and milestone
Navy			
Engage renewable energy proponents to mitigate or minimize impacts on naval training	▶ Define and codify organizational roles and responsibilities to streamline Navy assessments of renewable energy proposals by the end of FY2011	Complete	Completed in 2011
	<ul style="list-style-type: none"> ▶ Continuously respond to requests for analysis on potential impacts on range capabilities and range space from proposed energy infrastructure on range capabilities. ▶ Complete development of the Geographic Information System assessment tool in Environmental Information Management System (EIMS) to expedite OSD-directed assessments by the end of FY2012 	Ongoing	

Table 4-6 Energy Actions and Milestones (continued)

Goal Address Impacts from New Energy Infrastructure and Renewable Energy Impacts

Actions	Milestones	Status	Additional Service Comments
Navy (continued)			
Coordinate and contribute to the on-going OSD effort to assess energy infrastructure proposals are accomplished at the appropriate level	<ul style="list-style-type: none"> ▶ Continue to interact with Bureau of Ocean Energy Management state renewable energy task forces to support an iterative assessment of wind energy development proposals to minimize impacts to Navy/DoD readiness requirements in federal waters ▶ Continue to support the DoD Siting Clearinghouse in assessing renewable energy development proposal impacts 	Ongoing	
	<ul style="list-style-type: none"> ▶ Support and participate in the initiative to establish a single DoD point of contact to receive and assess wind farm proposals 	Complete	Completed in 2011
Air Force			
Engage renewable energy proponents in order to collaborate on site selections	<ul style="list-style-type: none"> ▶ Implement a DoD preliminary screening tool 	Complete	Completed October 2008
	<ul style="list-style-type: none"> ▶ Conduct a Nellis Energy Summit 	Complete	Completed February 2009
	<ul style="list-style-type: none"> ▶ Establish the Air Mobility Command Wind Resource Area Task Force 	Complete	Completed Spring 2009
	<ul style="list-style-type: none"> ▶ Contribute to the American Wind Energy Association National Conference, Governmental Listening Session and Presentation 	Complete	Completed April 2009
	<ul style="list-style-type: none"> ▶ Attend the FAA Conference on Competition for the Sky 	Complete	Completed September 2008
	<ul style="list-style-type: none"> ▶ Manager training on engaging energy developers 	Complete	Completed January–April 2009
	<ul style="list-style-type: none"> ▶ USAF Nevada Energy Forum sponsored by USecAF and SAF/IE where government and industry collaborated on process development 	Complete	Completed in Aug 2010
	<ul style="list-style-type: none"> ▶ Coordinate with DOE and AWEA to share data from development screening tools (FY2012) 	New	New milestone
Study Potential impacts and mitigation techniques	<ul style="list-style-type: none"> ▶ Study wind turbine impacts and mitigation techniques 	Complete	Phase 1 was completed in April 2010; Phase 2 was completed in FY2011
	<ul style="list-style-type: none"> ▶ Develop Tracking and/Decision making tool 	Complete	Completed in FY2011
	<ul style="list-style-type: none"> ▶ Expand Radar Toolbox for prediction of impacts on ASR-11 radar from wind turbines (FY2012) 	Slipped	Progress continuing into 2012
Create and field a DoD tracking and visualization tool for energy proposals	<ul style="list-style-type: none"> ▶ Develop Mission Compatibility Analysis Tool (FY2012) 	Slipped	Progress continuing into 2012. Initial development of the tool was released in 2011 but will undergo additional functionality and improvement during 2012

Overall Trend Analysis

Overall, the Military Services' approach to addressing the impacts from new energy infrastructure and renewable energy projects continues to mature.

Table 4-7 Climate Actions and Milestones

Goal Anticipate Climate Change Impacts

Actions	Milestones	Status	Additional Service Comments
Army			
Assess Global Climate Change risks and vulnerabilities	▶ Implement Global Climate Change planning and programming solutions that address the risks and commitments described in the 2010 DoD Quadrennial Defense Report	Ongoing	
	▶ Assess Global climate change risks and vulnerabilities	Ongoing	
	▶ Program Global Climate Change adaptation and mitigation measures in POM FY2013-2017	Updated	This milestone has been adjusted to focus efforts on incorporating climate change measures into existing Army plans, rather than seeking dedicated funding streams due to budget constraints
	▶ Incorporate global climate change adaptation and mitigation measures in existing Army plans	Ongoing	
	▶ Develop and validate a climate change vulnerability assessment and adaptation planning framework for installation assessments by 4th Quarter FY2012	Ongoing	
	▶ Execute climate change vulnerability assessment and adaptation planning at Army installations through the next scheduled (recurring) updates of installation-level plans	Ongoing	Plans include: Installation Strategic Plans, Master Plans, Integrated Natural Resources Management Plans
Marine Corps			
Support OSD-directed climate change policy and assessments	▶ Continue to respond to requests for data and analysis on potential impacts of range operations on climate change, and climate change impacts on range capabilities (as directed by OSD)	Ongoing	
	▶ Continue leadership role at Headquarters level in DoD Clean Air Act Services' Steering Committee, Subcommittee for Global Climate Change	Ongoing	USMC representative is currently the Subcommittee chair
Navy			
Support OSD-directed climate change policy and assessments	▶ Implement DoD Quadrennial Defense Report Global Climate Change directives. ▶ Assess climate change risks and vulnerabilities.	Ongoing	
Air Force			
Assess global climate change risks and vulnerabilities	▶ Implement DoD Quadrennial Defense Report Global Climate Change directives	Complete	Completed in FY2011
	▶ Assess climate change risks and vulnerabilities.	Ongoing	
Prepare for increased renewable energy priority and development	▶ Participate in White House Task Force on Wind Turbine Impacts on Radar	Ongoing	
	▶ Engage U.S. Bureau of Land Management to improve siting process	Ongoing	

Overall Trend Analysis

Overall, the Services' continue to gain situational understanding of the potential effects of climate change.

Table 4-8 Environmental Stewardship Actions and Milestones

Goal Sustain Excellence in Environmental Stewardship

Actions	Milestones	Status	Additional Service Comments
Army			
Execute the Army Range Assessment Program.	▶ Review and finalize all range assessment data from Phase I reports	Complete	
	▶ Complete Phase II assessments, where required, by 4th Quarter FY2014	Ongoing	

Table 4-8 Environmental Stewardship Actions and Milestones (continued)

Goal Sustain Excellence in Environmental Stewardship

Actions	Milestones	Status	Additional Service Comments
Army (continued)			
Execute environmental management and stewardship program to support sustainment of ranges and training lands.	▶ Finalize the Army Sustainability Campaign Plan	Complete	
	▶ Start implementing tasks and objectives identified in the Army Sustainability Campaign Plan by 3rd Quarter FY2011	Slipped	Implementation memorandum was signed 2nd Quarter of FY2011 and implementation is ongoing throughout the Army
	▶ Implement a process to integrate natural resource and conservation management plans into the Range Complex Master Plan (RCMP) template by 4th Quarter FY2011	Cancelled	It was determined that the procedural challenges and costs to implement these management plans into the RCMP outweighed the benefits after further review and internal coordination
Review, update, and promulgate environmental management and stewardship policy and regulation to support sustainment of ranges and training lands.	▶ Review and update Army Regulation 200-1, Environmental Protection and Enhancement by 3rd Quarter FY2012	New	New action and milestone. Formal staffing to the Army Staff began 1st Quarter FY2012
	▶ Promulgate the compliance policy statement for the Army's Ecosystem Services by 4th Quarter FY2012	New	New action and milestone. Current draft policy is being reviewed internally
Marine Corps			
Maintain Service-wide environmental management and range sustainability programs in accordance with applicable laws and regulations	▶ Engage in national regulatory and legislative processes on issues with that may potentially impact range sustainability or range readiness in coordination with the Office of the Secretary of Defense	Ongoing	
	▶ Continue to engage local, regional, and State regulatory agencies on issues that may affect range sustainability or range readiness	Ongoing	
	▶ Explore broader, landscape-level approaches and partnerships to meet regulatory and stewardship responsibilities for natural resources (e.g., wetland and Endangered Species banks) at the regional and national levels in coordination with the other branches of service, the Department of the Interior, U.S. Army Corps of Engineers and the Environmental Protection Agency	Updated	
	▶ Encourage non-governmental organizations and local communities to work on regional solutions for land use conflicts (e.g., Southeast Regional Partnership for Planning and Sustainability and Western Regional Partnership)	Ongoing	
Navy			
Execute Service-wide environmental management and range sustainability programs as required by law/regulation	<ul style="list-style-type: none"> ▶ Renew annually-expiring Marine Mammal Protection Act authorizations, as needed ▶ Evaluate the implementation and effectiveness of Integrated Natural Resources Management Plans at the end of each fiscal year ▶ Complete ongoing environmental planning for at-sea operational areas and range complexes by the end of FY2012 	Ongoing	
Air Force			
Provide for more accurate, more flexible risk assessment and weapons footprint creation	▶ Implemented the Weapons Danger Zone tool (FY2010–FY2011)	Complete	Completed in 2011
	▶ Reduced the landscape/airspace requirements for employing guided bomb units known as GBU-38s	Complete	Completed in 2011
	▶ Implementation at Dare County Range in North Carolina and Draughton Range in Japan	Complete	Completed in 2011
Develop range configuration to support urban training	▶ Expand the Air Force Special Operations Command Emerald Warrior exercise to include urban training over additional airspace and Gulf Coast communities	Complete	Completed in 2011
Continue environmental management and range sustainability programs	▶ Maintain active participation in Range Sustainment Initiatives e.g., Southeast Partnership for Planning and Sustainability and Western Regional Partnership	Ongoing	

Overall Trend Analysis

The Military Services' environmental stewardship programs continue to make progress as their environmental management programs mature.

4.3 Funding Requirements

NDA Section 366(a)(3)(C) requires DoD and the Military Services to report on funding requirements associated with implementing range sustainability initiatives. DoD has stated in previous submissions of this report that it faces several challenges in meeting this requirement. These challenges are discussed in the following paragraphs.

Each Military Service manages its range program in a manner that best suits the way their ranges operate to meet their specific missions. Therefore, each Military Service is responsible for identifying the requirements and accounting for funds to support their ranges. While processes and programs differ to some degree among the Military Services based upon their particular command structures, missions, and financial processes, each of the Military Services face challenges in developing comprehensive data regarding range funding. These challenges exist because funding for range sustainability is spread across and embedded within different appropriations (e.g., operation & maintenance [O&M], military personnel, procurement, MILCON) and program elements (e.g., manpower, training, ranges, environmental, real property, utilities).

While each of the categories of funding that affect range sustainability is accurately tracked by the Military Services, the Military Services experience challenges in separately tracking the extent to which different appropriations or programs are allocated to range sustainability. Funding of environmental initiatives or civilian personnel expenses that benefit ranges, for example, may be attributed to an installation in general, without being further categorized as supporting range sustainability. The cross-cutting scope of range management programs leads to

challenges in the tracking and reporting of range sustainability funding in a consolidated manner at the OSD level.

In an attempt to develop a common framework across the Military Services for consistently and accurately tracking and reporting range sustainability funding, a Sustainable Ranges Funding Subgroup was formed under the WIPT. The subgroup examined funding strategies and categorizations used by the Military Services for their training range sustainability efforts.

The group developed four main categories as a common starting point from which to report training range sustainability funding data. The categories, their descriptions, and specific examples for each category are included in Table 4-9.¹⁷

These categories serve as a framework for OSD and the Military Services to track, report, and project the need for future range sustainability fiscal resources in the context of the SRR. The ability to compare side-by-side the status of resources against the results of the range encroachment and capabilities assessments described in Section 3 will give DoD increased capability to address progress on resolving range sustainability issues. Taken together, this ability represents an important management tool that supports informed decisions about both the adequacy of existing resources, and the need for additional investment of sustainability dollars. Future funding will necessarily be subject to change, and is presented for planning purposes only. Military Service-wide range sustainability funding levels for FY2012 through FY2016 are provided in Table 4-10.¹⁸

In an attempt to increase accuracy of reporting, the Military Services were asked to report based on their FY2012 President's Budget submissions. Starting with the 2010 SRR, REPI program funds, which are centrally managed by OSD, have been broken out separately from Military Service encroachment

Table 4-9 DoD Sustainable Ranges Initiative Funding Categories

Funding Category	Description	Specific Examples
Modernization and Investment	Research, development, acquisition, and capital investments in ranges and range infrastructure. It includes related items such as real property purchases, construction, and procurement of instrumentation, communication systems, and targets.	<ul style="list-style-type: none"> ▶ Construction of new Multi-Purpose Training Ranges at Army installations ▶ Construction of Improvised Explosive Device (IED) Defeat Lanes ▶ Upgrades to Small Arms Ranges
Operations & Maintenance	Funds allocated for recurring activities associated with operating and managing a range and its associated infrastructure, including funds dedicated to range clearance, real property maintenance, and range sustainment plan development.	<ul style="list-style-type: none"> ▶ Clearance of unexploded ordnance prior to range construction ▶ CivPay for Range Operators at Army installations
Environmental	Funds dedicated to environmental management of ranges, including range assessments, response actions, and natural and cultural resource management planning and implementation.	<ul style="list-style-type: none"> ▶ Conservation funding for INRMPs and ICRMPs ▶ Environmental mitigation costs associated with range modernization and range construction ▶ Conducting Range Assessments
Encroachment	Funds dedicated to actions to optimize accessibility to ranges by minimizing restrictions that do or could limit ranges activities, including outreach and buffer projects.	<ul style="list-style-type: none"> ▶ Administration and support of the Army Compatible Use Buffer (ACUB) program

¹⁷ These funding categories should not be confused with appropriation categories.

¹⁸ The funding categories in this table should not be confused with appropriation categories.

Table 4-10 DoD Training Range Sustainment Funding (\$M)

Service*	Fiscal Year				
	FY2012	FY2013	FY2014	FY2015	FY2016
Army					
Modernization & Investment	\$203.5	\$339.4	\$209.4	\$224.7	\$261.9
Operation & Maintenance	\$374.9	\$387.3	\$393.1	\$396.0	\$402.6
Environmental	\$182.5	\$185.2	\$165.6	\$159.4	\$156.1
Encroachment	\$6.4	\$6.4	\$6.4	\$6.4	\$6.4
Army Total	\$767.3	\$918.3	\$774.5	\$786.5	\$827.0
Marine Corps**					
Modernization & Investment	\$5.1	\$44.1	\$34.6	\$34.3	\$35.3
Operation & Maintenance	\$44.6	\$41.5	\$42.2	\$42.9	\$43.1
Environmental	\$13.0	\$12.0	\$6.3	\$6.4	\$6.2
Encroachment	\$3.0	\$3.0	\$3.0	\$3.0	\$3.0
Marine Corps Total	\$65.7	\$100.6	\$86.1	\$86.6	\$86.8
Navy					
Modernization & Investment	\$76.0	\$82.2	\$80.1	\$79.7	\$82.2
Operation & Maintenance	\$171.4	\$172.0	\$174.1	\$177.3	\$180.4
Environmental	\$39.4	\$38.2	\$31.2	\$37.4	\$39.4
Encroachment	\$19.0	\$19.4	\$19.9	\$20.3	\$20.8
Navy Total	\$305.80	\$311.80	\$305.30	\$314.70	\$322.80
Air Force					
Modernization & Investment	\$98.2	\$96.0	\$98.7	\$86.8	\$89.0
Operation & Maintenance	\$174.7	\$146.5	\$150.5	\$149.1	\$150.1
Environmental	\$27.7	\$26.1	\$25.6	\$26.2	\$26.6
Encroachment	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Air Force Total	\$300.6	\$268.6	\$274.8	\$262.1	\$265.7
OSD					
REPI Program	\$54.2	\$50.6	\$34.1	\$34.2	\$34.4
DoD					
DoD Total	\$1,493.6	\$1,649.9	\$1,474.8	\$1,484.1	\$1,537.5

* Range sustainability programs are fully represented in the Services' programming and budgeting processes. Program fluctuations generally reflect best alignment of available resources across competing Military Service priorities based on programming guidance and validated by the Service Chiefs and Department Secretaries.

** Marine Corps FY2012 figures represent actual allocations, and FY2013 through FY2016 numbers reflect the most current figures available as of 26 March 2012.

funding for more accurate reporting. REPI funds support buffer initiatives across the Military Services and are allocated by OSD to the Military Services based on an assessment of need (For a more thorough discussion of the REPI program see Section 4.4.1.). Any Military Service funds budgeted for buffer projects are captured in that Military Services' encroachment lines.

The following is a summary of significant funding fluctuations observed across the reporting years and between the 2011 and 2012 SRR. Funding for range sustainability efforts are fully represented in the Military Services' programming and budgeting processes. Program fluctuations often reflect the tough choices Military Service Chiefs and Department Secretaries have to make in accepting risk and balancing their total portfolios across competing priorities in a fiscal environment that continues to increase in austerity.

Army

As previously stated, in the 2011 SRR, Army Modernization and Investment funding varies widely across the reporting years, both within a given report and between reports. This is common because of the nature and purpose of these funds. Cumulatively, small changes in MILCON and procurement projects across several hundred ranges have accelerated, delayed, and caused changes in the scope and design of individual projects. As a result, there have been significant fluctuations when funds are aggregated into a single funding category. Due to their nature and purpose, changes in Modernization and Investment funding levels do not generally impact the op-tempo of a range. Rather, these changes impact the Army's ability to add or improve capability.

Although Encroachment funding remains relatively constant across the reporting years, this year's SRR shows a significant increase in Encroachment funding from the 2011 SRR. The increase is brought about by two factors. The first factor is the attribution of manpower for centralized Army Compatible Use Buffer (ACUB) administration and management. The second factor is the successful attempt to program funds for ACUBs that provide environmental mitigation, instead of relying solely on end of year funds from other programs for the execution of these types of buffer projects.

Army O&M and Environmental funding continues to remain relatively stable.

Marine Corps

As previously stated in the 2011 SRR, the Marine Corp's Modernization and Investment, O&M, and Environmental funding projections for range sustainability show some significant fluctuations across the reporting years and between reports in the case of the environmental funding projection. These fluctuations are driven by prioritization and acceptance of certain levels of risk among competing priorities within the overall Marine Corps portfolio. As the Marine Corps is still assessing the spectrum of potential courses of action in a changing fiscal environment, the exact impacts on future range capabilities and capacities are unknown at this time.

The Marine Corps O&M line identifies funds centrally managed by TECOM, Range and Training Area Management Division, which manages an estimated 80 percent to 90 percent of all Marine Corps range funding. Funds for real property maintenance and Base Operating Support are managed at the installation-level to provide responsive support for various installation requirements, including local range sustainability initiatives. These installation-managed funding lines are not included in the O&M line because breakouts to range-specific expenditures were not available. FY2012 amounts reflected are based upon FY2012 actual amounts. FY2013 through FY2016 amounts reflected are accurate as of 26 March 2012.

Information provided does not include reductions experienced during the Department of the Navy Comptroller (NAVCOMP) Budget Cycle.

Navy

Fluctuations in Navy projections for range sustainability funding supporting O&M and Modernization and Investment are fairly minor across the reporting years and from the 2011 SRR to this year's report. In general, the decrease in O&M funding and increase in Modernization and Investment funding

projections from 2011 to this year's SRR are due to overall Navy priorities justified by Chief of Naval Operations (CNO) programming guidance.

Increases in FY2012 through FY2016 projections for Environmental funding as compared to that reported in the 2011 SRR are meant to bring Navy training events on the high seas into compliance with applicable environmental regulations (MMPA, ESA, EO 13089, and EO12114).

Increases in funding projections for Encroachment across the reporting years as compared to the 2011 SRR are attributable to an increase in installation Community Plans and Liaison Officers and funding for Encroachment Partnering acquisitions.

Air Force

Funding for Air Force training ranges, as defined and categorized by ODUSD(P&R), is tracked through two discrete channels. The first channel, which reflects the main source of funding for ranges, is through the Air Force A3/5 chain of command. The second channel is through the Air Force A4/7 chain of command. Within these two funding channels, the Air Force's reporting framework does not precisely sync with the SRI's funding categories and definitions. Under the SRI categories and definitions, the Air Force is able to report on Modernization and Investment, O&M, and Environmental. The Air Force is unable to report on Encroachment funds, as that category is defined in the SRR.

When compared to the 2011 SRR, large fluctuations can be seen between the same fiscal years in the Air Force's funding projected for Modernization & Investment and O&M range sustainability support. Although there are some fluctuations, the magnitudes of these are not as large as they appear. This is because an error was made in reporting funding in these categories in the 2011 SRR; the Air Force inadvertently omitted funds for one of their program elements. The corrected Air Force funding projections for these categories that were reported in the 2011 SRR can be seen in Table 4-11.

As can be seen with the revised figures, there were no significant fluctuations in any of the funding categories from the 2011 to the 2012 SRR with the exception of Modernization and Investment in FY2013. The decrease in projected Modernization and Investment funding beginning in FY2013 reflects a reduction in threat emitter procurement. The decrease in O&M funding projections beginning in FY2013 is due to conversion from contracted to civilian operations of Air Force range operations and maintenance functions. Projected figures for Environmental funding are estimates as the Air Force does not

Table 4-11 Corrected 2011 Air Force funding projections (\$M)

Corrected 2011 Air Force funding projections (\$M)	FY2011	FY2012	FY2013	FY2014	FY2015
Modernization & Investment	\$60.40	\$98.20	\$88.90	\$96.30	\$88.00
Operations & Maintenance	\$175.10	\$174.70	\$146.50	\$150.50	\$149.20

maintain a separate “range sustainability” program for environmental issues. Range environmental needs compete with other compliance, conservation, and pollution prevention projects based on a prioritization process across other Air Force environmental needs.

REPI

REPI Program fluctuations reflect the difficult decisions made in accepting risk and balancing total portfolios across competing priorities in a fiscal environment that continues to increase austerity.

4.4 Partnering and Outreach Initiatives

Congress has entrusted nearly 30 million acres of land – 1.1 percent of the total United States land area – to support the DoD mission. However, much of this land, as well as air and sea space, as well as the nation’s electromagnetic spectrum, must be shared with a broad array of stakeholders. To fulfill its training mission and maintain force readiness, DoD is fully committed to stakeholder engagement that supports environmental stewardship, sustainable resource management, as well as access to the test and training areas needed to ensure readiness both now and into the future.

Recognizing the importance of open communication and close coordination with neighboring stakeholder communities in land-use planning and decision making, the SRI has institutionalized a “toolbox” of programs and efforts that enable and support extensive partnerships focused on common needs and issues. The SRI toolbox incorporates REPI, the Office of Economic Adjustment’s (OEA) Compatible Use Program, Education and Engagement (supporting outreach as well as in-reach within DoD), and Regional Partnering among DoD, state, federal, tribal, and NGO agencies. Collectively, these efforts educate both internal and external stakeholders, engage other federal, tribal, state and local governments and NGOs, and implement collaborative efforts outside installation and range fence lines to sustain DoD’s training and testing missions and associated resources. Success across the nation has proved the toolbox’s effectiveness and strengthened DoD’s ability to sustain training and testing space and capabilities well into the future. Such efforts allow partners to use DoD and other public and private sector funds to acquire property or property interests, such as conservation easements from willing sellers who preserve critical buffers and habitat areas near installations and ranges where the military operates, tests, and trains.

This toolbox continues to expand and evolve through innovations that solve complex problems, leverage funding, and incorporate additional and diverse stakeholders.

4.4.1 The Readiness and Environmental Protection Initiative

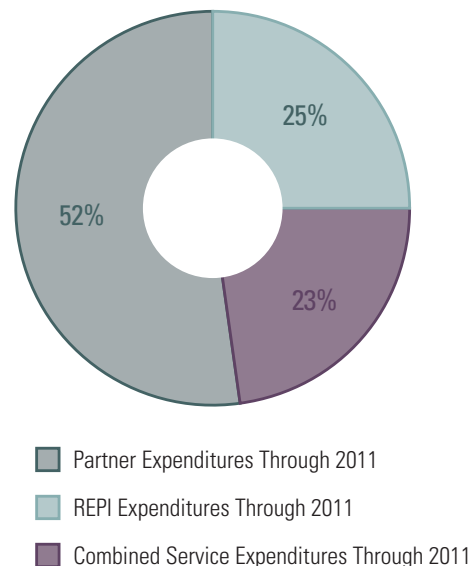
REPI supports DoD-compatible land use and conservation partnering initiatives and projects at ranges and installations across the country. It is a critical component of DoD’s SRI to prevent or reduce encroachment by protecting installation capability, accessibility, and availability for training and testing.

10 U.S.C. § 2684a, authorized by Congress in 2002, provides DoD funding to the Military Services to enter into agreements with state and local governments and private conservation organizations under the REPI program. Such agreements allow partners to use DoD and other public and private sector funds to acquire property, or property interests such as conservation easements, from willing sellers that preserve critical buffers and habitat areas near installations and ranges where the military operates, tests, and trains.

Through REPI, DoD works collaboratively with stakeholders and landowners outside installation and range boundaries to preserve habitat and support the broader objective of limiting incompatible development. REPI has supported Military Service partnerships with state and local governments and NGO advocates for private landowners to protect more than 215,000 acres of non-DoD land around installation and range lands across the nation since FY2005. REPI funding has supported projects at 60 installations and ranges in 24 states across the country since 2005. Partner resources account for more than half of the cost of preserving compatible land use and habitat through REPI partnership (See Figure 4-1).

Continued REPI success will require thoughtful planning with operators and range managers at the installation level. In a climate of transformation and resetting, it is critical to ensure

Figure 4-1 REPI Funds Leveraged through 2011



REPI planners understand the current and future operational mission footprint and are planning protection measures to ensure continued access to those capabilities. Regular communication and planning across directorates will also help REPI planners find areas for additional leveraging or benefits to include:

- ▶ Land exchange authority
- ▶ Ecosystem services such as wetlands credits or species or habitat conservation credits
- ▶ Cultural resource mitigation
- ▶ Revenue generation or working lands protection
- ▶ Compatible renewable energy planning
- ▶ Landscape-level linkages/regional partnerships

REPI will continue to encourage innovation, best practices, and additional benefits. These activities will serve as a way to accelerate the rate of protection, so that the greatest flexibility and capabilities can be maintained across DoD for the current and future mission.

Please refer to DoD's 2011 REPI Report to Congress (<http://www.repi.mil>) for additional information on REPI and DoD's efforts to reduce encroachment through use of the 10 U.S.C. § 2684a authority.

4.4.2 Office of Economic Adjustment Compatible Use Program

OEA's Compatible Use Program is the only federal government program that provides direct assistance to communities to help them work with the military to prevent and mitigate encroachment. Technical and financial assistance is available for state and local governments through the JLUS process to partner with the local military to plan and carry out strategies promoting compatible civilian use adjacent to installations, ranges, and military flight corridors. This program is further supported through Executive Order 12788, as amended, which provides direction for other federal agencies to assist state and local governments, through the Defense Economic Adjustment Program, to prevent civilian growth and development from impairing the military mission.

A JLUS is undertaken by state or local government to address local civilian and military activity that may adversely impact the military mission and local quality of life. The state or local government works with the military, federal, state, and local officials, residents, businesses, and landowners. A JLUS results in a strategic plan and specific implementation actions to ensure civilian growth and development are compatible with vital training, testing, and other military missions. Some examples of implementation actions include establishment of military overlay districts with specific land use and zoning requirements, unified development ordinances, amendments to capital

improvement plans, transfer of development rights, building code sound attenuation measures, real estate disclosure, lighting ordinances, and local development review procedures to ensure input from the military. The JLUS process promotes and enhances civilian and military communication and collaboration, serves as a catalyst to sustain the military mission, and promotes public health, safety, quality of life, and economic viability of a region. More than 70 JLUS projects are currently underway across the country.

JLUS and REPI are complementary to one another. Military and stakeholder communities may identify an issue for which a REPI project may provide resolution through the JLUS process. The JLUS process is a powerful tool for bringing communities and the military together to address compatible use issues, develop a set of compatibility guidelines, and identify specific implementation measures for both the community and military to ensure the long-term viability of the military mission.

4.4.3 Education and Engagement

The incorporation of both internal (DoD and Military Services) and external stakeholders into a collaborative process for the sustainment of military training and testing lies at the core of the SRI. Using coalition building, in-reach, and an easy-access educational toolbox, DoD is planning for the future with a progressive and collaborative mindset.

Coalition building with internal and external stakeholders enhances both ongoing partnerships and the potential for new partnerships that build trust and effectively support the longevity of DoD's test and training missions. To effectively address compatible land use and mission sustainability in our communities, the coalition building process requires knowledge of the issues, interactive communication, and cooperative partnerships to gain support. To this end, the SRI uses conferences, informal forums, and range tours to educate its stakeholder network to clearly understand the DoD mission. This sets the stage for partnership and collaborative planning, and helps to educate stakeholders on what DoD has to offer as a partner. Interactive outreach events proactively:

- ▶ Raise awareness about DoD's mission sustainability needs and initiatives
- ▶ Educate policy makers and NGO policy staffs about policies favorable to installation and range mission sustainability
- ▶ Build relationships among stakeholders that can ultimately advance sustainability efforts at local, state and national levels
- ▶ Identify partners who can serve as opinion leaders for both national sustainability messaging and building internal support among DoD leadership

Today, DoD enjoys effective partnerships with state and local government groups, conservation and environmental NGOs, and stakeholder groups within DoD. The following sections depict the outcomes of some of the partnerships that demonstrate DoD's visibility, support, and greater sustainability outside installation and range fence lines.

4.4.4 Regional Partnerships

Regional partnering, incorporated into DoD's engagement strategy, has enabled DoD to work successfully with multi-state, multi-agency teams to address substantial sustainability issues. At the regional level, DoD is currently involved with two partnerships that address sustainability issues: Southeastern Regional Partnership for Planning and Sustainability (SERPPAS) and the Western Regional Partnership (WRP). These two partnerships address sustainability, compatible land use issues relating to shared airspace and natural resources, urban sprawl, and renewable energy development. SERPPAS was formally endorsed by state and DoD entities via signed charter, and both partnerships are committed to working collaboratively through information sharing. The partnerships explore Geographic Information System (GIS) data, land use planning, and renewable energy endeavors that cross installation boundaries, metropolitan areas, and state lines. Similar partnerships are being considered for other regions where DoD has a large footprint.

4.4.5 Engagement for Energy Infrastructure Compatibility

New and expanding energy infrastructure can have an adverse effect on DoD's use of airspace, seaspace, land, and frequency spectrum for training, testing, and operations. DoD must coordinate internally to protect military readiness while enhancing facility energy security, and meeting energy efficiency and emissions targets. DoD must also engage federal, tribal, state, and local governments, the energy industry, NGOs, and other stakeholders to identify and address potentially incompatible energy proposals. The ODASD(R) is working closely with other OSD and Military Service training, testing, operations, installation, and environmental interests on a cooperative process to better analyze energy proposals and articulate a single departmental position. This includes working with the recently established DoD Siting Clearinghouse.

Large-scale energy development is underway or planned in many regions of the United States. Solar, wind, geothermal, and other renewable energy resources are attracting increasing public and private investments, often near vital test and training assets. At the same time, emphasis has been placed on domestic oil and gas production, (particularly on the Outer Continental Shelf [OCS]) to reduce U.S. dependence on foreign sources. DoD is increasingly involved in identifying and evaluating the impacts of energy proposals on our existing and planned activities. In the Western U.S., numerous large and small wind and solar

projects are being proposed and approved to supply renewable energy to the national energy grid. Energy production or transmission facilities can obstruct military aircraft near DoD training ranges and OPAREAs, or under military training routes. Additionally, wind turbines create a Doppler effect and other interference that can degrade the performance of radars and other electronic systems. Specific examples of issues now being worked include concerns over the safety of pilot training at Naval Air Station Kingsville, TX, due to a proliferation of nearby wind farms; potential training and testing impacts from a high-voltage transmission line being planned in southern New Mexico and Arizona; and the deconfliction of military activities with planning for offshore wind farms and expanded oil and gas leasing in the Gulf of Mexico.

In addition to the potential impacts of wind energy development noted above, a variety of other energy generation and transmission technologies pose mission compatibility issues for DoD that were not anticipated just a few years ago. Solar tower technology may present safety of flight concerns due to obstruction. The geothermal generation plant on Naval Air Station Fallon, CA creates ice fog conditions in winter months that increase the need to deice the helicopters operating from the airfield. The Army is currently studying the potential impacts of the electromagnetic corona of high-voltage transmission lines on its ability to test new technologies at the Electronic Proving Ground in Yuma, AZ.

DoD is working closely with the Military Services to develop consistent, transparent (within national security limits) and responsive processes that can inform the energy industry of DoD interests and evaluate energy projects to support effective decision-making. DoD typically works with agencies responsible for developing energy resources, such as the BLM and BOEM, or those with a regulatory oversight role (like FAA), to convey concerns and to work cooperatively on enabling energy development that does not degrade readiness activities.

DoD has a protocol in place with BLM regarding siting of wind energy projects on BLM lands, and this agreement has protected DoD equities in the western states. Efforts are underway to update and expand this protocol to other forms of renewable energy, and possibly to include additional federal agencies as well. In addition, DoD is actively supporting a new Rapid Response Team led by the Council on Environmental Quality (CEQ) to address issues and expedite approvals for construction of electrical transmission infrastructure. DoD is also working with the Department of Homeland Security (DHS), Federal Aviation Administration (FAA), National Oceanic and Atmospheric Administration (NOAA) and Department of Energy (DOE) to conduct a series of field tests and evaluations of technologies that promise to mitigate the doppler and other electromagnetic effects of wind turbines on radar and other sensors mentioned above.

In July 2010 DoD established the DoD Siting Clearinghouse, and expanded its activities in compliance of Section 358 of the FY2011 NDAA. The function of the Clearinghouse is to help identify, review, and facilitate fully coordinated DoD positions on the compatibility of proposed projects for energy developers, government agencies, and other concerned parties. In September 2011, DoD published an Interim Rule in the Federal Register that governs the activities of the DoD Siting Clearinghouse and informs energy developers, other government agencies and tribal concerns, and the general public about interaction with the Clearinghouse (32 CFR 211).

Renewable Energy Collaboration Successes

Terrestrial Renewable Energy Development

The extensive efforts noted above to fully understand impacts and engage with all interests to promote mission compatibility are already bearing fruit. At Naval Air Station Kingsville, TX an agreement is now in place between the Navy and a wind developer to share the costs of mitigating wind turbine impacts on radars. DoD has been gratified with the generally positive responses from industry and state and local government when concerns have been raised about the impacts of a wind farm on a military training route or OPAREA, with a number of development plans changing siting or completely eliminating turbines which cause conflicts. At the same time, the Siting Clearinghouse has been busy reviewing proposed projects. Of the 506 projects the Clearinghouse has reviewed to date, 486 projects have been cleared. This 96 percent clearance rate includes 32 solar projects, 2 geothermal projects, and 13,439 turbines, totaling approximately 24 gigawatts of renewable generation capacity (this figure assumes 13,439 turbines x the national average of 1.77MW/turbine = 23,787 megawatts, plus and allowance for solar and geothermal capacity, which we do not directly track).

Offshore Wind Energy Development

In December 2009, the Minerals Management Service (now BOEM) requested a DoD review of a proposed offshore wind energy development area on the outer continental shelf off the Virginia Capes. The DoD responded by conducting a thorough examination of potential impacts to military training, testing, and operational activities. The result was that these potential impacts were taken into account in the determination of lease blocks to be opened for offshore wind development. DoD's experience with Virginia's offshore wind effort served as a springboard for further requests from other coastal states for DoD to participate in the BOEM task force process. DoD now works with Virginia, North Carolina, Maryland, Delaware, New Jersey, Rhode Island, Massachusetts, and Maine to help shape the future of OCS wind energy development in a manner that will meet military

training, testing, and operational objectives as well as energy security objectives for the nation.

4.4.6 Military Service-Specific Stakeholder Engagement

The Military Services are in varying phases of developing and implementing Military Service-specific outreach and communication programs to support range sustainment and compatible land use issues. The following are examples of current Military Service outreach initiatives.

Army: Training Support Systems Division

The Army has developed a focused community research concept based on conducting both primary and secondary research efforts. Primary research activities include community stakeholder interviews, roundtable sessions, and community surveys; while secondary research activities include news media analysis, demographic analysis, and elected official background analysis. The goals of this research are to:

- ▶ Demonstrate to the community that the installation cares and values its relationships with the community and its input
- ▶ Identify areas of strength and areas for improvement in installation-community interaction
- ▶ Facilitate identification of actions that can support long-term mission sustainment and minimize future conflict
- ▶ Summarize findings and recommendations based on research for installations to use in decision making
- ▶ Provide a baseline to compare future research efforts to demonstrate how, or if, a community's views change

Since 2007, the Army has implemented this concept at eight major installations around the country. Additional community research efforts are currently underway for 2011 and 2012, and the Army is in the process of developing an ongoing strategy to continually update community research findings at all major training installations.

Marine Corps: Continuing Its Tradition of Community Engagement

Encroachment Control Plan (ECP) program—Preparation and execution of ECPs at the installation and regional levels is a cornerstone to the Marine Corps encroachment control program. An ECP for each installation and for each region is now required by Marine Corps Order 11011.2B, *Policies and Procedures for Encroachment Control Management*.¹⁹ Accordingly, ECPs have been or are being developed to

¹⁹ Marine Corps Order 11011.2B, *Policies and Procedures for Encroachment Control Management*, dated July 27, 2010.

provide thorough assessment of encroachment issues affecting the installation or region. ECPs document all encroachment issues into one action plan that identifies and analyzes potential and actual sources of encroachment, promotes actions for compatible land development and regulatory compliance, assigns responsibilities for encroachment outreach and control initiatives, and facilitates allocation of programmed resources for encroachment control.

Encroachment Partnering (EP) program—The Marine Corps continues to partner with state, local community, and conservation organizations to maintain operations assurance through the coordinated implementation of restrictive easements. Through July 2011, the Navy, on behalf of the Marine Corps, had acquired 30,452 acres of restrictive easements using \$47M in OSD REPI funds and Marine Corps operation and maintenance funds, while partners contributed \$53M. Projects have been completed at eight different ranges and installations. In the case of Townsend Bombing Range in Georgia, the restrictive easement acreage acquired thus far exceeds the size of the range by 400 percent. In the case of MCAS Beaufort in South Carolina, restrictive easements equal about 30 percent of the installation acreage.

Community Plans and Liaison Office (CPLO) Program—Marine Corps Order 11011.22B also directs installations to actively engage the local communities to develop encroachment solutions and articulates the duties of CPLOs.

CPLOs actively manage compatible land use issues through the identification of potential encroachment challenges affecting installations, ranges, and white space. They monitor encroachment concerns and local conditions in and around the installation/range and conduct community outreach to ensure mission sustainability and protect operational capability. CPLOs proactively maintain contact and visibility with local governments to acquire a working knowledge of local land use plans; zoning and development regulations; development trends; environmental issues; and local, state, and regional plans and programs that have the potential to impede the mission of the installation or range. Further, CPLOs establish working relationships with local, state, and regional governments and agencies; NGOs; and other groups engaged in any aspect of land use planning, development, conservation, and preservation that could impact operational assurance at the installation or range. CPLOs are employed at every Marine Corps installation and region, as well as at Headquarters Marine Corps.

Natural and Cultural Resource Conservation Program—The purpose of the Marine Corps Natural and Cultural Resource Conservation Program is to sustain and enhance the availability of range and training areas while complying with a variety of federal laws and regulations. Natural and cultural resource professionals at every installation establish working relationships with various federal and state regulatory agencies, as well as a variety of NGOs, to achieve this purpose. The Marine Corps is also exploring the congruency between

natural resource conservation requirements and priorities, and land conservation activities under the Encroachment Partnering Program.

Navy: Ongoing Community Outreach and Partnering Efforts

Encroachment Action Plans (EAPs)—The Navy continues to develop EAPs, which focus on systematic encroachment identification, quantification, and mitigation/prevention at ranges, installations and OPAREAs. These EAPs support existing as well as future mission requirements and ensure effective training and testing capabilities are maintained. Through 2011, the Navy has completed 42 EAPs while continuing work on 14 additional plans (6 new EAP awards in FY2011) and 6 EAPs were being refreshed. The Navy EAP program includes Range Complexes and Target Areas such as: VACAPES, Dare County Bombing Range, Pinecastle Range Complex, R-2508 Range Complex, Atlantic Test Range, McMullen Target Area, Pt. Mugu Sea Range, San Clemente Island, Northwest Range Complex, PMRF Kauai, El Centro Range Complex, and the Fallon Training Range Complex.

Encroachment Partnering (EP) program—The Navy continues to partner with state, local community, and conservation organizations to maintain operations assurance through the coordinated implementation of restrictive easements. Through September 2011, the Navy has acquired 10,818 acres of restrictive easements using \$68M in OSD REPI, Navy EP, and partner funds to prevent incompatible development. The Navy has 17 multi-year Encroachment Protection Agreements with partners at 14 installations and ranges, including the following:

- ▶ R-2508 China Lake Range Complex to protect the Black Mountain Supersonic Corridor
- ▶ NAS Fallon in support of the Fallon Training Range Complex
- ▶ Naval Base Coronado Assault and Tactical Weapons Training Complex (La Posta) in support of SPECWARCOM
- ▶ Naval Base Kitsap in support of submarine acoustical testing
- ▶ NAS Oceana/NALF Fentress, NB Ventura County, and NAS Jacksonville/OLF Whitehouse in support of Field Carrier Landing Practice training
- ▶ Atlantic Test Range/NAS Patuxent River in support of NAVAIR testing
- ▶ NAS Whiting Field in support of initial naval aviator training

Projects have also been completed at NAS Pensacola, NAS Whidbey Island, OLF Coupeville, Meridian Sea Ray Target Range, former NAES Lakehurst, and NS Everett.

Community Plans and Liaison Officer (CPLO) Program—

CPLOs actively manage compatible land use issues through the identification of potential encroachment challenges affecting installations and ranges (including military training routes [MTRs], SUA, and OPAREAs). They monitor encroachment concerns and local conditions in and around the installation/range and conduct community outreach to ensure mission sustainability and protect operational capability. CPLOs proactively maintain contact and visibility with local governments to acquire a working knowledge of local land use plans; zoning and development regulations; development trends; environmental issues; and local, state, and regional plans and programs that have the potential to impede the mission of the installation or range. Further, CPLOs establish working relationships with local, state, and regional governments and agencies; NGOs; and other groups engaged in any aspect of land use planning, development, conservation, and preservation that could impact operational assurance at the installation or range.

To date, there are eight regional CPLOs and approximately 30 official installation CPLOs in place, with more growth expected in FY2012.

Air Force: Transformation of Stakeholder Engagement

The Air Force is transforming its stakeholder engagement in an effort to prevent and manage encroachment. The new framework is designed to integrate existing programs, not to replace them, and to develop strategies that address areas not already covered by existing programs. An Installation Complex Encroachment Management Action Plan (ICEMAP) will be developed for each installation complex, and will include an assessment of encroachment and mission sustainability issues, as well as community issues and concerns. An installation complex is composed of a main installation and its non-contiguous properties (auxiliary airfields, annexes, missile fields, ranges, MTRs, airspace, landing/drop zones) that provide direct support to or are managed or scheduled by the main installation.

An ICEMAP also considers the mission footprint. This includes airspace (routes, MOAs) and ranges that are used by the installation or its tenants but that are not controlled/owned or managed by the main installation. By taking this systems approach, the individual components are highlighted in terms of the contribution to the entire “readiness system.”

An action plan detailing actions for the installation level, as well as higher headquarters and the community, will be developed. A detailed outreach and communication strategy will also be created for each installation complex to assist them in implementing the plan. Building and sustaining relationships with local communities is a key component to successful encroachment prevention and management.

In addition to the larger overarching encroachment management initiative, the Air Force has also embarked on an effort to develop a Range Compatible Use program. Similar to the successful Air Installation Compatible Use Program, this initiative strives to develop similar compatible zones for the Air Force ranges. The concept has had several beta version documents created to help support Joint Land Use Study efforts at Air National Guard ranges. A prototype Range Compatible Use Analysis has been developed for both Hardwood Range in Wisconsin, and Warren Grove Range in New Jersey. These two efforts build upon the initial 2008 prototype analysis prepared for Avon Park Bombing Range in Florida. The Air Force is working to finalize how operational and compatibility zones will be developed so they can finalize a program that will assist range commanders in their outreach and engagement with local communities.

4.5 Overview of Legislative and Regulatory Initiatives

In 2010 Senator Ensign, Nevada -R, put forth a legislative initiative for consideration relevant to the Air Force and sustainable ranges. The bill, titled “Study on Air Force Test and Training Range Infrastructure”, crafted by Senator Ensign, requires the Air Force to study threats to and sustainability of the air, test, and training range infrastructure. The bill was ultimately enacted as Section 343 of the FY 2012 NDAA. Specifically, Section 343 (A) Part 1 states:

“(1) IN GENERAL.—The Secretary of the Air Force shall conduct a study on the ability of the major air test and training range infrastructure, including major military operating area airspace and special use airspace, to support the full spectrum of Air Force operations. The Secretary shall incorporate the results of the study into a master plan for requirements and proposed investments to meet Air Force training and test needs through 2025. The study and the master plan shall be known as the “2025 Air Test and Training Range Enhancement Plan”.

DoD will continue to follow the processes and procedures prescribed by the Office of Management and Budget (OMB) for introducing and socializing such initiatives in the future.

4.6 Readiness Reporting Improvements

As robust encroachment and capabilities assessments are conducted under the SRI, DoD is working within the Department of Defense Readiness Reporting System (DRRS) construct to establish a Range Assessment Module (RAM) and strategy for reporting range resource and readiness issues. DoD actions, to better integrate range readiness issues into the DRRS, are consistent with the Section 366(b) requirement to improve readiness reporting by seeking to reflect the training and readiness impacts caused by constraints on the use of military lands, marine areas, and airspace.

4.6.1 The Defense Readiness Reporting System Enterprise

The overseas contingency operations (OCO) and U.S. Military involvement in Iraq and Afghanistan have reinforced the urgent need for a robust readiness reporting system that can provide accurate, relevant, and timely information to support the full range of operational planning. It is also essential to military operations that such a system should offer risk assessments of multiple simultaneous contingencies in the context of Defense Strategy. DoD Directive (DoDD) 7730.65, Department of Defense Readiness Reporting System Enterprise, authorized the establishment of a readiness assessment Enterprise System to calculate the capabilities and preparedness of military units to conduct wartime missions and other contingencies.

The DRRS Enterprise provides the means to manage and report on the readiness of DoD and the Military Services by building upon existing processes and readiness assessment tools to establish a capabilities-based, adaptive, near real-time readiness reporting system. The system is currently capable of reporting on the availability of resources needed to support a mission in six resource areas: Personnel, Equipment, Military Services, Training, Ordnance, and Facilities. It establishes a mission-focused, capabilities-based, common framework that provides the Combatant Commanders, Military Services, Joint Chiefs of Staff, and other key DoD users with a data-driven collaborative environment. The system allows users to evaluate, in near real-time, the readiness and capability of U.S. Armed Forces to carry out their national security missions.

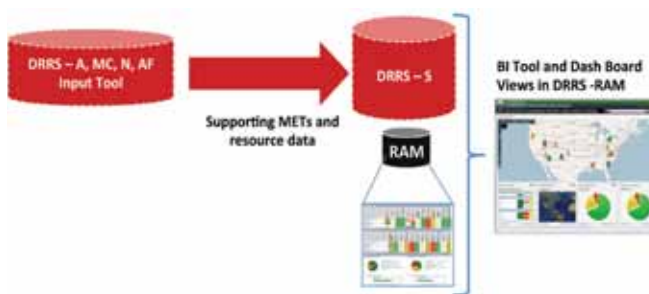
The DRRS Enterprise enables commanders and force managers to look across DoD for required capabilities, identify organizations with those capabilities, and then determine the readiness of the organizations to provide the capability. Readiness to provide needed capabilities for missions is established based upon available resources and the ability of an organization to execute its assigned METs and METLs, and used to support the Joint Force Commander's JMETL.

4.6.2 Relationship with Other Readiness Systems

The DRRS Enterprise also links to broader DoD transformation initiatives, such as training, logistics, and personnel systems. Additionally, the METs considered in the DRRS Enterprise provide the building blocks to support existing readiness processes, including the request for forces, force management, joint readiness, and adaptive planning tools. Effectively linking the DRRS with other existing and planned systems and decision support tools will further enable the emerging DoD requirement of on-demand creation and revision of executable plans, with up-to-date options, in near real time, as circumstances require.

The Military Services have developed Service-specific readiness reporting systems (e.g., DRRS-Army, MC, and Navy; the AF-DRRS Input Tool), which are designed to interface within

Figure 4-2 Planned RAM Cross Domain Solution in DRRS



the DRRS Enterprise. These ongoing readiness initiatives are currently focused on providing a robust organizational readiness view using information contained in the relevant authoritative databases and made available through Enhanced Status of Resources and Training Systems (ESORTS). Schematics of the DRRS Enterprise, and associated readiness reporting are shown in Figure 4-2.

4.6.3 Range Assessment as a Component of DRRS

During 2009, a Congressional reporting requirement contained in House Report (H.R.) 5658 (Duncan Hunter NDAA for FY2009) directed DoD to report on:

- ▶ Plans to pilot test a new functionality for training range encroachment assessment during CY2008
- ▶ How encroachment affects the training and readiness levels of tactical units of the Military Services

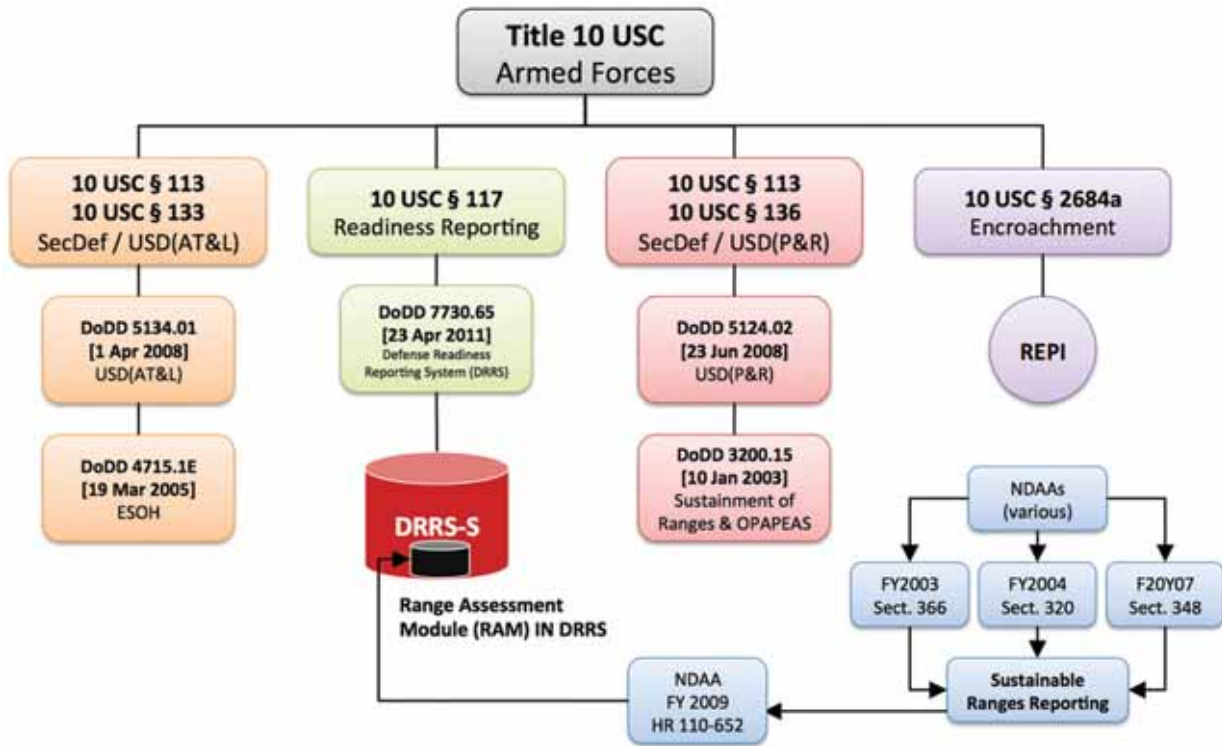
As discussed in Chapter 3 of this report, DoD has determined a common set of 13 Capability Attributes, 12 Encroachment Factors, and Military Service-specific Training Mission Areas assigned to ranges. The assessment results have shown that the process of collecting and reporting assessments in this “cause and effect” manner is understandable, repeatable, and efficient. This capability and encroachment-based assessment methodology provide DoD with a starting point for performing “what-if” analysis of potential range issues as they relate encroachment and capability concerns to unit readiness.

Based on the results and feedback from SRR 2008 and 2009 data collections, a decision was made to automate the manual reporting methodology and the SRR business rule as a baseline for development of a distributed on-line capability for a RAM.

DoD began a phased concept development in January 2009 for a RAM in DRRS. The Phase I development focused on reflecting the existing SRR assessment methods as potential component within the DRRS business process.

Following Phase I, a Phase II effort began in mid-2009 focused on using the existing DRRS framework and functionality with range assessments to build associations with operational readiness reporting processes. This effort, in turn, would facilitate the linkages between ranges and the operational tasks

Figure 4-3 Title 10 and Policy Drivers for Range Readiness Reporting



assigned to the units using these ranges. It is aimed at addressing how encroachment affects the training and readiness levels of the tactical units of the Military Services. While understanding this process is the goal, the challenge in identifying the relationships between operational readiness and the supporting training infrastructure cannot be understated and must be described in terms of each of the Military Services' unique organizational constructs and training process.

Due to recent action to restrict access to DRRS in an unclassified environment, a cross-domain solution was not pursued for Phase II development. Initial Phase II prototype validation and development were based on knowledge of existing DRRS-Strategic (DRRS-S) functionality. The DRRS RAM functionality is now available within classified DRRS-S. Range assessment data will be organized for DRRS RAM functions on the SIPRNet. Under Phase II, the RAM module within classified DRRS-S contains SRR historical data, and has the ability to enter current and projected assessment data, and manage associated comments as appropriate. The system calculates Encroachment and Capability scores, and depicts pie charts per the SRR methodology. The system can record comments as an assessment is being coordinated. The data and assessment comments can be exported as an Excel spreadsheet for other reporting. Phase II was completed in June 2010.

Under Phase III development (in progress), SRR assessments will be associated with installations or range complexes, through their Unit Identification Codes (UICs). This information will be

viewable within the module with readiness already being reported by operational forces known to use range capability. The alignment between DoD and Military Services range assessment and readiness reporting is through the standard criteria and definitions set forth in the 2008 and subsequent SRRs, which were based, in part, on other Military Service-specific range systems and input to RAM.

DoD will continue to coordinate with the Military Services to develop systems and processes that can view range readiness from within the DRRS-Enterprise and other associated systems. Military Service representatives from the readiness community, the installation community, and the DRRS Implementation Office (DIO) will need to coordinate strategies. The requirements of individual systems within DRRS-Enterprise are sufficiently consistent for the needs of DoD and the Military Services. As part of the annual process improvement for the SRR, opportunities for increased interoperability of data and metrics DoD and Military Service systems and processes are constantly evaluated for use and implementation. The target date for completion of Phase III system functionality is the end of June 2012.

As measures are implemented, DoD is exploring the development of a Business Intelligence (BI) tool to collect operational readiness information in DRRS. This information could then be related to range availability and capability, and could be made available to installation or range complex managers to help build the encroachment relationships with

operational readiness. A conceptual Phase III implementation is presented in Figure 4-3.

With full RAM implementation, end-user (range operator) participation, dedicated system sustainment and additional user training, RAM could serve as an important decision support tool for both OSD and the Military Services.

If implemented as anticipated, the RAM application could allow DoD and the Military Services to understand and visualize the relationship among range encroachment and capability by assigned mission area, and training tasks associated with operational mission areas.

4.7 Shared Information Enterprise

As SRI continues to mature, the need to maintain, access, analyze, and share range-specific data to support reporting requirements and to inform decision makers is also maturing. DoD continues to encourage the Military Services to develop information system solutions that both satisfy Military Service and range needs, as well as share summary data and support specific information requests from OSD and other users. The system should be able to support:

- ▶ Congressional reporting
- ▶ Range inventories, capacity, and capabilities reporting
- ▶ Range assessment reporting
- ▶ Investment planning
- ▶ Budget management
- ▶ Range sustainability initiatives
- ▶ Asset management

Information management efforts will be based upon a strategy aligned to DoD and federal information sharing goals and policies (e.g., Net-Centric Data Strategy). All efforts will contribute to the development of a shared data environment that will support range management decision-making and reporting.

4.8 Range Inventory Summary

The requirement for DoD and the Military Services to develop and maintain an inventory of operational ranges is specifically detailed in NDAA Section 366(c).

This section represents a summary of the Military Service inventories and provides current inventory information. DoD believes an accurate inventory is necessary to support range management and planning processes. In addition to the requirement to maintain a training range inventory as set forth in NDAA Section 366(c), DoD has issued specific policy directives that require the Military Services to develop and utilize sound GIS-based range inventories and scientific data as the basis for decision-making that supports training and testing

mission activities. Specific inventory details for each Military Service are provided in Appendix C, which contains maps and an inventory of the ranges, range complexes, and special use areas. Appendix E contains summaries of DoD and Military Service range sustainment policies.

The SRR Inventory is organized into the following components:

- ▶ **Regional Range and SUA Maps**—These maps display the location of DoD training and testing ranges and SUAs around the world. The data is drawn from the Military Services and the National Geospatial Intelligence Agency (NGA). Each Military Service maintains geospatial information on its training and testing ranges.
- ▶ **Tabular Range Inventory**—This component of the inventory provides a list of range complexes, range descriptions, and available range types. The Military Services maintain more detailed inventories that are used to support their specific range management and sustainment processes.
- ▶ **Military Training Route (MTR) Inventory**—The MTR inventory includes a listing of the three types of routes: visual routes, instrument routes, and slow routes. The inventory provides information on each MTR, including the originating agency, scheduling agency, effective times, and route length.
- ▶ **SUA Inventory**—This portion of the inventory provides a list of SUA and includes information relating to the controlling agency, associated range complex or installation, altitudes, users (Military Service), and area.

The SRR Inventory is built on Military Service inventories and information pulled from Military Service-supporting information management systems. When compiled, this inventory provides a comprehensive picture of DoD training and testing assets. In order to provide a Military Service-level perspective on range inventories, the following highlights some of the key components of the Military Service range inventories.

4.8.1 Army Range Inventory Description

Background

The Army has complied with the requirements set forth in DoDD 3200.15 by providing a comprehensive GIS-based inventory of all operational ranges with the Army operational range inventory. The operational range inventory was initiated in June 2004 and completed in April 2008. This inventory was based on an initial effort, evaluating the Army active/inactive range inventory of installations and training sites having operational ranges.

The Deputy Chief of Staff for G-3/5/7 and the Assistant Chief of Staff for Installation Management issued guidance for U.S.

Army Installation Geospatial Information and Services (IGI&S) data preponency, Common Installation Picture, and Quality Assurance Plans (QAPs) in August 2008 to improve consistency and coordination of all installation geospatial data. All Army installations are required to maintain geospatial common installation picture data and metadata for their sites, and updating of the operational range inventory has now transitioned from a centralized data collection effort to a decentralized effort based on this guidance. Updates of range data for installations under the Army's Sustainable Range Program (SRP) are now being compiled by Army SRP GIS professionals per the HQDA G-37/TRS SRP GIS Program Data Development Strategy guidance was issued in November 2008 and updated in May 2011. SRP-supported installations that lack on-site SRP GIS assistance are alternately provided support from the SRP Geospatial Support Center. The geospatial data layers that represent operational ranges are required to be validated annually.

Data Elements and Sources

The range data elements created and maintained by installation SRP GIS staff (or the Army's SRP Geospatial Support Center) are defined in each layer's geospatial data QAP. QAPs provide the definition, information about the functional and organizational proponent(s), policies and regulations, formatting and naming convention requirements, geometry used, database storage requirements, data update frequency, acceptable source data and methods, data quality requirements, attribute definitions and requirements, and metadata requirements for each of the data layers. QAPs are living documents and are maintained by the HQDA proponent with input from the installation data stewards and other stakeholders. QAPs are reviewed, updated (as required), and published annually.

Databases and Applications

The Army Mapper is the Army's database of record for installation geospatial data. All geospatial data relating to operational ranges is stored in the Army Mapper. Geospatial range data for installations supported by the Army's SRP is required to be validated by the installation Garrison Commander, or equivalent/delegated approval authority, prior to submission to the Army Mapper database of record.

4.8.2 Marine Corps Range Inventory Description

The Marine Corps Training and Education Command's Range and Training Area Management Division (TECOM/RTAM) is responsible for managing the Marine Corps range complex inventory. The Marine Corps range complexes refer to a collection of training areas and ranges, airspace areas, and other designated attributes for training. The inventory provides a detailed list of Marine Corps range complexes, including land, air, sea, and underseaspace. The intent of the range inventory is to support Marine Corps range management and sustainment

processes, including capabilities assessment, investment strategy, encroachment management, operational planning, and environmental management.

The Marine Corps first developed the inventory for the 2004 SRR, based on information available in the Marine Corps RTAM system (MCRTAMS). MCRTAMS is a Web-enabled, institutional-level, centrally-managed system. It provides commanders, operating units, range managers, and all cross-Military Service users with a single source access for all range-related capabilities and resources. MCRTAMS uses established and developing data metrics and software. The range complex information available in MCRTAMS was the primary source for the initial range complex inventory. The 2012 Marine Corps inventory follows previous review processes and uses the MCRTAMS database and the RCMPs as primary data sources.

The Marine Corps range complex inventory is currently maintained on MCRTAMS, as well as in a spreadsheet format. It uses a number of data fields (e.g., name, claimant organization, location, size, range type) and provides GIS data with numerous data layers. The inventory is updated annually and has been significantly improved upon during the last few years, due to the initiation of RCMPs, which catalogue range complex baseline attributes and capabilities, and include a comprehensive inventory of ranges and SUA.

The MCRTAMS inventory review process is led by TECOM/RTAM, using a QA/QC process to ensure inventory consistency and accuracy.

4.8.3 Navy Range Inventory Description

The Navy range complex inventory is a detailed list of land, air, sea, and underseaspace that comprise the Navy range complexes. It encompasses major fleet training ranges, OPAREAs, SUA, and major range and test facility base (MRTFB) sites (also referred to as range complexes). The inventory does not capture individual ranges and training areas not associated with a range complex. The intent of the range inventory is to support Navy range management and sustainment processes, including capabilities assessment, investment strategy, encroachment management, operational planning, and environmental management.

The Navy inventory has improved over the years, due to the implementation of the Tactical Training Theater Assessment Planning (TAP) Program, which included the preparation of RCMPs. RCMPs catalogue range complex baseline assets and capabilities and include a comprehensive inventory of ranges, OPAREAs, and SUA.

The Office of the Chief of Naval Operations (OPNAV) N43 first developed the inventory for the 2004 SRR, based on multiple sources that included the Navy's Ranges to Readiness Study, active/inactive range survey (2000), Fleet Training Area/Range Directory (Naval Warfare Assessment Station, Corona,

2003), Fleet OPAREA Instruction, and Fleet Area Control and Surveillance Facility Instructions. The inventory is currently maintained in a relational database, as part of the Tactical Training and Testing Ranges Repository and Management System (TRAMS), and in a spreadsheet format. As the inventory spreadsheet is updated, the TAP Repository (TAPR) database will be updated. Additional detail on the range complex inventory is provided as part of the RCMPs to include scheduling, operations, encroachment, and capabilities information. In the future, the inventory and associated information will be integrated into the TAPR.

The inventory is updated annually using the best available sources of information. The RCMP is the primary source of information for the updates. Beginning in FY2009, the RCMP has been updated biennially to coincide with the POM development cycle. The updates will include an assessment of each range complex's inventory and capabilities. For the remaining range complexes, range instructions and manuals will be used to update the inventory.

The inventory review process involves a review by the United States Pacific Fleet (PACFLT) and the United States Fleet Forces Command (USFF) to ensure the most current information is reflected in the inventory. Additionally, the Navy has a quality assurance/quality control (QA/QC) process that ensures consistency and accuracy of the inventory.

USFF will use the inventory as the basis for the Navy training area geospatial library now under development in the TRAMS/Environmental Information Management System (TRAMS/EIMS) project. Space and Warfare Systems Center (SPAWAR) Charleston and Naval Facilities Engineering Command (NFEC) developed EIMS to meet a fleet requirement for "a single, comprehensive Navy GIS-based information management system and databases for operational and environmental planning to support operational requirements, at sea environmental issues, and range/OPAREAs compliance and encroachment concerns." (TRAMS was originally developed as the TAPR with the goal of hosting all TAP-generated training area data, much of which is geospatial. However, the TAPR became TRAMS as the program moved beyond hosting only TAP data.)

The fleets have recognized the need for a single authoritative geospatial library in EIMS, based on a comprehensive Navy training area inventory and built on maps provided by the NGA, DoD's mapping authority. The foundational maps from NGA will include training area boundaries, with all other geospatial information developed by TAP and other authoritative sources layered on top. NGA will provide Web-based geospatial information so that EIMS foundational maps will be updated when training area boundaries are

updated. Complete, foundational maps for all fleet range complexes are currently being worked on, with the schedule dependent upon RCMP completion.

4.8.4 Air Force Range Inventory Description

The Air Force training and testing range inventory is managed and administered by the Headquarters United States Air Force Ranges and Airspace Division. The inventory is composed of four parts:

- ▶ U.S. air-to-ground ranges
- ▶ Overseas air-to-ground ranges operated by the Air Force
- ▶ Detailed SUA information
- ▶ Detailed MTR information

The Air Force inventory does not include all operational ranges and training areas. The intent of the Air Force inventory is to address, manage, and sustain air-to-ground training resources.

The inventory is based on data elements from a variety of sources, and is in GIS format. The format allows the inventory to be searched, filtered, and displayed on a map for quick analysis. Inventory elements are stored in a variety of formats, from tabular data to geographic information sources. Major Command reports are also used to update capabilities. Every 56 days, the airspace tables are updated with information from the NGA, while range information is continuously updated. The entire inventory receives an annual review.



5

The Way Ahead

As DoD's SRI has continued to mature over the last 10 years, DoD and the Military Services have made significant progress in being able to identify and act upon the external pressures that constrain the use of training and testing range resources. Critical factors in managing those pressures have been:

- ▶ Effective use of Section 2864a authorities
- ▶ Engagement activities for compatible land, sea, airspace, and frequency use
- ▶ Both local and regional encroachment partnering activities
- ▶ Further refining the comprehensive DoD-wide range inventory
- ▶ Development of clear criteria and standard methods for assessing the adequacy of range resources against current and anticipated training requirements

Looking to the future, DoD must build upon the early successes of the SRI, while continually evaluating needs and requirements associated with a constantly changing environment and using innovations to ensure the long-term sustainability of military range resources.

5.1 The Sustainable Ranges Initiative

The SRI is an ongoing process, with its greatest benefits coming from influencing and changing approaches to mission management and resource use decision making. Though encroachment is an issue for ranges in general, the situation at each range is unique and requires a specific approach in order to achieve mission success. The SRI is designed to help range staffs address encroachment concerns by providing training and education to staffs both inside and outside the fence line, fostering long-term partnerships to reduce the likelihood of

future conflict, and attracting outside investment in mission protection. The SRI helps provide tools to improve asset management on the ranges, and encourage compatible activities off the ranges.

5.2 Compatible Land, Airspace, and Sea Space Use and Engagement and Partnering Activities

Competition for land, airspace, and sea space for siting of renewable energy infrastructure to meet national energy objectives is a growing concern in relation to DoD's capability and capacity to train and maintain readiness. As a result, DoD has been working on developing compatible energy siting considerations and sharing information with interested stakeholders to include NGOs, other government agencies, and the renewable energy industry. These considerations will protect military training, testing, and operational considerations while promoting sound environmental stewardship. DoD is also working with BOEM and the coastal states through a task force process to ensure that renewable energy infrastructure siting on the outer continental shelf is compatible with DoD's offshore activities. Additionally, DoD is seeking to proactively engage with stakeholders to develop compatible siting solutions through the establishment of a DoD Siting Clearinghouse. The purpose of this organization is to facilitate fully coordinated Department positions on the mission compatibility of proposed projects for energy developers, government agencies, and other concerned parties.

DoD will continue to work with Congress, other federal agencies, Native American tribes, states, local governments, NGOs, and other stakeholders to take full advantage of legislative and regulatory initiatives that support compatible land use and encroachment prevention around Military installations. While the REPI program had conserved over

215,000 acres of land near and around DoD installations by the close of FY2011, demand from the Military Services for funding of projects in FY2010 was 1.5 times greater than those funds appropriated for the program. Regional partnering efforts are bearing fruit, with state partners in SERPPAS and WRP investing in compatible land use, conservation, habitat restoration and management, and renewable energy.

Academia is contributing to that success in a variety of studies and pilot projects directly impacting DoD efforts, while NGOs are working collaboratively to develop and implement range-wide planning efforts. DoD and the Military Services have found outreach and partnering on such issues to be the most effective way to address today's encroachment concerns while minimizing future problems and ensuring the long-term sustainability of DoD's range resources.

Through the Regional Partnerships established in the Southeast and the Southwest, GIS mapping is being used to clearly articulate DoD current and future mission requirements across these regions, particularly in areas where outlying landing fields, low-level flight routes, and helicopter training areas are located. This effort could expand to all regions of the country, if states are interested, or if there is desire among a particular set of States to coordinate efforts towards multiple and mutual benefits across a region.

It is important to note that SRI outreach, education, engagement, and partnering is a long-term part of the solution to develop true sustainability across all DoD ranges. DoD is committed to continued investment in current efforts, and to developing new tools to protect and enhance readiness. Conservation banking, as authorized in the FY2009 NDAA, holds particular promise for tapping new sources of private industry funding to leverage DoD, other federal agency funding, and State and local government contributions. It took several decades for the challenges of encroachment to manifest themselves around ranges opened during World War II, and it will take a consistent and sustained effort to address and mitigate those challenges.

5.3 Use of Range Inventory and Encroachment and Capability Tools

DoD will make greater use of its comprehensive range inventory and standardized assessment methodology to evaluate encroachment impacts and range capabilities in a manner that is consistent across the Military Services. The tools developed to date will assist DoD and Military Service leadership with identifying at-risk ranges, recognizing emerging issues, and making informed decisions about how to focus new or additional range sustainment efforts. These actions will enhance the abilities of DoD and the Military Services to meet training requirements, and will allow for accurate and expedited responses to internal and Congressional requests for related information.

The ultimate success of the SRI will be realized when DoD can prevent encroachment and avoid mission degradation before it occurs.

A

National Defense Authorization Act Language

The National Defense Authorization Act for Fiscal Year 2003

Sec. 366. Training Range Sustainment Plan, Global Status of Resources and Training System, and Training Range Inventory.

- [a] **Plan Required**—(1) The Secretary of Defense shall develop a comprehensive plan for using existing authorities available to the Secretary of Defense and the Secretaries of the military departments to address training constraints caused by limitations on the use of military lands, marine areas, and airspace that are available in the United States and overseas for training of the Armed Forces.
- [2] As part of the preparation of the plan, the Secretary of Defense shall conduct the following:
- [A] An assessment of current and future training range requirements of the Armed Forces; and
 - [B] An evaluation of the adequacy of current Department of Defense resources (including virtual and constructive training assets as well as military lands, marine areas, and airspace available in the United States and overseas) to meet those current and future training range requirements.
- [3] The plan shall include the following:
- [A] Proposals to enhance training range capabilities and address any shortfalls in current Department of Defense resources identified pursuant to the assessment and evaluation conducted under paragraph (2);
 - [B] Goals and milestones for tracking planned actions and measuring progress;
 - [C] Projected funding requirements for implementing planned actions; and
 - [D] Designation of an office in the Office of the Secretary of Defense and in each of the military departments that will have lead responsibility for overseeing implementation of the plan.
- [4] At the same time as the President submits to Congress the budget for fiscal year 2004, the Secretary of Defense shall submit to Congress a report describing the progress made in implementing this subsection, including:
- [A] The plan developed under paragraph (1);
 - [B] The results of the assessment and evaluation conducted under paragraph (2); and
 - [C] Any recommendation that the Secretary may have for legislative or regulatory changes to address training constraints identified pursuant to this section.
- [5] At the same time as the President submits to Congress the budget for each of fiscal years 2005 through FY2008, the Secretary shall submit to Congress a report describing the progress made in implementing the plan and any additional actions taken, or to be taken, to address training constraints caused by limitations on the use of military lands, marine areas, and airspace.

- [b] **Readiness Reporting Improvement**—Not later than 30 June 2003, the Secretary of Defense, using existing measures within the authority of the Secretary, shall submit to Congress a report on the plans of the Department of Defense to improve the Global Status of Resources and Training System to reflect the readiness impact that training constraints caused by limitations on the use of military lands, marine areas, and airspace have on specific units of the Armed Forces.
- [c] **Training Range Inventory**—(1) The Secretary of Defense shall develop and maintain a training range inventory for each of the Armed Forces—
- [A] To identify all available operation training ranges;
 - [B] To identify all training capacities and capabilities available at each training range; and
 - [C] To identify all training constraints caused by limitations on the use of military lands, marine areas, and airspace at each training range.
- [2] The Secretary of Defense shall submit an initial inventory to Congress at the same time as the President submits the budget for fiscal year 2004, and shall submit an updated inventory to Congress at the same time as the President submits the budget for fiscal years 2005 through 2008.
- [d] **GAO Evaluation**—The Secretary of Defense shall transmit copies of each report required by Subsections (a) and (b) to the Comptroller General. Within 60 days after receiving a report, the Comptroller General shall submit to Congress an evaluation of the report
- [e] **Armed Forces Defined**—In this section, the term “Armed Forces” means the Army, Navy, Air Force, and Marine Corps.

National Defense Authorization Act for Fiscal Year 2007

Sec. 348. Five-Year Extension of Annual Report on Training Range Sustainment Plan and Training Range Inventory.

Section 366 of the Bob Stump National Defense Authorization Act for Fiscal Year 2003 (Public Law 107-314; 116 Stat. 2522; 10 USC 113 note) is amended—

- [1] in Subsections (a)(5) and (c)(2), by striking ‘fiscal years 2005 through 2008’ and inserting ‘fiscal years 2005 through 2013’; and
- [2] in Subsection (d), by striking ‘within 60 days of receiving a report’ and inserting ‘within 90 days of receiving a report’.

B

Military Service Mission Area Descriptions and Definitions Army

Army

Mission Command—The mission command warfighting function develops and integrates those activities enabling a commander to balance the art of command and the science of control. It is also a fundamental philosophy of command that places people, rather than technology or systems, at the center. Under this philosophy, commanders drive the operations process through their tasks of understand, visualize, describe, direct, lead, and assess; develop teams, both within their own organizations and with joint, interagency, intergovernmental, and multinational partners; inform and influence, inside and outside their organizations; and determine the appropriate degree of control for decentralizing decision-making and execution. The commander leads the staff's tasks under the science of control. The four primary staff tasks are conduct the operations process (plan, prepare, execute, assess); conduct knowledge management and information management; conduct inform and influence activities; and conduct cyber/electromagnetic activities.

Movement and Maneuver—The movement and maneuver warfighting function is the related tasks and systems that move and employ forces to achieve a position of advantage in relation to the enemy and other threats. Direct fire and close combat are inherent in maneuver. This function includes tasks associated with force projection related to gain a positional advantage over the enemy. For the purposes of the encroachment and capability assessments discussed in Chapter 3 of this report, each range will be assessed for its ability to support three movements and maneuver task areas:

- ▶ Infantry
- ▶ Armor
- ▶ Aviation

Intelligence—The intelligence warfighting function is the related tasks and systems that facilitate understanding of the enemy, terrain, and civil considerations. It includes the synchronization of collection requirements with the execution of tactical tasks such as reconnaissance, surveillance and related intelligence operations. The warfighting function includes specific intelligence and communication structures at each echelon.

Fires—The fires warfighting function is the related task and systems that provide collective and coordinated use of Army indirect fires, air and missile defense, and joint fires through the targeting process. For the purposes of the encroachment and capability assessments discussed in Chapter 3 of this report, each range was assessed for its ability to support two fire support task areas:

- ▶ Field Artillery
- ▶ Air Defense Artillery

Sustainment—The sustainment warfighting function is the related tasks and systems that provide support and services to ensure freedom of action, extend operational reach, and prolong endurance. The endurance of Army forces is primarily a function of their sustainment. Sustainment determines the depth and duration of Army operations. It is essential to retaining and exploiting the initiative.

Protection—The protection warfighting function is the related tasks and systems that preserve the force so the commander can apply maximum combat power to accomplish the mission. Preserving the force includes protecting personnel (friendly combatants and noncombatants), and physical assets of the United States, host-nation, and multinational military and civilian partners. For the purposes of the encroachment and

capability assessments discussed in Chapter 3 of this report, each range was assessed for its ability to support three protection task areas:

- ▶ Engineering
- ▶ Chemical
- ▶ Military Police

Marine Corps

Individual Level Training—The set of core and core plus skills associated with the USMC Individual Training Standards (ITS) for each element of a Marine Air Ground Task Force (MAGTF). Accordingly, the Individual Level training range provides and supports the most basic training environment associated with the MAGTF Aviation Combat Element (ACE), Ground Combat Element (GCE), and Combat Logistics Element (CLE). The Individual Level training range also reinforces basic infantry combat skills and supports those specific training requirements and skills associated with progressive USMC ITS and the program of instruction at each USMC Formal School.

Unit Level Training—The set of friendly force small unit offensive and defensive tactics and operations associated with expeditionary MAGTF forces against hostile or potentially hostile forces. The Unit Level training range supports all types of aircraft, weapons, special operations (SPECOPS) forces, landing forces, and ground forces employed in concerted military efforts described by the Marine Corps' Expeditionary Maneuver Warfare (EMW) doctrine, which includes Operational Maneuver from the Sea (OMFTS) and Ship to Objective Maneuver (STOM). It includes tactics and operations associated with all training phases of small unit level missions of a MAGTF.

Marine Expeditionary Unit Level Training—The set of friendly force offensive and defensive tactics and operations associated with expeditionary MAGTF forces against hostile or potentially hostile forces. The MEU Level training range supports all types of aircraft, weapons, SPECOPS forces, landing forces, and ground forces employed in concerted military presence and engagement efforts described by the USMC's EMW doctrine, to include OMFTS and STOM.

Marine Expeditionary Brigade Level Training—The set of friendly force offensive and defensive tactics and operations associated with small-scale contingency expeditionary MAGTF forces against hostile or potentially hostile forces. The MEB Level training range supports all types of aircraft, weapons, SPECOPS forces, landing forces, and ground forces that will be employed in concerted crisis response military efforts that are characterized by high-density, high-risk operations.

Navy

Strike Warfare (STW)—The set of friendly force air, surface, subsurface, and land-based offensive tactics and operations associated with identifying, targeting, and engaging fixed, mobile, and time-sensitive land-based targets using air-to-ground (A-G) weapons. The STW range also supports tactics and operations associated with manned and unmanned Tactical Airborne Reconnaissance, Unmanned Combat Air Vehicles, Suppression of Enemy Air Defenses (SEAD), Close Air Support (CAS), and engagement of fixed and mobile land-based targets using naval surface gunfire and sea-launched cruise missiles.

Electronic Combat (EC)—The set of friendly offensive and defensive tactics and operations associated with Electronic Attack and Electronic Protect activities. The EC range function supports identifying, degrading, or denying hostile forces the effective use of their battlefield surveillance, targeting radar and electro-optical systems, communications, counter-fire equipment, and electronically fused munitions. It is a subset of C2 Warfare.

Anti-Air Warfare (AAW)—The set of friendly force offensive and defensive surface-to-air (S-A) and air-to-air (A-A) tactics and operations associated with defending friendly air, surface, and land forces from emergent hostile air threats, whether launched from air, surface, or subsurface platforms. The AAW range function also supports the set of friendly force offensive A-A tactics and operations associated with gaining and maintaining air superiority or air supremacy of the battle space. The AAW range function supports the use of electronic decoys and electronic jammers used by friendly forces for the purpose of counter-targeting against airborne threats.

Anti-Surface Warfare (ASUW)—The set of friendly force air, surface, and subsurface offensive and defensive tactics and operations associated with detection, surveillance, and engagement of contacts, critical contacts of interest, and hostile at-sea surface forces. In addition to traditional training against large ships, the ASUW range function also supports a variety of training activities against small boats, and fast-moving surface vessels. The ASUW range function may also support offensive tactics and operations against designated surface targets located in ports, harbors, and anchorages.

Mine Warfare (MW)—The set of friendly force air, surface, and subsurface offensive and defensive tactics and operations associated with mine-laying and Mine Counter Measures (MCM). Offensive minelaying operations aim to dislocate the enemy war efforts and improve the security of friendly sea lines of communications by destroying, or threatening to destroy, enemy seaborne forces. MCM includes active measures (to locate and clear mined areas), passive measures (to include small object avoidance and ship routing around high threat areas), and self-protective measures (ship signature reduction).

Amphibious Warfare (AMW)—The set of friendly force offensive and defensive tactics and operations associated with providing expeditionary forces capable of projecting power ashore from the sea to accomplish a specific objective. The AMW range function may support establishing and sustaining landing forces ashore for extended periods or putting landing forces ashore only for a short period of time before withdrawing them. The AMW range function supports virtually every type of ship, aircraft, weapon, SPECOPS force, and landing force employed in concerted military efforts described by the Operational Maneuver from the Sea (OMFTS) doctrine, which includes Expeditionary Maneuver Warfare, and Ship to Objective Maneuver. As a result, the AMW range function supports tactics and operations associated with all phases of ESG and MEU missions using OMFTS, including both amphibious assault and vertical assault tactics. The AMW range function does not support specific post-landing tactics and operations.

Anti-Submarine (ASW)—The set of friendly force air, surface, and subsurface offensive and defensive tactics and operations associated with countering hostile and potentially hostile submarine threats. The ASW range function may support open-ocean, choke point, and littoral anti-submarine missions, including detection, classification, surveillance, localization, tracking, and attack.

Naval Special Warfare (NSW)—The set of friendly force air, surface, subsurface, and land-based offensive and defensive tactics and operations associated with the five principal NSW missions: Combating Terrorism, Counter Proliferation, Special Reconnaissance, Direct Action, and Unconventional Warfare. The NSW range function supports identifying, targeting, and engaging fixed, mobile, and time sensitive land-based targets using the entire inventory of NSW weapons

Air Force

Strategic Attack—Offensive action conducted by command authorities aimed at generating effects that most directly achieve our national security objectives by affecting the adversary's leadership, conflict-sustaining resources, and strategy.

Counterair—Operations to attain and maintain a desired degree of air superiority by the destruction, degradation, or disruption of enemy forces. Counterair's two elements, offensive counterair (OCA) and defensive counterair (DCA), enable friendly use of contested airspace and disable the enemy's offensive air and missile capabilities to reduce the threat posed against friendly forces.

Counterspace—Kinetic and non-kinetic operations conducted to attain and maintain a desired degree of space superiority by the destruction, degradation, or disruption of enemy space capability. Counterspace operations have an offensive and a defensive component.

Counterland—Air and space operations against enemy land force capabilities to dominate the surface environment and prevent the opponent from doing the same. Counterland is composed of two discrete air operations for engaging enemy land forces: air interdiction, in which air maneuver indirectly supports land maneuver or directly supports an air scheme of maneuver, and close air support (CAS), in which air maneuver directly supports land maneuver.

Countersea—Specialized collateral tasks performed in the maritime environment such as sea surveillance, anti-ship warfare, protection of sea lines of communications through antisubmarine and anti-air warfare, aerial minelaying, and air refueling in support of naval campaigns with the objective of gaining control of the medium and, to the extent possible, dominating operations either in conjunction with naval forces or independently.

Information Operations (IO)—Actions taken to influence, affect, or defend information, systems, and/or decision-making of an adversary's "observe-orient-decide-act" (OODA) loop while protecting our own.

Electronic Combat Support—Actions involving the use of electromagnetic and directed energy to control the electromagnetic spectrum or to attack the enemy across the electromagnetic battlespace. The operational elements of electronic (EW) warfare operations are electronic attack, electronic protection, and EW support.

Command and Control—The battlespace management process of planning, directing, coordinating, and controlling forces and operations. It involves the integration of a system of procedures, organizational structures, personnel, equipment, facilities, information, and communications designed to enable a commander to exercise authority and direction across the range of military operations.

Air Drop—Air Drop is the delivery of personnel and materiel from an aircraft in flight to a drop zone (DZ). Most airdrop procedures use parachutes to deliver loads to the ground, such as heavy equipment, container delivery systems, and personnel. Another airdrop procedure is free fall delivery. This involves dropping relatively small items, such as packaged meals or unbreakable objects like hay bales without the use of a parachute. Airdrop allows commanders to project and sustain combat power into areas where a suitable ALZ or a ground transportation network may not be available.

Air Refueling—The in-flight transfer of fuel between tanker and receiver aircraft.

Space lift—The delivery of satellites, payloads, and materiel to space.

Special Operations—The use of special airpower operations (denied territory mobility, surgical firepower, and special tactics) to conduct the following special operations (SPECOPS) functions: unconventional warfare, direct action, special reconnaissance, counterterrorism, foreign internal defense, psychological operations, and counterproliferation.

Intelligence, Surveillance & Reconnaissance—Activities involving the systematic observation of air, space, surface, or subsurface areas, places, persons, or things, by visual, aural, electronic, photographic, or other means; obtaining specific information about the activities and resources of an enemy or potential enemy through visual observation or other detection methods; or by securing data concerning the meteorological, hydrographic, or geographic characteristics of a particular area; and the resulting product of such activities.

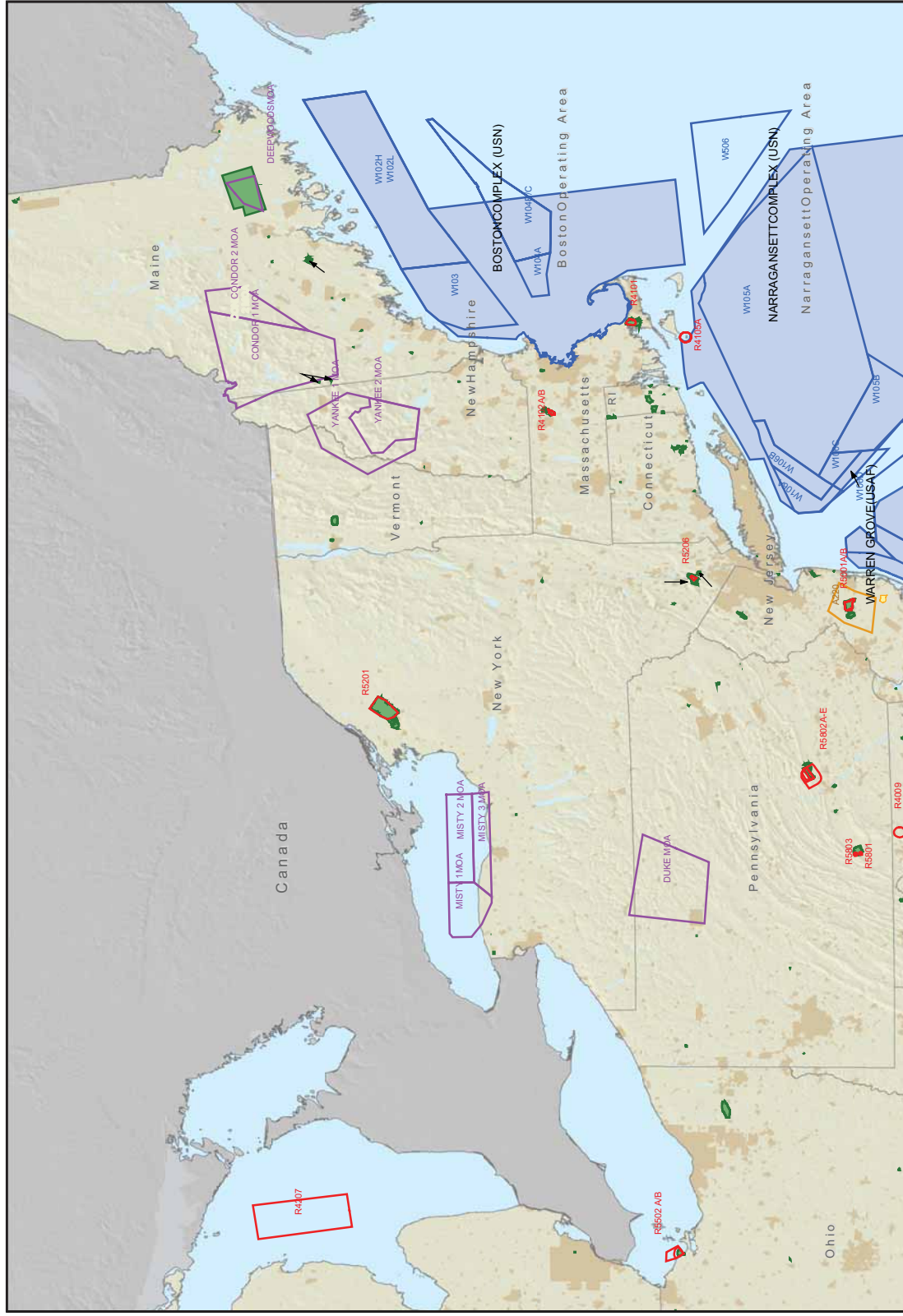


C

Maps and Inventory of Ranges, Range Complexes, Military Training Routes, and Special Use Areas

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Figure C-1 DoD Regional Range Complexes: Northeast



Testing and Training Ranges
Northeast

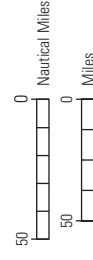
DoD Ranges

	U.S. Marine Corps
	U.S. Navy
	U.S. Air Force
	U.S. Army*

*Army ranges smaller than 500 acres are not labeled.

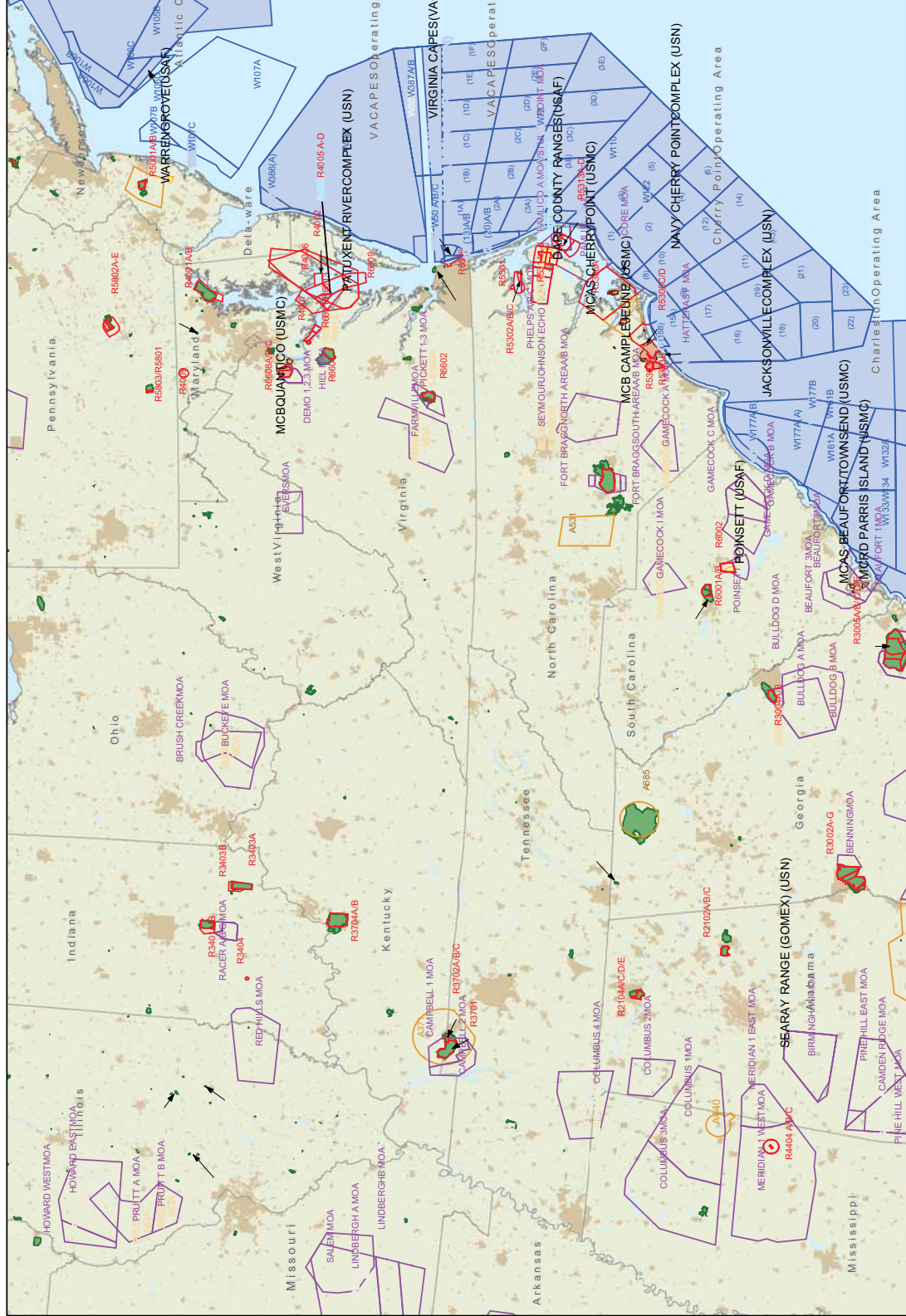
Special Use Airspace

	Alert Area
	Military Operating Area (MOA)
	Restricted Area
	Warning Area
	Surface/Subsurface Operating Areas
	U.S. Census Populated Places



Sources: WT, DISDI, 2004; ORS, USAEC, 2007; NGA DAFI, 2008; Atlantic Fleet Inst 3120.26E, 1983.

Figure C-2 DoD Regional Range Complexes: Mid-Atlantic



Testing and Training Ranges
Mid-Atlantic

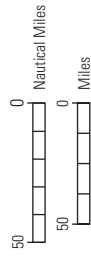
DoD Ranges

- U.S. Marine Corps
- U.S. Navy
- U.S. Air Force
- U.S. Army*

*Army ranges smaller than 500 acres are not labeled.

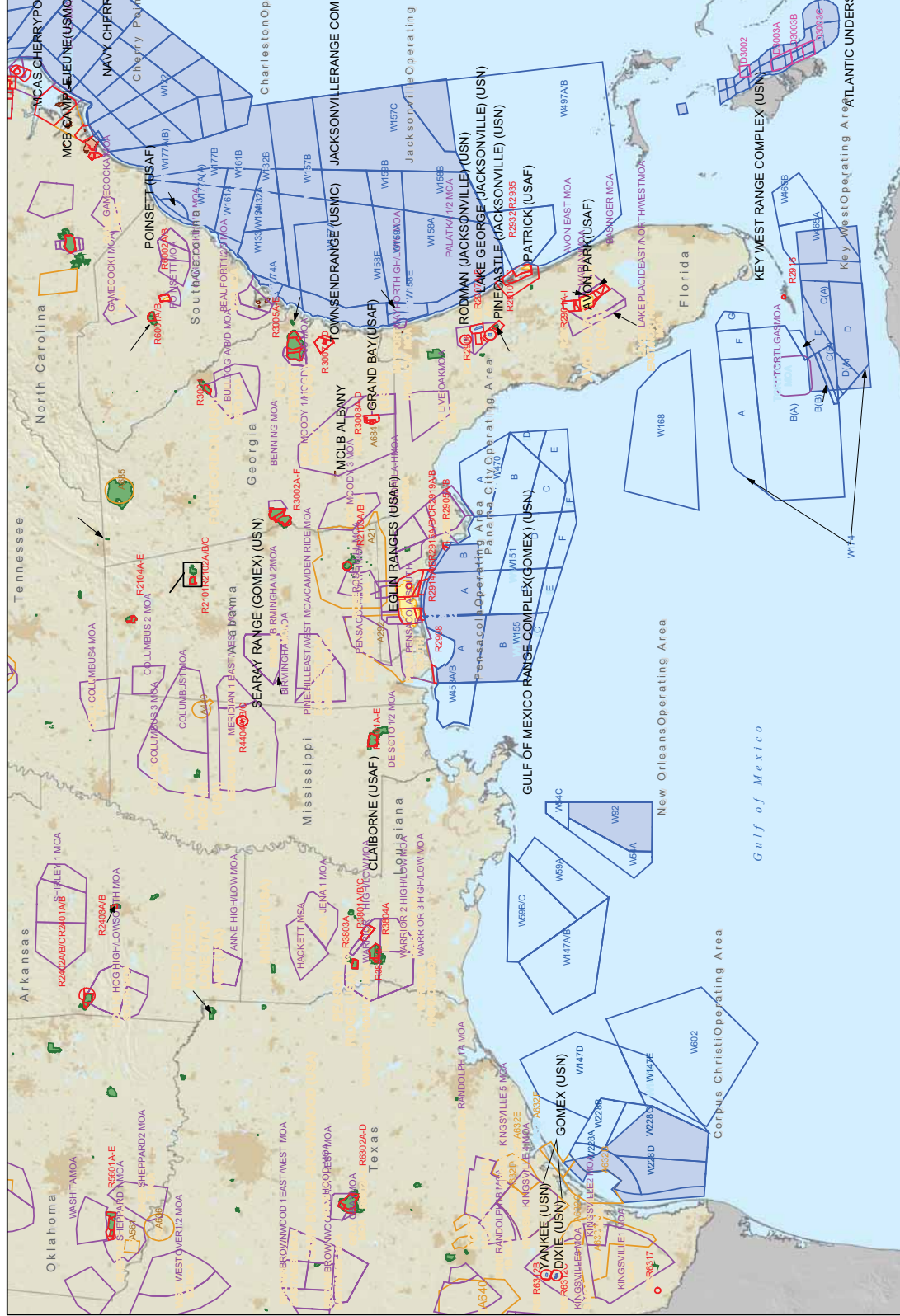
Special Use Airspace

- Alert Area
- Military Operating Area (MOA)
- Restricted Area
- Warning Area
- Surface/Subsurface Operating Areas
- U.S. Census Populated Places



Sources: IVI, DISDI, 2004; ORIS, USAEC, 2007; NGA DAHF, 2008; Atlantic Fleet Inst 3120.26E, 1993.

Figure C-3 DoD Regional Range Complexes: Southeast



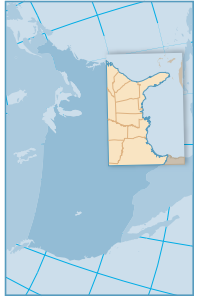
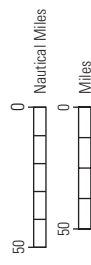
Testing and Training Ranges
 Southeast
DoD Ranges

	U.S. Marine Corps
	U.S. Navy
	U.S. Air Force
	U.S. Army*

*Army ranges smaller than 500 acres are not labeled.

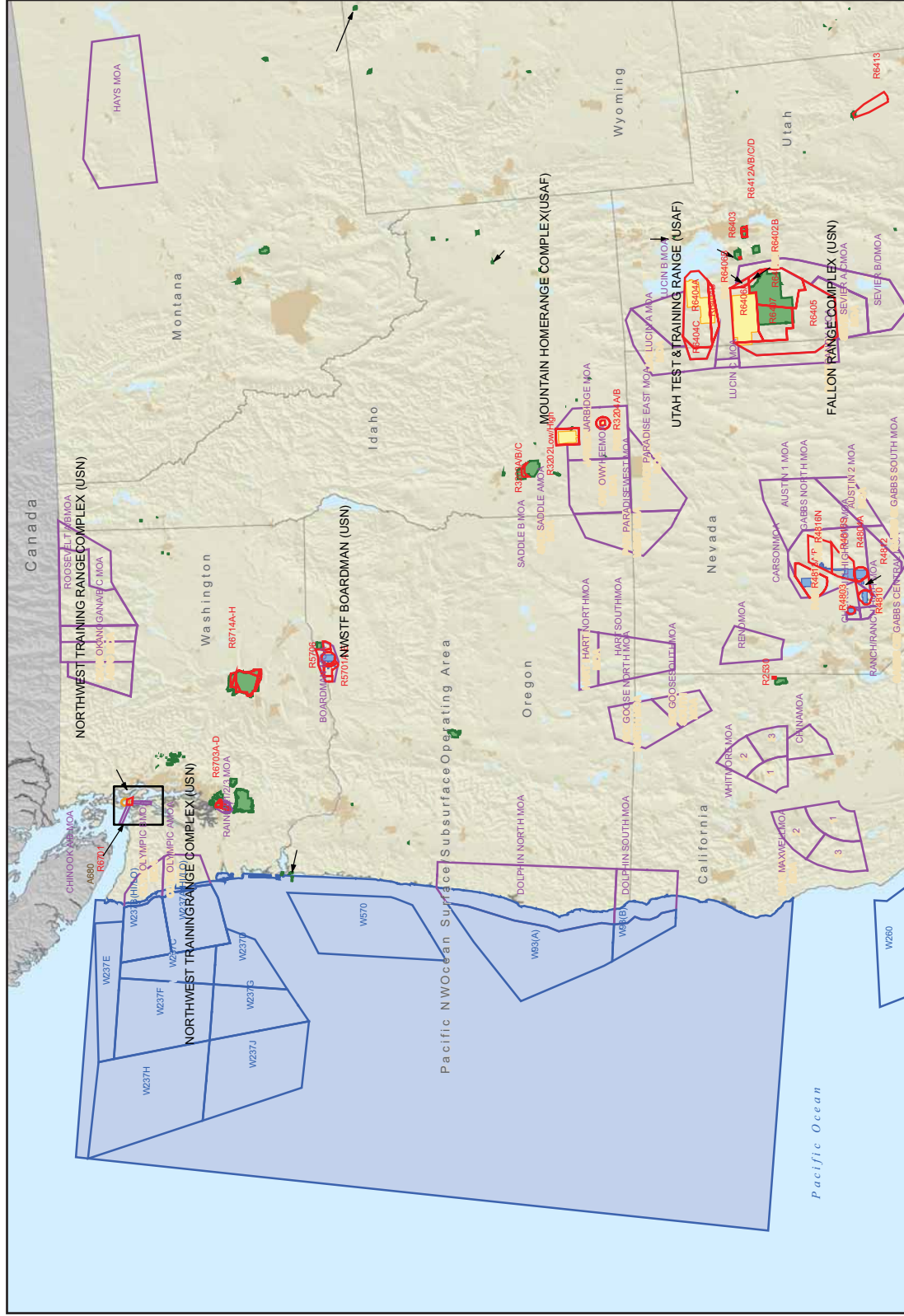
Special Use Airspace

	Alert Area
	Danger and Prohibited Area
	Military Operating Area (MOA)
	Restricted Area
	Warning Area
	Surface/Subsurface Operating Areas
	U.S. Census Populated Places



Sources: IWT, DISDI, 2004; ORIS, USAEC, 2007; NGA DAFH, 2008; Atlantic Fleet Inst 3120.26E, 1993

Figure C-4 DoD Regional Range Complexes: Northwest



Testing and Training Ranges
Northwest

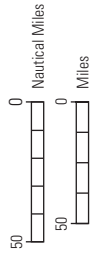
DoD Ranges

	U.S. Marine Corps
	U.S. Navy
	U.S. Air Force
	U.S. Army*

*Army ranges smaller than 500 acres are not labeled.

Special Use Airspace

	Alert Area
	Military Operating Area (MOA)
	Restricted Area
	Warning Area
	Surface/Subsurface Operating Areas
	U.S. Census Populated Places



Sources: MT, DISDI, 2004; ORIS, USAEC, 2007; NGA DAFIF, 2008; FACSAC San Diego Inst 3120-1E, 2000

Figure C-5 DoD Regional Range Complexes: Southwest

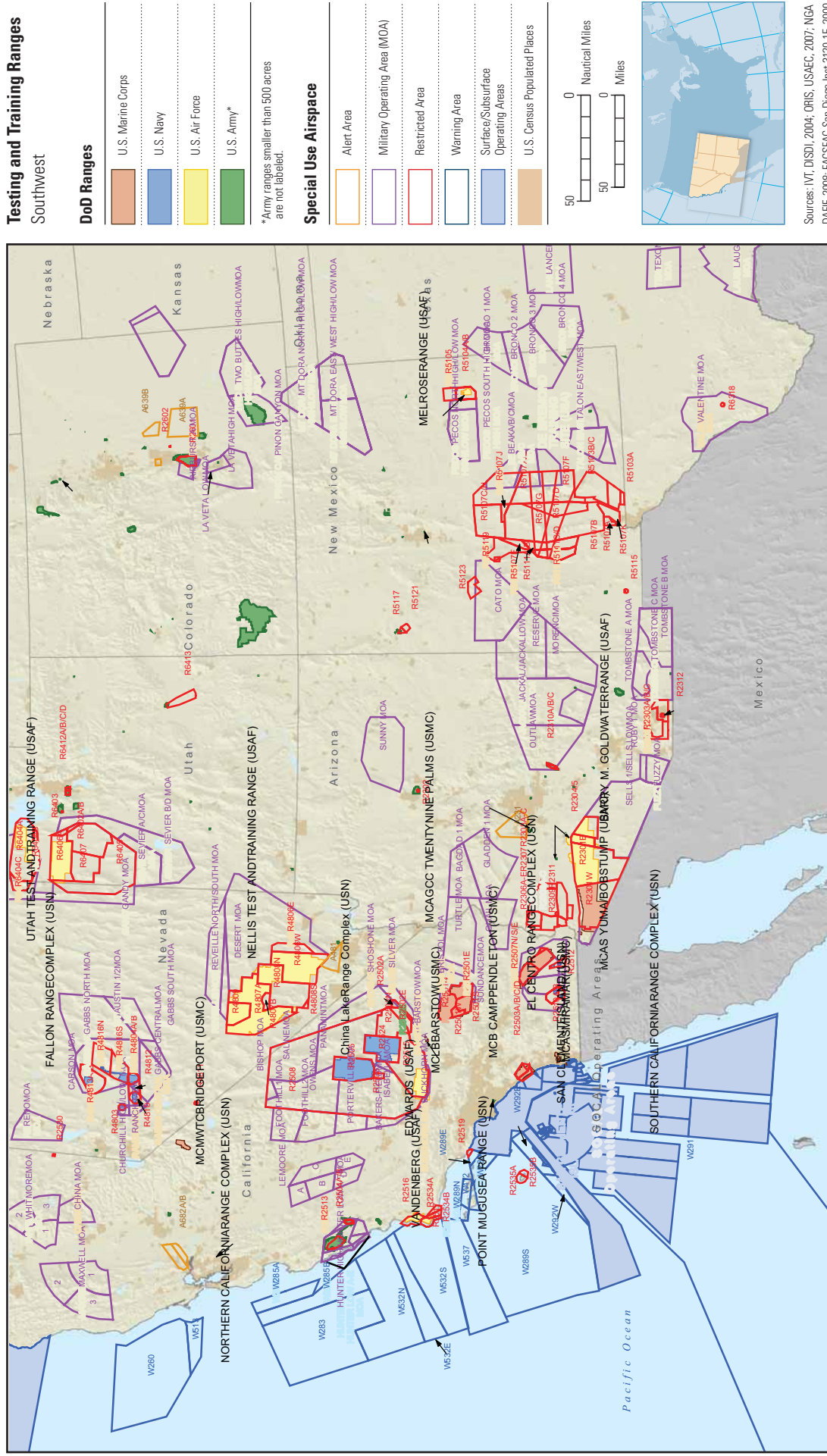
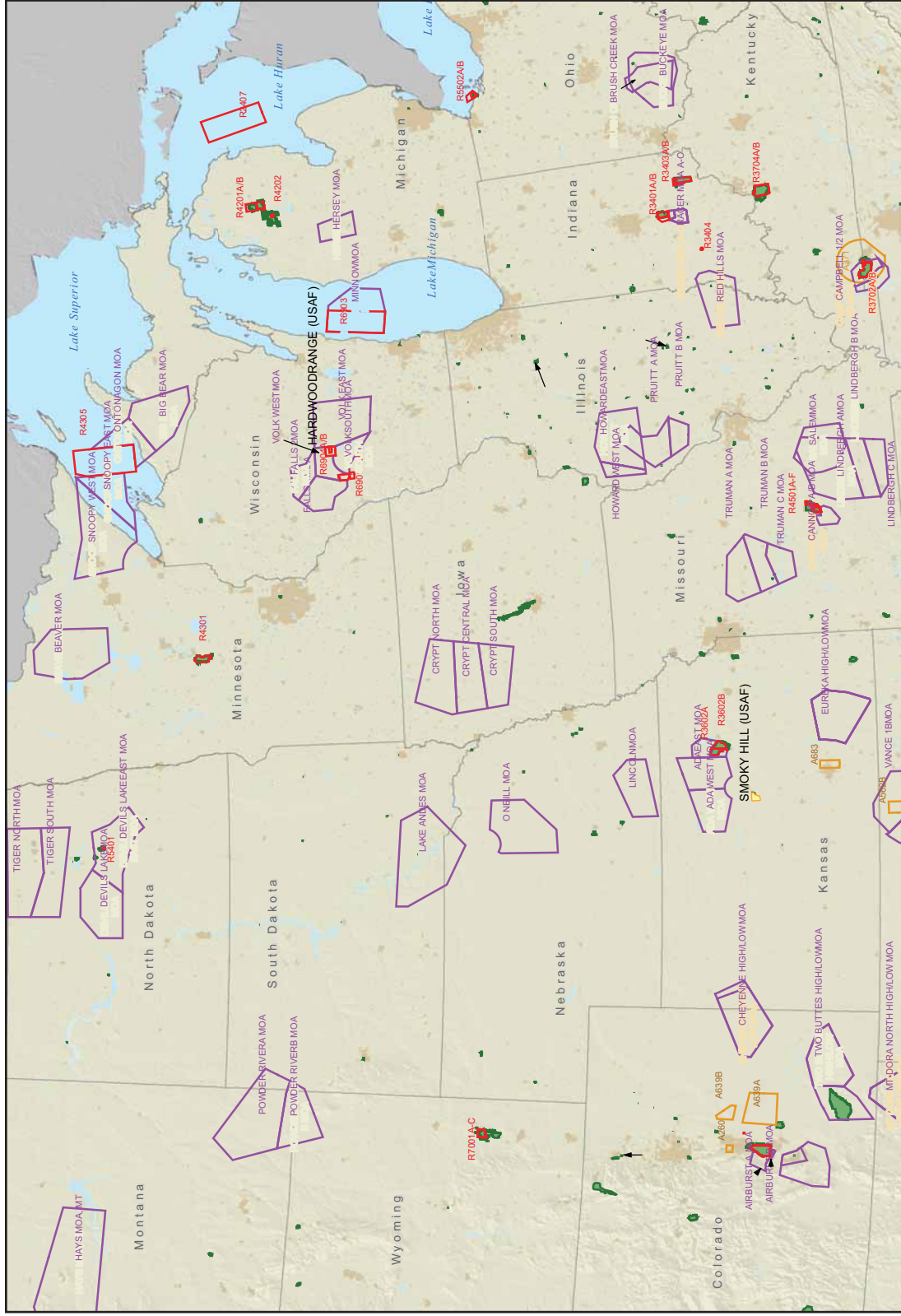


Figure C-6 DoD Regional Range Complexes: Midwest



Testing and Training Ranges
Midwest

DoD Ranges

- U.S. Marine Corps
- U.S. Navy
- U.S. Air Force
- U.S. Army*

*Army ranges smaller than 500 acres are not labeled.

Special Use Airspace

- Alert Area
- Military Operating Area (MDA)
- Restricted Area
- Warning Area
- Surface/Subsurface Operating Areas
- U.S. Census Populated Places

50 0 Nautical Miles
50 0 Miles

Sources: VT, DISD, 2004; ORIS, USAEC, 2007; NGA DAFI, 2008; Atlantic Fleet Inst. 3120.26E, 1993

Figure C-7 DoD Regional Range Complexes: Alaska

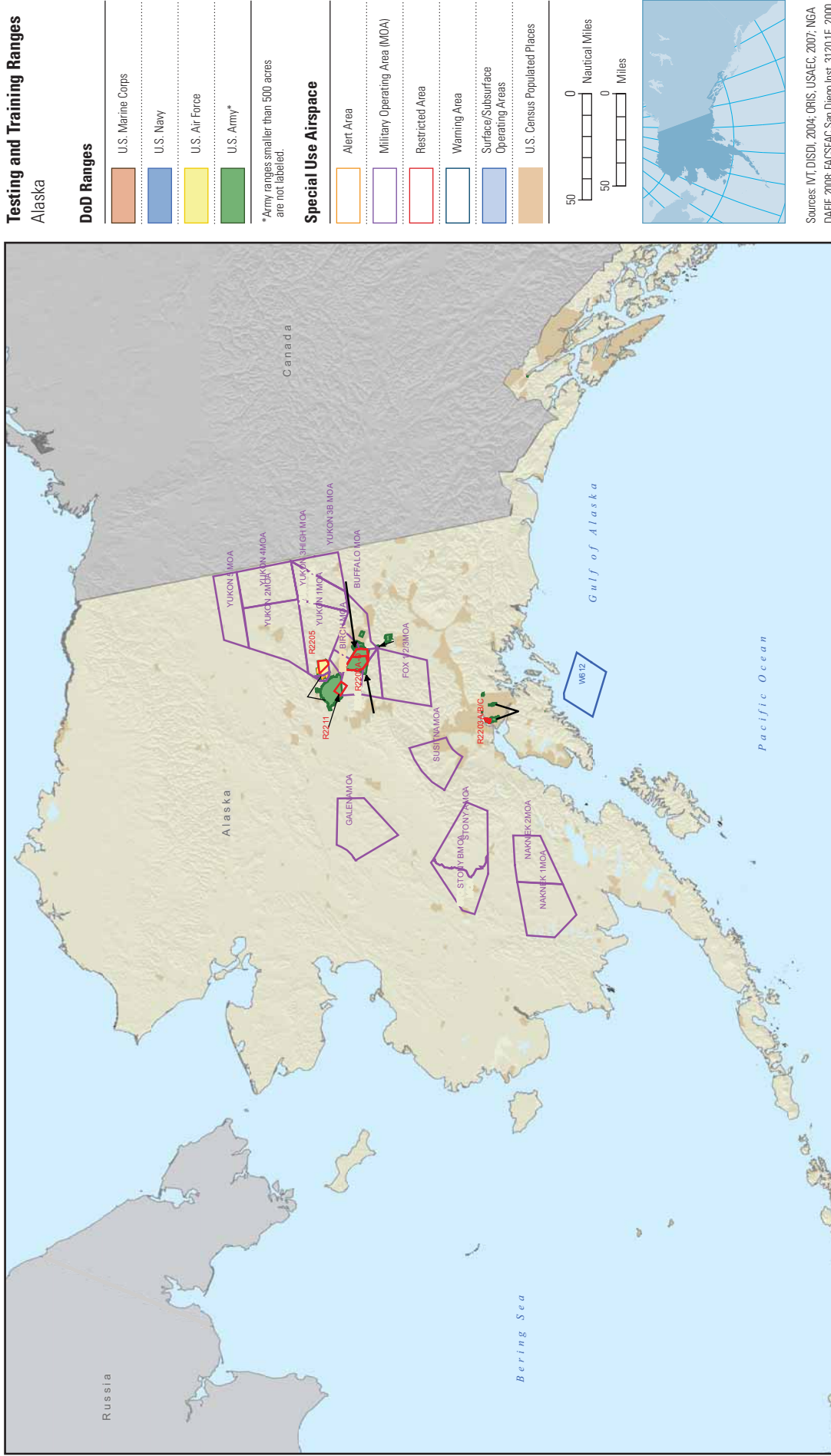
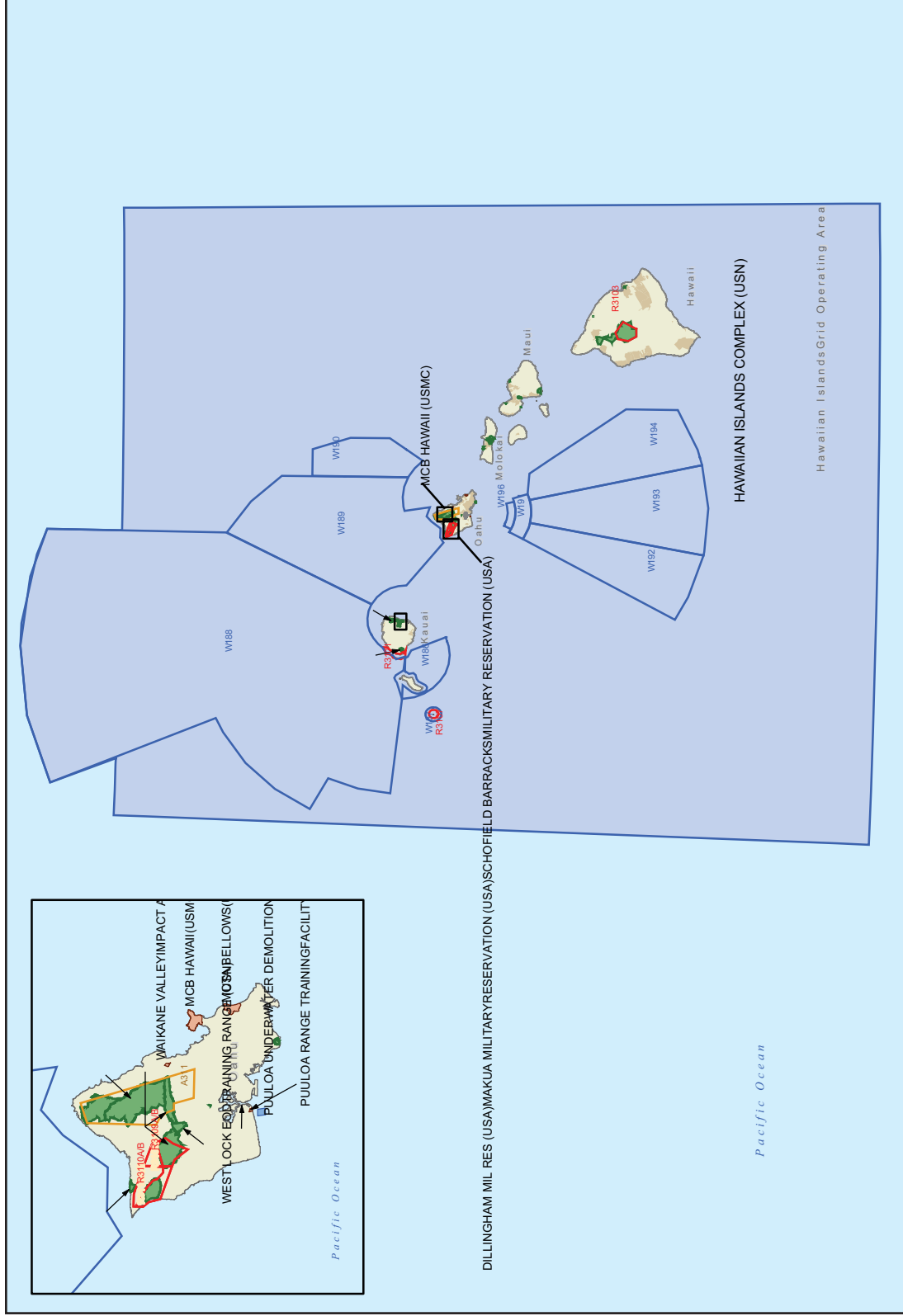


Figure C-8 DoD Regional Range Complexes: Hawaii



Testing and Training Ranges
Hawaii

DoD Ranges

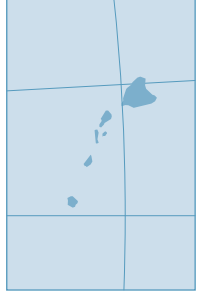
- U.S. Marine Corps
- U.S. Navy
- U.S. Air Force
- U.S. Army*

*Army ranges smaller than 500 acres are not labeled.

Special Use Airspace

- Alert Area
- Military Operating Area (MOA)
- Restricted Area
- Warning Area
- Surface/Subsurface Operating Areas
- U.S. Census Populated Places

50 0 Nautical Miles
50 0 Miles



Sources: IVT, DISDI, 2004; OFHS, USAEC, 2007; NGA DAFIF, 2008; FACS/FAC San Diego Inst. 31201.E, 2000.

Figure C-9 DoD Regional Range Complexes: Europe

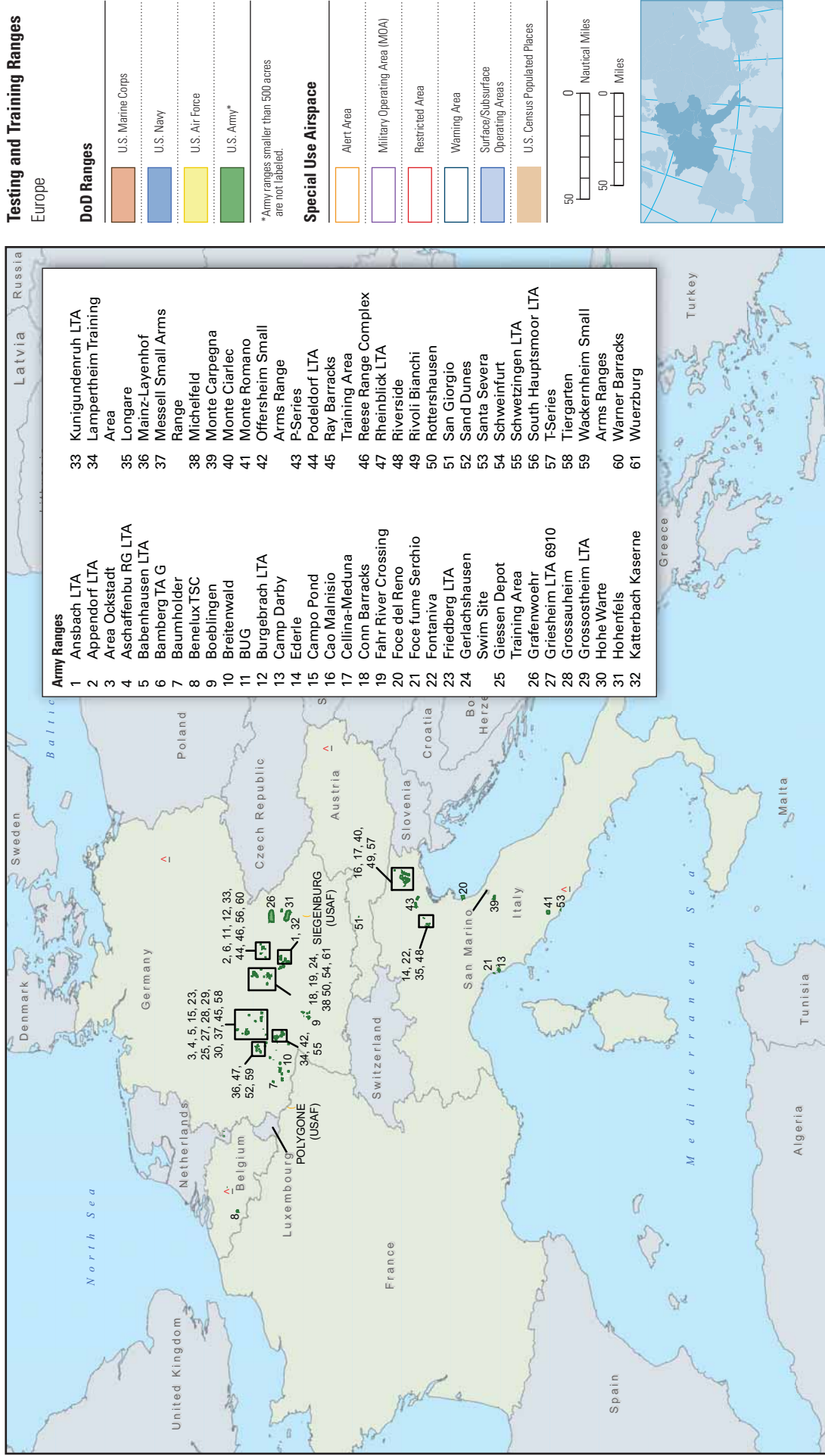
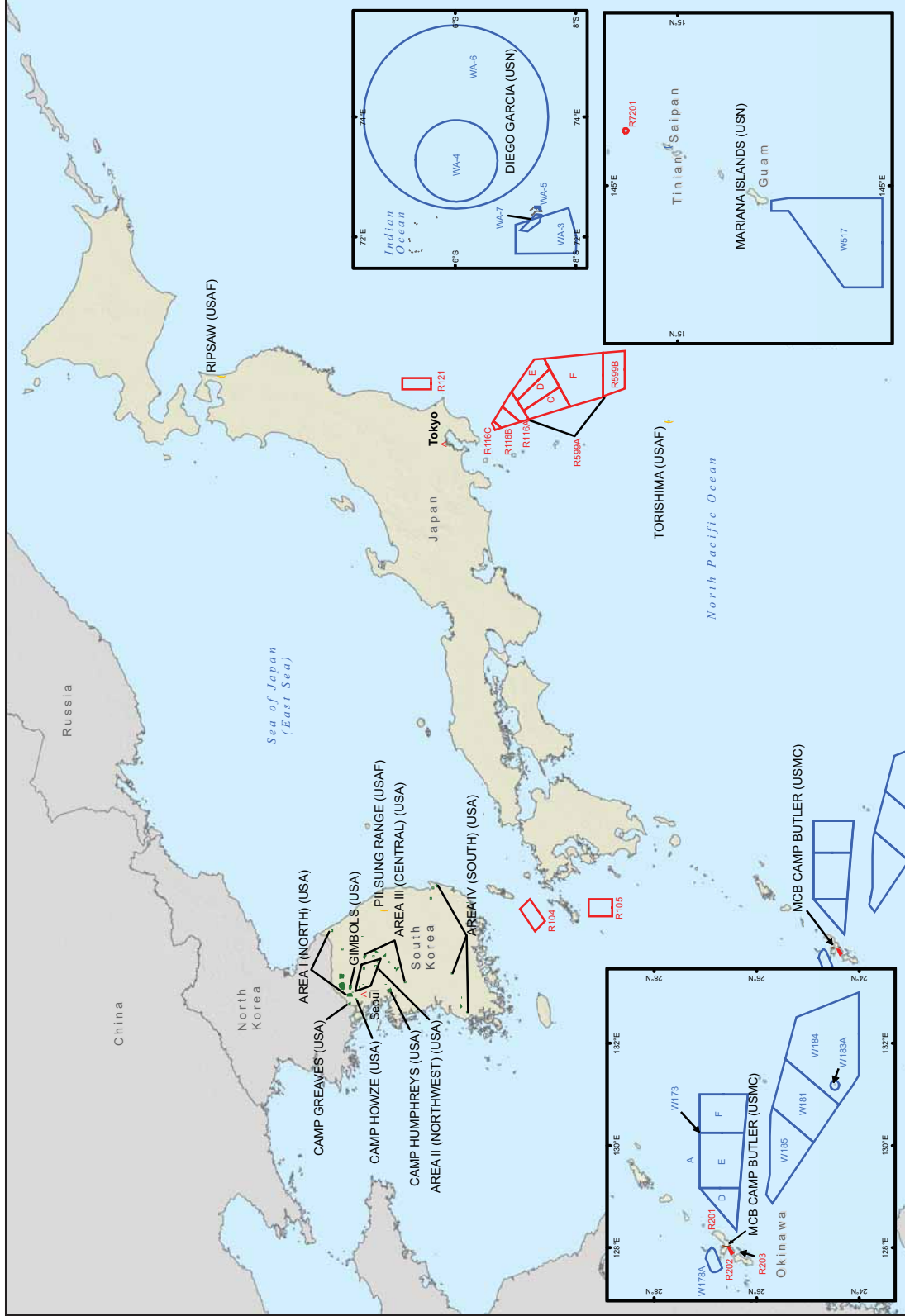


Figure C-10 DoD Regional Range Complexes: West Pacific and Indian Ocean



Testing and Training Ranges
Western Pacific and Indian Ocean

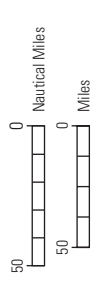
DoD Ranges

	U.S. Marine Corps
	U.S. Navy
	U.S. Air Force
	U.S. Army*

*Army ranges smaller than 500 acres are not labeled.

Special Use Airspace

	Alert Area
	Military Operating Area (MOA)
	Restricted Area
	Warning Area
	Surface/Subsurface Operating Areas
	U.S. Census Populated Places



Sources: IJT, DISD, 2004; OFRIS, USAEC, 2007; NGA DAFH, 2008; Atlantic Fleet Inst 3120.26E, 1993

Training Range Complex Inventory

Military Service	Range Complex	United States (US) or Overseas (OS)	State or Country	Command/Component	Range Description				Range Type																		
					Land Area for Ranges (acres)	Special Use Airspace (sq nm)	Sea Surface Area (sq nm)	Underwater Tracking Area (sq nm)	Air-to-Air or Air-to-Surface	Air-to-Ground	Land Maneuver	Land Impact Area	Land Firing Range	C2W/EW	Ocean Operating Area	MOUT	Underwater Tracking Range	Amphibious Area	Other								
Army	Camp Atterbury	US	IN	ARNG	31,889	0	0	0	N	N	Y	Y	N	N	N	N	N	N	N	N							
	Camp Beauregard	US	LA	ARNG	12,558	0	0	0	N	N	Y	Y	N	N	N	N	N	N	N	N	N						
	Camp Blanding	US	FL	ARNG	68,543	0	0	0	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N					
	Camp Bowie	US	TX	ARNG	8,697	0	0	0	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N				
	Camp Butner	US	NC	ARNG	4,550	0	0	0	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N			
	Camp Clark	US	MO	ARNG	997	0	0	0	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N		
	Camp Crowder	US	MO	ARNG	4,098	0	0	0	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N		
	Camp Curtis Guild	US	MA	ARNG	623	0	0	0	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
	Camp Darby	OS	Italy	USAREUR	135	0	0	0	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	Camp Davis	US	ND	ARNG	82	0	0	0	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	Camp Dawson	US	WV	ARNG	4,363	0	0	0	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	Camp Edwards	US	MA	ARNG	13,285	13	0	0	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	Camp Fogarty Training Site	US	RI	ARNG	17,755	0	0	0	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	Camp Fretterd	US	MD	ARNG	424	0	0	0	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	Camp Grafton	US	ND	TRADOC	11,380	0	0	0	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	Camp Grayling	US	MI	ARNG	147,711	8,680	0	0	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	Camp Gruber	US	OK	ARNG	46,887	0	0	0	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	Camp Guernsey	US	WY	ARNG	35,062	46	0	0	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	Camp Hartell	US	CT	ARNG	31	0	0	0	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	Camp Johnson	US	VT	ARNG	591	0	0	0	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Camp Mackall	US	NC	FORSCOM	8,403	0	0	0	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
Camp Maxey	US	TX	ARNG	6,562	0	0	0	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
Camp McCain	US	MS	ARNG	12,741	0	0	0	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
Camp Merrill	US	GA	TRADOC	340,358	0	0	0	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
Camp Minden	US	LA	ARNG	13,637	0	0	0	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
Camp Murray	US	WA	ARNG	113	0	0	0	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
Camp Perry	US	OH	ARNG	343	0	0	0	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
Camp Rilea	US	OR	ARNG	4,188	0	0	0	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	

Training Range Complex Inventory

Military Service	Range Complex	United States (US) or Overseas (OS)	State or Country	Command/Component	Range Description				Range Type											
					Land Area for Ranges (acres)	Special Use Airspace (sq nm)	Sea Surface Area (sq nm)	Underwater Tracking Area (sq nm)	Air-to-Air or Air-to-Surface	Air-to-Ground	Land Maneuver	Land Impact Area	Land Firing Range	C2W/EW	Ocean Operating Area	MOUT	Underwater Tracking Range	Amphibious Area	Other	
Army	Fort Hood	US	TX	FORSCOM	199,758	500	0	0	N	N	Y	Y	Y	N	N	N	N	Y	N	N
	Fort Huachuca	US	AZ	TRADOC	73,840	815	0	0	N	N	Y	Y	Y	N	N	N	N	N	N	N
	Fort Indiantown Gap	US	PA	ARNG	14,869	0	0	0	N	N	Y	Y	Y	N	N	N	N	Y	N	N
	Fort Irwin	US	CA	FORSCOM	585,638	560	0	0	N	N	Y	Y	Y	N	N	N	N	N	N	N
	Fort Jackson	US	SC	TRADOC	29,532	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	N	N
	Fort Knox	US	KY	TRADOC	101,220	113	0	0	N	N	Y	Y	Y	N	N	N	N	Y	N	N
	Fort Leavenworth	US	KS	TRADOC	4,285	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	N	N
	Fort Lee	US	VA	TRADOC	3,097	69	0	0	N	N	Y	Y	Y	N	N	N	N	N	N	N
	Fort Leonard Wood	US	MO	TRADOC	53,502	175	0	0	N	N	Y	Y	Y	N	N	N	N	N	N	N
	Fort Lewis	US	WA	FORSCOM	77,577	0	0	0	N	N	Y	Y	Y	N	N	N	N	Y	N	N
	Fort McClellan	US	AL	ARNG	40	0	0	0	N	N	Y	Y	N	N	N	N	N	Y	N	N
	Fort McCoy	US	WI	USARC	135,601	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	N	N
	Fort McPherson	US	GA	FORSCOM	21	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	N	N
	Fort Meade	US	SD	ARNG	6,090	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	N	N
	Fort Monmouth	US	NJ	AMC	104	0	0	0	N	N	Y	Y	Y	N	N	N	N	Y	N	N
	Fort Nathaniel Greene	US	RI	USARC	96	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	N	N
	Fort Pickett	US	VA	ARNG	38,699	161	0	0	N	N	Y	Y	Y	N	N	N	N	Y	N	N
	Fort Polk	US	LA	FORSCOM	138,126	5,471	0	0	N	N	Y	Y	Y	N	N	N	N	Y	N	N
	Fort Richardson	US	AK	USARPAC	54,541	163	0	0	N	N	Y	Y	Y	N	N	N	N	Y	N	N
	Fort Riley	US	KS	FORSCOM	92,209	107	0	0	N	N	Y	Y	Y	N	N	N	N	Y	N	N
Fort Rucker	US	AL	TRADOC	58,204	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	N	N	
Fort Sam Houston/Camp Bullis	US	TX	MEDCOM	27,600	0	0	0	N	N	Y	Y	Y	N	N	N	N	Y	N	N	
Fort Sill	US	OK	TRADOC	85,002	153	0	0	N	N	Y	Y	Y	N	N	N	N	N	N	N	
Fort Stewart	US	GA	FORSCOM	274,291	556	0	0	N	N	Y	Y	Y	N	N	N	N	Y	N	N	
Fort Wainwright	US	AK	USARPAC	922,589	0	0	0	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	
Fort William Henry Harrison	US	MT	ARNG	6,314	0	0	0	N	N	Y	Y	Y	N	N	N	N	Y	N	N	
Fort Wingate Missile Launch Complex	US	NM	ATEC	6,526	0	0	0	N	N	N	N	Y	Y	Y	Y	Y	N	N	N	

Training Range Complex Inventory

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					Land Area for Ranges (acres)	Special Use Airspace (sq nm)	Sea Surface Area (sq nm)	Underwater Tracking Area (sq nm)	Air-to-Air or Air-to-Surface	Air-to-Ground	Land Maneuver	Land Impact Area	Land Firing Range	C2W/EW	Ocean Operating Area	MOUT	Underwater Tracking Range	Amphibious Area	Other
Army	Fort Wolters	US	TX	ARNG	4,061	0	0	0	N	N	Y	Y	N	N	N	N	N	N	N
	Friedberg LTA	OS	Germany	USAREUR	8,519	0	0	0	N	N	Y	Y	N	N	N	N	N	N	N
	Frye Mountain Training Site	US	ME	ARNG	5,137	0	0	0	N	N	Y	Y	N	N	N	N	N	N	N
	Gardiner	US	ME	ARNG	106	0	0	0	N	N	Y	Y	N	N	N	N	N	N	N
	Grafenwoehr	OS	Germany	USAREUR	52,281	0	0	0	N	N	Y	Y	N	N	N	N	N	N	N
	Greely	US	AK	USARPAC	631,643	0	0	0	N	N	Y	Y	N	N	N	N	N	N	N
	Green River Launch Complex	US	UT	ATEC	3,944	0	0	0	N	N	N	Y	N	N	N	N	N	N	N
	Guiderland	US	NY	ARNG	291	0	0	0	N	N	N	Y	N	N	N	N	N	N	N
	Gunpowder MIL RES	US	MD	ARNG	227	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Happy Valley (Carlsbad)	US	NM	ARNG	721	0	0	0	N	N	Y	Y	N	N	N	N	N	N	N
	Hawthorne Army Depot	US	NV	AMC	35,633	0	0	0	N	N	Y	Y	N	N	N	N	N	N	N
	Henry H. Cobb Jr. - Pelham	US	AL	ARNG	22,139	0	0	0	N	N	Y	Y	N	N	N	N	N	N	N
	Hohenfels	OS	Germany	USAREUR	38,981	0	0	0	N	N	Y	Y	N	N	N	N	N	N	N
	Hollis Plains Training Site	US	ME	ARNG	412	0	0	0	N	N	Y	Y	N	N	N	N	N	N	N
	Hunter Army Airfield	US	GA	FORSCOM	2,742	0	0	0	N	N	Y	Y	N	N	N	N	N	N	N
	Hunter-Liggett	US	CA	USARC	153,872	113	0	0	N	N	Y	Y	N	N	N	N	N	N	N
	Idaho Falls Training Site	US	ID	ARNG	1,081	0	0	0	N	N	Y	Y	N	N	N	N	N	N	N
	Idaho Launch Complex	US	ID	ATEC	315	0	0	0	N	N	N	Y	N	N	N	N	N	N	N
	Ike Skelton Training Site	US	MO	ARNG	24	0	0	0	N	N	Y	Y	N	N	N	N	N	N	N
	Indiana Range Wet Site	US	PA	ARNG	165	0	0	0	N	N	Y	Y	N	N	N	N	N	N	N
Iowa AAP	US	IA	AMC	1,338	0	0	0	N	N	Y	Y	N	N	N	N	N	N	N	
Jefferson Proving Ground	US	IN	AMC	1,050	0	0	0	N	N	N	Y	N	N	N	N	N	N	N	
John Sevier Range	US	TN	ARNG	6	0	0	0	N	N	N	Y	N	N	N	N	N	N	N	
Joliet Training Center	US	IL	USARC	3,446	0	0	0	N	N	Y	Y	N	N	N	N	N	N	N	
Kahuku Training Area	US	HI	USARPAC	8,833	0	0	0	N	N	Y	Y	N	N	N	N	N	N	N	
Kanaio Training Center	US	HI	ARNG	4,612	0	0	0	N	N	Y	Y	N	N	N	N	N	N	N	
Kansas AAP	US	KS	AMC	157	0	0	0	N	N	Y	Y	N	N	N	N	N	N	N	
Kansas Regional Training Site (Smoky Hills)	US	KS	ARNG	3,404	0	0	0	N	N	Y	Y	N	N	N	N	N	N	N	

Training Range Complex Inventory

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					Land Area for Ranges (acres)	Special Use Airspace (sq nm)	Sea Surface Area (sq nm)	Underwater Tracking Area (sq nm)	Air-to-Air or Air-to-Surface	Air-to-Ground	Land Maneuver	Land Impact Area	Land Firing Range	C2W/EW	Ocean Operating Area	MOUT	Underwater Tracking Range	Amphibious Area
Army	Monte Romano	OS	Italy	USAREUR	10,207	0	0	0	N	N	Y	Y	N	N	N	N	N	N
	MOTSU	US	NC	MTMC	7	0	0	0	N	N	Y	N	N	N	N	N	N	N
	MTA Camp Dodge	US	IA	ARNG	4,025	0	0	0	N	N	Y	Y	N	N	N	N	N	N
	MTA SMR CP Pendleton	US	VA	ARNG	89	0	0	0	N	N	Y	Y	N	N	N	N	N	N
	Navajo	US	AZ	ARNG	28,349	0	0	0	N	N	Y	Y	N	N	N	N	N	N
	New Castle Rifle Range	US	DE	ARNG	93	0	0	0	N	N	Y	Y	N	N	N	N	N	N
	Newton Falls (RAAP)	US	OH	ARNG	2,879	0	0	0	N	N	Y	Y	N	N	N	N	N	N
	NGTC at Sea Girt	US	NJ	ARNG	120	0	0	0	N	N	Y	Y	N	N	N	N	N	N
	NH NG Training Site	US	NH	ARNG	94	0	0	0	N	N	N	N	N	N	N	N	N	N
	Offersheim Small Arms Range	OS	Germany	USAREUR	3	0	0	0	N	N	Y	Y	N	N	N	N	N	N
	Onate Training Site	US	NM	ARNG	158	0	0	0	N	N	Y	Y	N	N	N	N	N	N
	Orchard (Gowen Field) Training Area	US	ID	ARNG	138,847	0	0	0	N	N	Y	Y	N	N	N	N	N	N
	Papago Park MIL RES	US	AZ	ARNG	103	0	0	0	N	N	N	N	N	N	N	N	N	N
	Parks RFTA	US	CA	USARC	1,985	0	0	0	N	N	Y	Y	N	N	N	N	N	N
	Peason Ridge NC	US	LA	FORSCOM	33,456	0	0	0	N	N	N	Y	Y	N	N	N	N	N
	Picatimny Arsenal	US	NJ	AMC	4,545	0	0	0	N	N	Y	Y	N	N	N	N	N	N
	Pine Bluff Arsenal	US	AR	AMC	99	0	0	0	N	N	N	Y	Y	N	N	N	N	N
	Plymouth Training Site	US	ME	ARNG	306	0	0	0	N	N	Y	Y	N	N	N	N	N	N
	Pocatello Training Site	US	ID	ARNG	718	0	0	0	N	N	Y	Y	N	N	N	N	N	N
	Podeldorf LTA	OS	Germany	USAREUR	1,105	0	0	0	N	N	Y	Y	N	N	N	N	N	N
	Pohakuloa Training Area	US	HI	USARPAC	109,950	0	0	0	N	N	Y	Y	N	N	N	N	N	N
	P-Series	OS	Italy	USAREUR	5,291	0	0	0	N	N	Y	Y	N	N	N	N	N	N
	Pueblo Chemical Depot	US	CO	AMC	94	0	0	0	N	N	N	N	N	N	N	N	N	N
Puu Luhine (Red Hill) LTA	US	HI	ARNG	8,314	0	0	0	N	N	Y	Y	N	N	N	N	N	N	
Racine County Line Range	US	WI	ARNG	15	0	0	0	N	N	N	Y	Y	N	N	N	N	N	
Ray Barracks Training Area	OS	Germany	USAREUR	21	0	0	0	N	N	Y	Y	N	N	N	N	N	N	
Red River Army Depot	US	TX	AMC	165	0	0	0	N	N	N	N	N	N	N	N	N	N	
Redfield Training Area	US	SD	ARNG	174	0	0	0	N	N	Y	Y	N	N	N	N	N	N	

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Individual Army Ranges	Honopou LTA	US	HI	ARNG	106	0	0	0	N	N	Y	N	N	N	N	N	N	N	N	N					
	Horsetooth Reservoir	US	CO	ARNG	5,012	0	0	0	N	N	N	N	N	N	N	N	N	N	N	N	Y				
	Kalepa LTA	US	HI	ARNG	902	0	0	0	N	N	Y	N	N	N	N	N	N	N	N	N	N	N			
	Katterbach Kaserne	OS	Germany	USAREUR	49	0	0	0	N	N	N	N	N	N	N	N	N	N	N	N	N	Y			
	Keamuku LTA	US	HI	USARPAC	22,640	0	0	0	N	N	Y	N	N	N	N	N	N	N	N	N	N	N			
	Kekaha LTA	US	HI	ARNG	3,193	0	0	0	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N		
	Kelly Canyon TS	US	ID	ARNG	3,826	0	0	0	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N		
	Kingsbury LTA	US	IN	USARC	919	0	0	0	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	
	Kunigundenruh LTA	OS	Germany	USAREUR	113	0	0	0	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	
	Lake City AAP	US	MO	AMC	696	0	0	0	N	N	Y	N	N	N	Y	N	N	N	N	N	N	N	Y	Y	
	Lampertheim Training Area	OS	Germany	USAREUR	3,942	0	0	0	N	N	Y	N	N	N	Y	N	N	N	N	N	N	N	Y	Y	
	Lander Local Training Area	US	WY	ARNG	1,353	0	0	0	N	N	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	
	Lauderick Creek MIL RES	US	MD	ARNG	1,065	0	0	0	N	N	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	
	Lebanon Readiness Center	US	NH	ARNG	0	0	0	0	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	
	Leeman Field LTA	US	VA	ARNG	24	0	0	0	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	
	Leroy Dilka Land	US	CO	ARNG	2	0	0	0	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	
	Letterkenny Army Depot	US	PA	AMC	9	0	0	0	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	
	Lexington	US	OK	ARNG	317	0	0	0	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	
	Limestone Hills Training Area	US	MT	ARNG	19,120	0	0	0	N	N	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	Y
	Lone Star AAP	US	TX	AMC	232	0	0	0	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N
Longare	OS	Italy	USAREUR	15	0	0	0	N	N	Y	N	N	N	Y	N	N	N	N	N	N	N	N	Y	Y	
Longhorn AAP	US	TX	AMC	0	0	0	0	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	
Los Alamitos JFTB	US	CA	ARNG	397	0	0	0	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	Y	Y	
Lovell Local Training Area	US	WY	ARNG	3,606	0	0	0	N	N	Y	N	N	N	Y	N	N	N	N	N	N	N	N	Y	Y	
LTA 6910	OS	Germany	USAREUR	104	0	0	0	N	N	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	
LTA Vaap	US	TN	USARC	195	0	0	0	N	N	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	
Lt. Hernan G. Pesquera Usar Center	US	PR	USARC	4	0	0	0	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	
Mabe Range LTA	US	VA	ARNG	1,726	0	0	0	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	Y	Y	

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Individual Army Ranges	Macon Training Site	US	MT	ARNG	3,062	0	0	0	N	N	Y	N	Y	N	N	N	N	N	N
	Mainz-Layenhof	OS	Germany	USAREUR	249	0	0	0	N	N	N	N	N	N	N	Y	N	N	N
	Makua MIL RES	US	HI	USARPAC	4,228	0	0	0	N	N	N	N	N	N	Y	N	N	N	N
	Maluhia LTA	US	HI	ARNG	70	0	0	0	N	N	Y	N	Y	N	N	N	N	N	N
	Mankato Local Training Area	US	MN	USARC	20	0	0	0	N	N	Y	N	Y	N	N	N	N	N	N
	Marion LTA	US	OH	USARC	122	0	0	0	N	N	Y	N	Y	N	N	N	N	N	N
	Marseilles Training Site	US	IL	ARNG	2,617	0	0	0	N	N	Y	N	Y	Y	Y	N	N	N	Y
	McAlester AAP	US	OK	AMC	2,245	0	0	0	N	N	Y	N	Y	Y	Y	N	N	N	Y
	McCrary Training Center	US	SC	ARNG	14,506	0	0	0	N	N	Y	N	Y	Y	Y	N	N	N	Y
	Mead Training Site	US	NE	ARNG	1,185	0	0	0	N	N	Y	N	Y	Y	Y	N	N	N	Y
	Messell Small Arms Range	OS	Germany	USAREUR	25	0	0	0	N	N	N	N	N	N	Y	N	N	N	Y
	Michelfeld	OS	Germany	USAREUR	92	0	0	0	N	N	Y	N	Y	N	N	N	N	N	N
	Milian Volunteer Training Site	US	TN	ARNG	2,391	0	0	0	N	N	Y	N	Y	Y	Y	N	N	N	Y
	Mitchell Training Area	US	SD	ARNG	1	0	0	0	N	N	N	N	N	N	Y	N	N	N	N
	Mobridge Training Area	US	SD	ARNG	119	0	0	0	N	N	Y	N	Y	Y	N	N	N	N	Y
	Monte Carpegna	OS	Italy	USAREUR	6,488	0	0	0	N	N	Y	N	Y	Y	N	N	N	N	N
	Monte Ciarlec	OS	Italy	USAREUR	7,925	0	0	0	N	N	Y	N	Y	Y	N	N	N	N	N
	Monte Romano	OS	Italy	USAREUR	10,207	0	0	0	N	N	Y	N	Y	Y	Y	N	N	N	Y
	Moosehorn	US	ME	ARNG	0	0	0	0	N	N	N	N	N	N	Y	N	N	N	N
	MOTSU	US	NC	MTMC	7	0	0	0	N	N	Y	N	Y	Y	Y	N	N	N	N
Mountwood Park	US	WV	ARNG	3,109	0	0	0	N	N	Y	N	Y	Y	N	N	N	N	N	
MTA Camp Dodge	US	IA	ARNG	4,025	0	0	0	N	N	Y	N	Y	Y	Y	N	Y	N	Y	
MTA SMR CP Pendleton	US	VA	ARNG	89	0	0	0	N	N	Y	N	Y	Y	Y	N	N	N	Y	
MTA Stead FAC	US	NV	ARNG	196	0	0	0	N	N	Y	N	Y	Y	N	N	N	N	N	
Navajo	US	AZ	ARNG	28,349	0	0	0	N	N	Y	N	Y	Y	Y	N	N	N	Y	
New Castle Rifle Range	US	DE	ARNG	93	0	0	0	N	N	Y	N	Y	Y	Y	N	N	N	Y	
New River Valley Training Site	US	VA	USARC	88	0	0	0	N	N	N	N	N	N	N	N	N	N	Y	
Newark LTA, NY	US	NY	ARNG	100	0	0	0	N	N	Y	N	Y	Y	N	N	N	N	N	

Training Range Complex Inventory

Military Service	Range Complex	United States (US) or Overseas (OS)	State or Country	Command/Component	Range Description				Range Type																		
					Land Area for Ranges (acres)	Special Use Airspace (sq nm)	Sea Surface Area (sq nm)	Underwater Tracking Area (sq nm)	Air-to-Air or Air-to-Surface	Air-to-Ground	Land Maneuver	Land Impact Area	Land Firing Range	C2W/EW	Ocean Operating Area	MOUT	Underwater Tracking Range	Amphibious Area	Other								
Individual Army Ranges	Newfane WET Site	US	NY	USARC	3	0	0	0	N	N	N	N	N	N	N	N	N	N	N	N							
	Newport Chemical Depot	US	IN	AMC	0	0	0	0	N	N	N	N	N	N	N	N	N	N	N	N	N						
	Newton Falls (RAAP)	US	OH	ARNG	2,879	0	0	0	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y					
	NGTC at Sea Girt	US	NJ	ARNG	120	0	0	0	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y					
	NHNG Training Site	US	NH	ARNG	94	0	0	0	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N				
	Nounou LTA	US	HI	ARNG	1,720	0	0	0	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y				
	Ocala Armory	US	FL	ARNG	0	0	0	0	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N			
	Offersheim Small Arms Range	OS	Germany	USAREUR	3	0	0	0	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y			
	Ogden Local Training Area	US	UT	USARC	132	0	0	0	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		
	Onate Training Site	US	NM	ARNG	158	0	0	0	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		
	Orchard (Gowen Field) Training Area	US	ID	ARNG	138,847	0	0	0	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		
	Oxford	US	ME	ARNG	58	0	0	0	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		
	Paisley LTA	US	FL	ARNG	11,279	0	0	0	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		
	Papago Park MIL RES	US	AZ	ARNG	103	0	0	0	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
	Parks RFTA	US	CA	USARC	1,985	0	0	0	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		
	Pau'Ujilo LTA	US	HI	ARNG	45	0	0	0	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
	Peaceful Valley Ranch	US	CO	ARNG	1,205	0	0	0	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
	Pearson Ridge NC	US	LA	FORSCOM	33,456	0	0	0	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	Peterborough Readiness Center	US	NH	ARNG	0	0	0	0	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	Picacho Training Site	US	AZ	ARNG	352	0	0	0	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Picatinny Arsenal	US	NJ	AMC	4,545	0	0	0	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		
Pickens TS	US	SC	ARNG	9	0	0	0	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		
Pierre Training Area	US	SD	ARNG	5	0	0	0	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
Pine Bluff Arsenal	US	AR	AMC	99	0	0	0	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
Platte Training Area	US	SD	ARNG	40	0	0	0	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		
Plymouth Training Site	US	ME	ARNG	306	0	0	0	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		
Pocatello Airport Local Training Area	US	ID	USARC	9	0	0	0	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		
Pocatello Training Site	US	ID	ARNG	718	0	0	0	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		

Training Range Complex Inventory

Military Service	Range Complex	United States (US) or Overseas (OS)	State or Country	Command/Component	Range Description					Range Type								
					Land Area for Ranges (acres)	Special Use Airspace (sq nm)	Sea Surface Area (sq nm)	Underwater Tracking Area (sq nm)	Air-to-Air or Air-to-Surface	Air-to-Ground	Land Maneuver	Land Impact Area	Land Firing Range	C2W/EW	Ocean Operating Area	MOUT	Underwater Tracking Range	Amphibious Area
Individual Army Ranges	Podeldorf LTA	OS	Germany	USAREUR	1,105	0	0	0	N	N	Y	N	Y	N	N	N	N	N
	Pohakuloa Training Area	US	HI	USARPAC	109,950	0	0	0	N	N	Y	Y	Y	N	N	N	N	Y
	Poverty Flats Training Area	US	UT	ARNG	448	0	0	0	N	N	Y	N	Y	N	N	N	N	N
	Price Training Area	US	UT	ARNG	159	0	0	0	N	N	N	N	N	N	N	N	N	Y
	P-Series	OS	Italy	USAREUR	5,291	0	0	0	N	N	Y	N	Y	N	N	N	N	N
	Pueblo Chemical Depot	US	CO	AMC	94	0	0	0	N	N	N	N	N	N	N	N	N	Y
	Puu Kapele LTA	US	HI	ARNG	1,109	0	0	0	N	N	Y	N	Y	N	N	N	N	N
	Puu Luhine (Red Hill) LTA	US	HI	ARNG	8,314	0	0	0	N	N	Y	N	Y	N	N	N	N	N
	Puu Pa LTA	US	HI	ARNG	13,243	0	0	0	N	N	Y	N	Y	N	N	N	N	N
	Pu Unene LTA	US	HI	ARNG	1,610	0	0	0	N	N	Y	N	Y	N	N	N	N	N
	Racine County Line Range	US	WI	ARNG	15	0	0	0	N	N	N	N	N	N	N	N	N	N
	Raleigh County Firing Range	US	WV	ARNG	1	0	0	0	N	N	N	N	N	N	N	N	N	N
	Ramey Usar Center LTA	US	PR	USARC	53	0	0	0	N	N	N	N	N	N	N	N	N	N
	Ray Barracks Training Area	OS	Germany	USAREUR	21	0	0	0	N	N	Y	N	Y	N	N	N	N	Y
	Raytown Training Site	US	MO	ARNG	51	0	0	0	N	N	Y	N	Y	N	N	N	N	Y
	Red River Army Depot	US	TX	AMC	165	0	0	0	N	N	N	N	N	N	N	N	N	Y
	Redfield Training Area	US	SD	ARNG	174	0	0	0	N	N	Y	N	Y	N	N	N	N	N
	Redstone Arsenal	US	AL	AMC	25,505	25	0	0	N	N	Y	Y	Y	N	Y	N	N	N
	Reese Range Complex	OS	Germany	USAREUR	18	0	0	0	N	N	N	N	N	N	N	N	N	Y
	Rheinblick LTA	OS	Germany	USAREUR	44	0	0	0	N	N	N	N	N	N	N	N	N	Y
	Ridgeway	US	PA	ARNG	7	0	0	0	N	N	Y	N	Y	N	N	N	N	Y
	Rio Rancho	US	NM	ARNG	96	0	0	0	N	N	N	N	N	N	N	N	N	Y
	Rittenhouse Training Site	US	AZ	ARNG	198	0	0	0	N	N	Y	N	Y	N	N	N	N	N
	Riverside	OS	Italy	USAREUR	3	0	0	0	N	N	Y	N	Y	N	N	N	N	N
	Rivoli Bianchi	OS	Italy	USAREUR	235	0	0	0	N	N	N	N	N	N	Y	N	N	N
	Roswell	US	NM	ARNG	5,376	0	0	0	N	N	Y	N	Y	N	Y	N	N	N
Rotterdam	OS	Germany	USAREUR	142	0	0	0	N	N	Y	N	Y	N	N	N	N	N	
Safford Training Site	US	AZ	ARNG	399	0	0	0	N	N	Y	N	Y	N	N	N	N	N	

Training Range Complex Inventory

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					Land Area for Ranges (acres)	Special Use Airspace (sq nm)	Sea Surface Area (sq nm)	Underwater Tracking Area (sq nm)	Air-to-Air or Air-to-Surface	Air-to-Ground	Land Maneuver	Land Impact Area	Land Firing Range	C2W/EW	Ocean Operating Area	MOUT	Underwater Tracking Range	Amphibious Area
Individual Army Ranges	Tarleton LTA	US	OH	ARNG	118	0	0	0	N	N	Y	N	N	N	N	N	N	N
	Tiergarten	OS	Germany	USAREUR	234	0	0	0	N	N	Y	N	N	N	N	N	N	Y
	Toledo Usarc	US	OH	USARC	28	0	0	0	N	N	Y	N	N	N	N	N	N	N
	Tooele Army Depot	US	UT	AMC	1,450	0	0	0	N	N	N	N	N	N	Y	N	N	N
	Tosohatchee LTA	US	FL	ARNG	3,445	0	0	0	N	N	N	N	N	N	N	N	N	Y
	Truman Training Site	US	MO	ARNG	565	0	0	0	N	N	Y	N	N	N	N	N	N	N
	TS Caswell	US	ME	ARNG	1,094	0	0	0	N	N	Y	N	N	N	Y	N	N	N
	TS NAS Fallon RG B19	US	NV	ARNG	132	0	0	0	N	N	N	N	N	Y	Y	N	N	Y
	T-Series	OS	Italy	USAREUR	7,222	0	0	0	N	N	Y	N	N	N	N	N	N	N
	TS-Hawk McCombsville, OH	US	OH	ARNG	395	0	0	0	N	N	Y	N	N	N	N	N	N	N
	Tucumcari Training Site	US	NM	ARNG	63	0	0	0	N	N	Y	N	N	Y	N	N	N	N
	Tulahoma MIL RES	US	TN	ARNG	6,553	0	0	0	N	N	Y	N	N	Y	Y	N	N	Y
	Twin Falls Training Site	US	ID	ARNG	312	0	0	0	N	N	Y	N	N	Y	Y	N	N	N
	Ukumehame Firing Range	US	HI	ARNG	39	0	0	0	N	N	Y	N	N	Y	Y	N	N	N
	Umatilla Chemical Depot	US	OR	AMC	9	0	0	0	N	N	N	N	N	N	Y	N	N	Y
	Vail Tree Farm LTA	US	WA	USARC	166,332	0	0	0	N	N	N	N	N	N	N	N	N	Y
	Van Vleck Ranch	US	CA	ARNG	2,685	0	0	0	N	N	Y	N	N	N	N	N	N	Y
	Vernal Training Area	US	UT	ARNG	159	0	0	0	N	N	N	N	N	N	N	N	N	Y
	Wackenheim Small Arms Ranges	OS	Germany	USAREUR	32	0	0	0	N	N	N	N	N	Y	N	N	N	Y
	Waco Training Area	US	MT	ARNG	4,763	0	0	0	N	N	Y	N	N	Y	Y	N	N	N
	Waiawa	US	HI	ARNG	15	0	0	0	N	N	N	N	N	N	N	N	N	Y
	Walker Field Airport	US	CO	ARNG	25	0	0	0	N	N	N	N	N	N	N	N	N	Y
	Wally Eagle DZ	US	CO	ARNG	837	0	0	0	N	N	N	N	N	N	N	N	N	Y
Wappapellots	US	MO	ARNG	2,187	0	0	0	N	N	Y	N	N	Y	N	N	N	Y	
Warner Barracks	OS	Germany	USAREUR	2	0	0	0	N	N	N	N	N	N	Y	N	N	N	
Washington County Memorial Usarc	US	OH	USARC	16	0	0	0	N	N	Y	N	N	Y	N	N	N	N	
Watertown Training Area	US	SD	ARNG	5	0	0	0	N	N	N	N	N	N	Y	N	N	N	
Watkin Armory	US	CO	ARNG	5	0	0	0	N	N	N	N	N	N	N	N	N	Y	
Watkins Range	OS	Korea	EUSA	44	0	0	0	N	N	N	N	N	N	N	N	N	Y	

Training Range Complex Inventory

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Marine Corps	MCAS Beaufort/Townsend	US	SC	MCEAST	5,182	1,130	0	0	Y	Y	N	Y	Y	Y	N	N	N	N
	MCMWTC Bridgeport	US	CA	TECOM	62,000	0	0	0	N	N	Y	N	Y	Y	N	N	N	N
	MCAS Cherry Point	US	NC	MCEAST	29,139	1,082	0	0	Y	Y	Y	Y	Y	Y	Y	Y	N	N
	MCBH	US	HI	MARFORPAC	1,986	0	0	0	N	N	Y	Y	Y	Y	Y	Y	Y	Y
	MCB Japan	OS	Japan	MARFORPAC	47,000	333	0	0	N	N	Y	Y	Y	Y	Y	Y	N	Y
	MCB Camp Lejeune	US	NC	MARFORLANT	107,263	151	0	0	N	N	Y	Y	Y	Y	Y	Y	Y	Y
	MCB Camp Pendleton	US	CA	MARFORPAC	125,704	180	0	0	N	N	Y	Y	Y	Y	Y	Y	Y	Y
	MCB Quantico	US	VA	MCCDC	55,278	278	0	0	N	N	Y	Y	Y	Y	Y	Y	N	Y
	MCAGCC Twentynine Palms	US	CA	TECOM	601,151	1,268	0	0	N	N	Y	Y	Y	Y	Y	Y	N	Y
	MCAS Yuma/Bob Stump	US	AZ	MCWEST	1,216,000	7,085	0	0	Y	Y	Y	Y	Y	Y	Y	N	N	Y
	MCAS Miramar	US	CA	MCWEST	14,311	0	0	0	N	N	Y	Y	Y	Y	Y	N	N	Y
	MCLB Albany	US	GA	MATCOM	4	0	0	0	N	N	N	N	N	Y	Y	N	N	N
	MCLB Barstow	US	CA	MATCOM	2,438	0	0	0	N	N	N	N	N	Y	Y	N	N	N
	MCRD Parris Island	US	SC	TECOM	1,100	0	0	0	N	N	Y	Y	Y	Y	Y	N	N	N
	Atlantic City	US	NJ	CFFC	0	5,585	4,413	4,413	Y	N	N	N	N	N	N	N	N	N
	Atlantic Test Range (Patuxent River)	US	MD, VA	NAVAIR	5,700	3,401	330	0	Y	Y	Y	N	Y	N	N	N	N	N
	Navy	Atlantic Undersea Test and Evaluation Center (AUTEC)	OS	Bahamas	NAVSEA	0	870	1,320	195	Y	N	N	N	N	N	Y	N	N
Boston		US	MA	CFFC	12,446	10,099	13,494	13,494	Y	Y	Y	Y	Y	N	N	N	N	Y
China Lake		US	CA	NAVAIR	1,141,200	13,661	0	0	Y	Y	N	Y	Y	Y	N	N	N	N
Diego Garcia		OS	BIOT	CPF	0	32,692	0	0	Y	N	N	N	N	N	N	N	N	N
El Centro		US	CA	CFFC	43,948	256	0	0	Y	Y	N	Y	Y	N	N	N	N	Y
Fallon		US	NV	CFFC	232,481	14,182	0	0	Y	Y	Y	Y	Y	Y	Y	Y	N	N
Guantanamo		OS	Cuba	CFCC	8	13,175	13,118	13,118	Y	Y	Y	Y	Y	Y	N	N	N	N
Gulf of Mexico		US	FL, MS, TX	CFFC	10,057	38,393	17,469	17,469	Y	Y	N	Y	Y	Y	Y	N	Y	Y
Hawaii		US	HI	CPF	303	94,083	214,638	214,638	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Jacksonville		US	FL, GA	CFFC	17,728	61,265	50,098	50,098	Y	Y	N	Y	Y	Y	Y	N	N	N
Japan		OS	Japan	CPF	0	10,165	0	0	Y	N	N	N	N	N	N	N	N	N

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					Land Area for Ranges (acres)	Special Use Airspace (sq nm)	Sea Surface Area (sq nm)	Underwater Tracking Area (sq nm)	Air-to-Air or Air-to-Surface	Air-to-Ground	Land Maneuver	Land Impact Area	Land Firing Range	C2W/EW	Ocean Operating Area	MOUT	Underwater Tracking Range	Amphibious Area
Navy	Key West	US	FL	CFFC	1	24,812	8,282	8,282	8,282	Y	Y	N	N	Y	Y	N	N	Y
	Mariana Islands	US	CNMI, Guam	CPF	24,894	8,726	8,698	8,698	8,698	Y	N	Y	N	Y	Y	Y	N	Y
	Narragansett Bay	US	RI	CFFC	0	13,005	27,208	27,208	27,208	Y	N	N	N	Y	Y	N	N	N
	Navy Cherry Point	US	NC	CFFC	0	18,718	18,718	18,718	18,718	Y	N	N	N	Y	Y	N	N	Y
	Northern California (NOCAL)	US	CA	CFFC	0	19,681	0	0	0	Y	N	N	N	Y	Y	N	N	N
	Northwest Training Range Complex	US	CA, OR, WA	CFFC	49,674	42,714	128,103	128,103	128,103	Y	Y	Y	Y	Y	Y	N	Y	Y
	Okinawa	OS	Japan	CPF	0	35,129	0	0	0	Y	Y	N	N	Y	Y	N	N	N
	Pt. Mugu Sea Range	US	CA	NAVAIR	15,000	27,712	27,278	0	0	Y	Y	N	N	Y	Y	N	N	N
	Southern California (SOCAL)	US	CA	CFFC	43,437	113,231	120,000	7,699	7,699	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Virginia Capes (VACAPES)	US	NC, VA	CFFC	1,543	29,925	28,916	28,916	28,916	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Adirondack	US	NY	ANG	75,000	200	0	0	0	N	Y	N	N	Y	Y	N	N	N
	Airburst	US	CO	ANG	4,257	26	0	0	0	N	Y	N	N	Y	Y	N	N	N
	Atterbury	US	IN	ANG	18,500	103	0	0	0	N	Y	N	N	Y	Y	N	N	N
	Avon Park	US	FL	ACC	106,073	1,400	0	0	0	Y	Y	N	N	Y	Y	N	N	N
Air Force	Barry M. Goldwater Range (BMGR)	US	AZ	AETC	1,607,018	3,906	0	0	0	Y	Y	N	N	Y	Y	N	N	N
	Belle Fourche ESS	US	SD	ACC	183	0	0	0	0	N	Y	N	N	Y	Y	N	N	N
	Blair Lake	US	AK	PACAF	2,560	22,000	0	0	0	N	Y	N	N	Y	Y	N	N	N
	Bollen	US	PA	ANG	10,657	42	0	0	0	N	Y	N	N	Y	Y	N	N	N
	Cannon	US	MO	ANG	4,600	339	0	0	0	N	Y	N	N	Y	Y	N	N	N
	Claiborne	US	LA	AFRC	7,800	135	0	0	0	N	Y	N	N	Y	Y	N	N	N
	Dare County Ranges	US	NC	ACC	46,621	1,184	0	0	0	Y	Y	N	N	Y	Y	N	N	N
	Draughton	OS	Japan	PACAF	0	0	0	0	0	N	Y	N	N	Y	Y	N	N	N
	Edwards Ranges	US	CA	AFMC	50,080	20,000	0	0	0	Y	Y	N	N	Y	Y	N	N	N
	Eglin Ranges	US	FL	AFMC	463,360	133,979	0	0	0	Y	Y	N	N	Y	Y	N	N	N
	Falcon	US	OK	AFRC	5,200	1,845	0	0	0	N	Y	N	N	Y	Y	N	N	N
	Grand Bay	US	GA	ACC	6,000	17,290	0	0	0	N	Y	N	N	Y	Y	N	N	N
	Grayling	US	MI	ANG	145,025	63	0	0	0	Y	Y	N	N	Y	Y	N	N	N
	Hardwood	US	WI	ANG	7,263	84	0	0	0	N	Y	N	N	Y	Y	N	N	N
Holloman	US	NM	ACC	207,800	2,256	0	0	0	Y	Y	N	N	Y	Y	N	N	N	

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Table C-2 Military Training Route (MTR) Inventory

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
IR002	20 OSS/OSOA, Shaw AFB, SC 29152-5000 DSN 965-1121/1122, C 803-895-1121/1122, Fax 965-1118/1119, C803-895-1118/1119.	20 OSS/OSOS, Shaw AFB, SC 29152 Duty hrs DSN 965-1118/1119, C803-895-1118/1119.	Continuous	125
IR012	4 OSS/OSR, Seymour Johnson AFB, NC 27531-5004 DSN 722-2672, C919-722-2672.	4 OSS/OSOSF, Seymour Johnson AFB, NC 27531-5004 DSN 722-2129/2124, C919-722-2129	Continuous	144
IR015	347 OSS/OSKA, Moody AFB, GA 31699-1899 DSN 460-4131, C229-257-4131.	347 OSS/OSOS, Moody AFB, GA 31699-1899 Mon-Fri 0730-1630L exc holidays DSN 460-4	Continuous	164
IR016	347 OSS/OSKA, Moody AFB, GA 31699-1899 DSN 460-4131, C229-257-4131.	347 OSS/OSOS, Moody AFB, GA 31699-1899 Mon-Fri 0730-1630L exc holidays DSN 460-4	Continuous	167
IR017	187 FW, 5187 Selma Highway, Montgomery, AL 36108-4824 DSN 358-9255, C334-394-725	Same as Originating Activity	Continuous	201
IR018	FACSFAC JAX, NAS Jacksonville, FL 32212 DSN 942-2004/2005, C904-542-2004/2005, A	Same as Originating Activity	0700-2400 local daily	401
IR019	FACSFAC JAX, NAS Jacksonville, FL 32212 DSN 942-2004/2005, C904-542-2004/2005, A	Same as Originating Activity	0700-2400 local daily	454
IR020	FACSFAC JAX, NAS Jacksonville, FL 32212 DSN 942-2004/2005, C904-542-2004/2005, A	Same as Originating Activity	0700-2400 local daily	392
IR021	FACSFAC, Pensacola, FL 32508-5217 DSN 922-2735, C850-452-2735.	Same as Originating Activity	1200-0400Z++ Mon-Fri, occasionally on weekends	451
IR022	FACSFAC, Pensacola, FL 32508-5217 DSN 922-2735, C850-452-2735.	Same as Originating Activity	1200-0400Z++ weekdays, occasional weekends	322
IR023	CG MCAS CHERRY POINT, ATTN RAC-DIROPS, Cherry Point, NC 28533 DSN 582-3466, C252	Central Scheduling Division, MCAS Cherry Point, NC 28533 DSN 582-4040/4041, C252	Continuous	224
IR026	FACSFAC-JAX, PO Box 40, NAS Jacksonville, FL 32212-0040 DSN 942-2004/2005 C904-54	Same as Originating Activity	By NOTAM	55
IR027	FACSFAC-JAX, PO Box 40, NAS Jacksonville, FL 32212-0040 DSN 942-2004/2005 C904-54	Same as Originating Activity	By NOTAM	12
IR030	Commander Naval Air Warfare Center, Weapons Division, Code 52911GE, NAWS, Point	Same as Originating Activity	Daylight hours only, daily	260
IR031	Commander Naval Air Warfare Center, Weapons Division, Code 52911GE, NAWS, Point	Same as Originating Activity	Daylight hours only, daily	260
IR032	Commander Naval Air Warfare Center, Weapons Division, Code 52911GE, NAWS, Point	Commander Fleet Area Control and Surveillance Facility Jacksonville, Naval Air S	Daylight hours	167
IR033	Commander Naval Air Warfare Center, Weapons Division, Code 52911GE, NAWS, Point	Commander Fleet Area Control and Surveillance Facility Jacksonville, Naval Air S	Daylight hours	211
IR034	347 Rescue Wing, Detachment 1/RO, 8707 North Golf Course St., MacDill AFB, FL 33	347 Rescue Wing, Detachment 1/ROA, 8707 North Golf Course St., MacDill AFB, FL 3	0600-2400 local	150
IR035	437 AW/C-17 OSS/OSA Charleston AFB, SC 29404 DSN 673-7692, C843-963-7692.	20 OSS/OSOS, Shaw AFB, SC 29152-5000 Duty hours DSN 965-1118/1119 C803-895-1118,	0600-2200 local, daily	198
IR036	437 AW/C-17 OSS/OSOT Charleston AFB, SC 29404 DSN 673-5613, C803-566-5613.	20 OSS/OSOS, Shaw AFB, SC 29152-5000 Duty hours DSN 965-1118/1119 C803-895-1118,	0600-2200 local, daily	178

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** Length calculations were performed using an the appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: May 2010)).

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
IR037	FACSFAC, Pensacola, FL 32508-5217 DSN 922-2735, C850-452-2735.	Same as Originating Activity	Mon-Fri 1200-0400Z++, occasional weekends	213
IR038	FACSFAC, NAS Pensacola, FL 32508-5217 DSN 922-2735, C850-452-2735.	Same as Originating Activity	Sunrise-Sunset, Mon-Fri, occasional weekends	398
IR040	FACSFAC, NAS Pensacola, FL 32508-5217 DSN 922-2735, C850-452-2735.	Same as Originating Activity	Mon-Fri 1200-0400Z++, occasional weekends	176
IR044	COMTRAWING ONE, NAS Meridian, MS 39309-0136 DSN 637-2347, C601-679-2347.	Same as Originating Activity	Sunrise-Sunset	161
IR046	347 Rescue Wing, Detachment 1/RO, 8707 North Golf Course St., MacDill AFB, FL 33	347 Rescue Wing, Detachment 1/ROA, 8707 North Golf Course St., MacDill AFB, FL 3	0700-2400 local, daily	171
IR047	347 Rescue Wing, Detachment 1/RO, 8707 North Golf Course St., MacDill AFB, FL 33	347 Rescue Wing, Detachment 1/ROA, 8707 North Golf Course St., MacDill AFB, FL 3	0700-2400 local, daily	67
IR048	347 Rescue Wing, Detachment 1/RO, 8707 North Golf Course St., MacDill AFB, FL 33	347 Rescue Wing, Detachment 1/ROA, 8707 North Golf Course St., MacDill AFB, FL 3	0700-2400 local, daily	31
IR049	347 Rescue Wing, Detachment 1/RO, 8707 North Golf Course St., MacDill AFB, FL 33	347 Rescue Wing, Detachment 1/ROA, 8707 North Golf Course St., MacDill AFB, FL 3	0700-2400 local, daily	87
IR050	347 Rescue Wing, Detachment 1/RO, 8707 North Golf Course St., MacDill AFB, FL 33	347 Rescue Wing, Detachment 1/ROA, 8707 North Golf Course St., MacDill AFB, FL 3	0700-2400 local, daily	109
IR051	347 Rescue Wing, Detachment 1/RO, 8707 North Golf Course St., MacDill AFB, FL 33	347 Rescue Wing, Detachment 1/ROA, 8707 North Golf Course St., MacDill AFB, FL 3	0700-2400 local, daily	196
IR053	347 Rescue Wing, Detachment 1/RO, 8707 North Golf Course St., MacDill AFB, FL 33	347 Rescue Wing, Detachment 1/ROA, 8707 North Golf Course St., MacDill AFB, FL 3	0600-2400 local, daily	136
IR055	347 WG, Detachment 1/RO, 8707 North Golf Course St., MacDill AFB, FL 33621-5205	347 WG, Detachment 1/ROA, 8707 North Golf Course St., MacDill AFB, FL 33621-5205	0600-2400 local, daily	138
IR056	347 WG, Detachment 1/RO, 8707 North Golf Course St., MacDill AFB, FL 33621-5205	347 WG, Detachment 1/ROA, 8707 North Golf Course St., MacDill AFB, FL 33621-5205	0600-2400 local	206
IR057	16 OSS/DOAA, Hurlburt Field, FL 32544 DSN 579-7409, C850-884-7409.	16 OSS/DOO, Hurlburt Field, FL 32544 DSN 579-6877/7812, C850-884-6877/7812.	Continuous	416
IR059	16 OSS/DOAA, Hurlburt Field, FL 32544 DSN 579-7409, C850-884-7409.	16 OSS/DOO, Hurlburt Field, FL 32544 DSN 579-6877/7812, C850-884-6877/7812.	Continuous	436
IR062	COMSTRKFIGHTWINGLANT, Oceana NAS, Virginia Beach, VA 23460 DSN 433-4013, C757-43	FACSFAC VACAPES, Oceana, NAS Virginia Beach, VA 23460 DSN 433-1228, C757-433-12	Continuous	507
IR066	14 OSS/OSOP, Columbus AFB, MS 39710 DSN 742-7560/7633, C662-434-7560/7633.	50 FTS, Columbus AFB, MS 39710 DSN 742-7734/7735, C662-434-7734/7735.	Sunrise-Sunset Mon-Fri	285
IR067	14 OSS/OSOP, Columbus AFB, MS 39710 DSN 742-7560/7633, C662-434-7560/7633.	48 FTS, Columbus AFB, MS 39710 DSN 742-7840/7847, C662-434-7840/7847.	Sunrise-Sunset Mon-Fri	312

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** Length calculations were performed using an the appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: May 2010)).

Appendix C: Maps and Inventory of Ranges, Range Complexes, Military Training Routes, and Special Use Areas

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
IR068	14 OSS/OSOP, Columbus AFB, MS 39710 DSN 742-7560/7633, C662-434-7560/7633.	48 FTS, Columbus AFB, MS 39710 DSN 742-7840/7847, C662-434-7840/7847.	Sunrise-Sunset Mon-Fri	149
IR070	14 OSS/OSOP, Columbus AFB, MS 39710-5000 DSN 742-7560/7633, C662-434-7560/7633.	48 FTS, Columbus AFB, MS 39710 DSN 742-7840/7847, C662-434-7840/7847.	Sunrise-Sunset daily	260
IR077	FACSFAC, Pensacola, FL 32508-5217 DSN 922-2735, C850-452-2735.	Same as Originating Activity	1200-0400Z++ Mon-Fri; occasional weekends	276
IR078	FACSFAC, Pensacola, FL 32508-5217 DSN 922-2735, C850-452-2735.	Same as Originating Activity	1200-0400Z++ Mon-Fri; occasional weekends	276
IR079	FACSFAC, Pensacola, FL 32508-5217 DSN 922-2735, C850-452-2735.	Same as Originating Activity	1200-0400Z++ Mon-Fri; occasional weekends	246
IR080	FACSFAC, Pensacola, FL 32508-5217 DSN 922-2735, C850-452-2735.	Same as Originating Activity	1200-0400Z++ Mon-Fri; occasional weekends	267
IR081	FACSFAC, Pensacola, FL 32508-5217 DSN 922-2735, C850-452-2735.	Same as Originating Activity	1200-0400Z++ Mon-Fri; occasional weekends	216
IR082	FACSFAC, Pensacola, FL 32508-5217 DSN 922-2735, C850-452-2735.	Same as Originating Activity	1200-0400Z++ Mon-Fri; occasional weekends	270
IR083	FACSFAC, Pensacola, FL 32508-5217 DSN 922-2735, C850-452-2735.	Same as Originating Activity	1200-0400Z++ Mon-Fri; occasional weekends	298
IR089	437 OSS/OSOT, Charleston AFB, SC 29404 DSN 673-5554, C843-963-5554.	437 OSS/OSOT, Charleston AFB, SC 29404 DSN 673-5552, C843-963-5552. Non duty hrs	0600-2400 local, daily, Jan, Mar, May, Jul, Sep and Nov only	177
IR090	437 OSS/OSOT, Charleston AFB, SC 29404 DSN 673-5554, C843-963-5554.	437 OSS/OSOT, Charleston AFB, SC 29404 DSN 673-5552, C843-963-5552. Non duty hrs	0600-2400 local, daily, Feb, Apr, Jun, Aug, Oct and Dec only	177
IR091	14 OSS/OSOP Columbus AFB, MS 39710 DSN 742-7560/7633 C662-434-7560/7633.	50 FTS Columbus AFB, MS 39710 DSN 742-7734/7735, C662-434-7734/7735.	Sunrise-Sunset Mon-Fri	179
IR102	49 OSS/OSTA, 700 Delaware Ave., Holloman AFB, NM 88330-8017 DSN 572-3244, C575-5	49 OSS/OSOS, 744 Delaware Ave., Holloman AFB, NM 88330-8014 DSN 572-3536, C575-5	Daylight hours by NOTAM	520
IR103	301 OG/SUA, NAS JRB Fort Worth, TX 76127 DSN 739-6903/6904/6905, C817-782-6903/6	Same as Originating Activity	0600-2200 local, daily	117
IR105	301 OG/SUA, NAS JRB, Ft. Worth, TX 76127 DSN 739-6903/6904/6905, C817-782-6903/6	Same as Originating Activity	0600-2200 local, daily	212
IR107	27 SOSS/OSTA 110 E. Sextant Ave., Suite 1081, Cannon AFB, NM 88103 DSN 681-2521	27 SOSS/OSOS 110 E. Sextant Ave., Suite 1080, Cannon AFB, NM 88103 DSN 681-2276,	Continuous	655
IR109	27 SOSS/OSTA 110 E. Sextant Ave., Suite 1081, Cannon AFB, NM 88103 DSN 681-2521	27 SOSS/OSOS 110 E. Sextant Ave., Suite 1080, Cannon AFB, NM 88103 DSN 681-2276,	Continuous	747
IR111	27 SOSS/OSTA 110 E. Sextant Ave., Suite 1081, Cannon AFB, NM 88103 DSN 681-2521	7 SOSS/OSOS 110 E. Sextant Ave., Suite 1080, Cannon AFB, NM 88103 DSN 681-2276,	Continuous	661

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** Length calculations were performed using an appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: May 2010)).

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
IR112	27 SOSS/OSTA 110 E. Sextant Ave., Suite 1081, Cannon AFB, NM 88103 DSN 681-2521	27 SOSS/OSOS 110 E. Sextant Ave., Suite 1080, Cannon AFB, NM 88103 DSN 681-2276,	Continuous	641
IR113	27 SOSS/OSTA 110 E. Sextant Ave., Suite 1081, Cannon AFB, NM 88103 DSN 681-2521	27 SOSS/OSOS 110 E. Sextant Ave., Suite 1080, Cannon AFB, NM 88103. Req for use s	Continuous	781
IR115	49 OSS/OSTA, 700 Delaware Ave., Holloman AFB, NM 88330-8017 DSN 572-3244, C575-5	49 OSS/OSOS, 744 Delaware Ave., Holloman AFB, NM 88330-8014 DSN 572-3536, C575-5	Daylight hours by NOTAM	62
IR116	49 OSS/OSTA, 700 Delaware Ave., Holloman AFB, NM 88330-8017 DSN 572-3244, C575-5	49 OSS/OSOS, 744 Delaware Ave., Holloman AFB, NM 88330-8014 DSN 572-3536, C575-5	Daylight hours by NOTAM	62
IR117	188 FW, 4850 Leigh Ave., Fort Smith, AR 72903-6096 DSN 778-5502.	Same as Originating Activity. Route scheduled no more than 24 hr in advance. Min	Continuous (except Sunday 1000-1200 local)	117
IR117	188FW Arkansas ANG, 4850 Leigh Ave., Fort Smith, AR 72903-6096 DSN 778-5502.	Same as Originating Activity. Route scheduled no more than 72 hr in advance. Min	Continuous (except Sunday 1000-1200 local)	71
IR120	188 FW, 4850 Leigh Ave., Fort Smith, AR 72903-6096 DSN 778-5502.	Same as Originating Activity. Route scheduled no more than 24 hr in advance. Min	Continuous (except Sunday 1000-1200 local)	81
IR121	188 FW, 4850 Leigh Ave., Fort Smith, AR 72903-6096 DSN 778-5502.	Same as Originating Activity. Route scheduled no more than 24 hr in advance. Min	Continuous (except Sunday 1000-1200 local)	120
IR122	49 OSS/OSTA, 700 Delaware Ave., Holloman AFB, NM 88330-8017 DSN 572-3244, C575-5	49 OSS/OSOS, 744 Delaware Ave., Holloman AFB, NM 88330-8014 DSN 572-3536, C575-5	Continuous (except Sunday 1000-1200 local)	28
IR123	301 OG/SUA, NAS JRB Fort Worth, TX 76127 DSN 739-6903/6904/6905, C817-782-6903/6	Same as Originating Activity	0700-2200 local	403
IR124	301 OG/SUA, NAS JRB Fort Worth, TX 76127 DSN 739-6903/6904/6905, C817-782-6903/6	Same as Originating Activity	0700-2200 local	245
IR126	7 OSS/A3R, 965 Ave. D-4, Ste. 109, Dyess AFB, TX 79606 DSN 461-3666, C325-696-36	7 OSS/A3R, 966 Ave. D-4, Ste. 109, Dyess AFB, TX 79606 DSN 461-3665, C325-696-36	Continuous	807
IR127	12 OSS/OSOA, 501 I Street East, Randolph AFB, TX 78150 DSN 487-5580, C210-652-55	99th FTS, 1450 5th Street East, Randolph AFB, TX 78150 DSN 487-6746, C210-652-67	Sunrise-Sunset	243
IR128	7 OSS/A3R, 965 Ave. D-4, Ste. 109, Dyess AFB, TX 79606 DSN 461-3666, C325-696-36	7 OSS/A3R, 966 Ave. D-4, Ste. 109, Dyess AFB, TX 79606 DSN 461-3665, C325-696-36	Continuous	651
IR129	12 OSS/OSOA, 501 I Street East, Randolph AFB, TX 78150 DSN 487-5580, C210-652-55	99th FTS, 1450 5th Street East, Randolph AFB, TX 78150 DSN 487-6746, C210-652-67	Sunrise-Sunset	279
IR130	49 OSS/OSTA, 700 Delaware Ave., Holloman AFB, NM 88330-8017 DSN 572-3244, C575-5	49 OSS/OSOS, 744 Delaware Ave., Holloman AFB, NM 88330-8014 DSN 572-3536, C575-5	Daylight hours by NOTAM	28
IR131	49 OSS/OSTA, 700 Delaware Ave., Holloman AFB, NM 88330-8017 DSN 572-3244, C575-5	49 OSS/OSOS, 744 Delaware Ave., Holloman AFB, NM 88330-8014 DSN 572-3536, C575-5	Daylight hours by NOTAM	32
IR132	49 OSS/OSTA, 700 Delaware Ave., Holloman AFB, NM 88330-8017 DSN 572-3244, C575-5	49 OSS/OSOS, 744 Delaware Ave., Holloman AFB, NM 88330-8014 DSN 572-3536, C575-5	Daylight hours by NOTAM	32

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** Length calculations were performed using an the appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: May 2010)).

Appendix C: Maps and Inventory of Ranges, Range Complexes, Military Training Routes, and Special Use Areas

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
IR133	49 OSS/OSOA, 700 Delaware Ave., Holloman AFB, NM 88330-8014 DSN 572-3244, C575-5618/6283/6	49 OSS/OSOS, 744 Delaware Ave., Holloman AFB, NM 88330-8014 DSN 572-3536, C575-5	0700-2300 local	329
IR134	49 OSS/OSOA, 700 Delaware Ave., Holloman AFB, NM 88440-8014 DSN 572-3244, C575-5	49 OSS/OSOS, 744 Delaware Ave., Holloman AFB, NM 88330-8014 DSN 572-3536, C575-5	Sunrise-0600Z++	205
IR135	COMDRAWING TWO, NAS Kingsville, TX 78363 DSN 876-6518/6283, C361-516-6518/6283/6	Same as Originating Activity	Sunrise-Sunset, daily	137
IR136	COMDRAWING TWO, NAS Kingsville, TX 78363 DSN 876-6518/6283, C361-516-6518/6283/6	Same as Originating Activity	Sunrise-Sunset, daily	162
IR137	58 OSS/DOO, Kirtland AFB, NM 87117-5861 DSN 263-5979/5888, C505-853-5979/5888/57	Same as Originating Activity	Continuous	219
IR139	301 OG/SUA, NAS JRB Fort Worth, TX 76127 DSN 739-6903/6904/6905, C817-782-6903/6	Same as Originating Activity	0600-2200 local, daily	102
IR141	49 OSS/OSTA, 700 Delaware Ave., Holloman AFB, NM 88330-8017 DSN 572-3244, C575-5	49 OSS/OSOS, 744 Delaware Ave., Holloman AFB, NM 88330-8014 DSN 572-3536, C575-5	Daylight hours by NOTAM	520
IR142	49 OSS/OSOA, 700 Delaware Ave., Holloman AFB, NM 88330-8014 DSN 572-3244, C575-5	49 OSS/OSOS, 744 Delaware Ave., Holloman AFB, NM 88330-8014 DSN 572-3536, C575-5	Sunrise-0600Z++	206
IR145	71 FTW/OSOP, Vance AFB, OK 73705-5202 DSN 448-7850, C580-213-7850.	25 FTS/DISP, Vance AFB, OK 73705-5202 DSN 448-6038, C580-213-6038.	30 min after Sunrise-30 min before Sunset and active days per local directives	187
IR146	71 FTW/OSOP, Vance AFB, OK 73705-5202 DSN 448-7850, C580-213-7850.	25 FTS/DISP, Vance AFB, OK 73705-5202 DSN 448-6038, C580-213-6038.	30 min after Sunrise-30 min before Sunset and active days per local directives	185
IR147	COMDRAWING TWO, NAS Kingsville, TX 78363 DSN 876-6518/6283, C361-516-6518/6283/6	Same as Originating Activity	Sunrise to 30 minutes after Sunset, daily	122
IR148	COMDRAWING TWO, NAS Kingsville, TX 78363 DSN 876-6518/6283, C361-516-6518/6283/6	Same as Originating Activity	Daily 0600-2230 local	172
IR149	COMDRAWING TWO, NAS Kingsville, TX 78363 DSN 876-6518/6283, C361-516-6518/6283/6	Same as Originating Activity	Daily 0600-2230 local	213
IR150	7 OSS/OSOR, 966 Ave. D-4, Ste. 117, Dyess AFB, TX 79607 DSN 461-3666, C325-696-3	7 OSS/OSOR, 966 Ave. D-4, Ste. 117, Dyess AFB, TX 79607 DSN 461-3665, C325-696-3	Continuous	295
IR154	97 OSS/DOA, 400 N. Sixth Street, Bldg 164, Rm 4, Altus AFB, OK 73522 DSN 866-609	97 OSS/OSK, 516 S. Sixth Street, Ste A, Altus AFB, OK 73523 DSN 866-7110/6617.	0830-0230 local Mon-Fri	220
IR155	97 OSS/DOA, 400 N. Sixth Street, Bldg 164, Rm 4, Altus AFB, OK 73522 DSN 866-609	97 OSS/OSK, 516 S. Sixth Street, Ste A, Altus AFB, OK 73523 DSN 866-7110/6617.	0830-0230 local Mon-Fri	213
IR164	188 FW, 4850 Leigh Ave., Fort Smith, AR 72903-6096 DSN 778-5502.	Same as Originating Activity. Route scheduled no more than 24 hr in advance. Min	Continuous (except Sunday 1000-1200 local)	110
IR166	COMDRAWING TWO, NAS Kingsville, TX 78363 DSN 876-6518/6283, C361-516-6518/6283/6	Same as Originating Activity	0600-2400 local, daily	184

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** Length calculations were performed using an appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: May 2010)).

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
IR167	COMTRAWING TWO, NAS Kingsville, TX 78363 DSN 876-6518/6283, C361-516-6518/6283/6	Same as Originating Activity	0600-2400 local, daily	119
IR169	47 OSS/OSOR, 570 2nd Street, Ste. 6, Laughlin AFB, TX 78843-5222 DSN 732-5864, C	87 FTS/DOS, 570 2nd Street, Laughlin AFB, TX 78843 DSN 732-5484, C830-298-5484.	Sunrise-Sunset daily	175
IR170	47 OSS/OSOR, 570 2nd Street, Ste. 6, Laughlin AFB, TX 78843-5222 DSN 732-5864, C	87 FTS/DOS, 570 2nd Street, Laughlin AFB, TX 78843 DSN 732-5484, C830-298-5484.	Sunrise-Sunset daily	191
IR171	71 FTW/OSOP, Vance AFB, OK 73705-5202 DSN 448-7850, C580-213-7850.	25 FTS/DISP, Vance AFB, OK 73705-5202 DSN 448-6038, C580-213-6038.	30 min after Sunrise-30 min before Sunset and active days per local directives	175
IR172	71 FTW/OSOP, Vance AFB, OK 73705-5202 DSN 448-7850, C580-213-7850.	Same as Originating Activity.	30 min after Sunrise-30 min before Sunset and active days per local directives	165
IR173	71 FTW/OSOP, Vance AFB, OK 73705-5202 DSN 448-7850, C580-213-7850.	Same as Originating Activity.	30 min after Sunrise-30 min before Sunset and active days per local directives	160
IR174	509 OSS/OSKA, 905 Spirit Blvd., Whiteman AFB, MO 65305 DSN 975-1713/1754, C660-6	Same as Originating Activity	Continuous	546
IR175	71 FTW/OSOP, Vance AFB, OK 73705-5202 DSN 448-7850, C580-213-7850.	25 FTS/DISP, Vance AFB, OK 73705-5202 DSN 448-6038, C580-213-6038.	30 min after Sunrise-30 min before Sunset and active days per local directives	204
IR177	7 OSS/OSOR, 966 Ave. D-4, Ste. 117, Dyess AFB, TX 79607 DSN 461-3666, C325-696-3	7 OSS/OSOR, 966 Ave. D-4, Ste. 117, Dyess AFB, TX 79607 DSN 461-3665, C325-696-3	Continuous	363
IR178	7 OSS/A3R, 965 Ave. D-4, Ste. 109, Dyess AFB, TX 79606 DSN 461-3666, C325-696-36	Same as Originating Activity.	Continuous	1,027
IR180	7 OSS/A3R, 965 Ave. D-4, Ste. 109, Dyess AFB, TX 79606 DSN 461-3666, C325-696-36	7 OSS/A3R, 966 Ave. D-4, Ste. 109, Dyess AFB, TX 79606 DSN 461-3665, C325-696-36	Continuous	562
IR181	71 FTW/OSOP, Vance AFB, OK 73705-5202 DSN 448-7850, C580-213-7850.	25 FTS/DISP, Vance AFB, OK 73705-5202 DSN 448-6038, C580-213-6038.	30 min after Sunrise-30 min before Sunset and active days per local directives	175
IR182	71 FTW/OSOP, Vance AFB, OK 73705-5202 DSN 448-7850, C580-213-7850.	Same as Originating Activity.	30 min after Sunrise-30 min before Sunset and active days per local directives	165
IR183	71 FTW/OSOP, Vance AFB, OK 73705-5202 DSN 448-7850, C580-213-7850.	Same as Originating Activity.	30 min after Sunrise-30 min before Sunset and active days per local directives	160
IR185	71 FTW/OSOP, Vance AFB, OK 73705-5202 DSN 448-7850, C580-213-7850.	25 FTS/DISP, Vance AFB, OK 73705-5202 DSN 448-6038, C580-213-6038.	30 min after Sunrise-30 min before Sunset and active days per local directives	204

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** Length calculations were performed using an the appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: May 2010)).

Appendix C: Maps and Inventory of Ranges, Range Complexes, Military Training Routes, and Special Use Areas

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
IR192	49 OSS/OSOA, 700 Delaware Ave., Holloman AFB, NM 88330-8014 DSN 572-3244, C575-5	49 OSS/OSOS, 744 Delaware Ave., Holloman AFB, NM 88330-8014 DSN 572-3536, C575-5	Sunrise-0600Z++	562
IR193	97 OSS/DOA, 400 N Sixth St., Altus AFB, OK 73521 DSN 866-6098 C580-481-6098.	97 OSS/DOA, 400 N Sixth St., Ste 12, Altus AFB, OK 73521 DSN 866-7110.	0830-0230 local Mon-Fri	142
IR194	49 OSS/OSOA, 700 Delaware Ave., Holloman AFB, NM 88330-8014 DSN 572-3244, C575-5	49 OSS/OSOS, 744 Delaware Ave., Holloman AFB, NM 88330-8014 DSN 572-3536, C575-5	Sunrise-0600Z++	564
IR195	49 OSS/OSOA, 700 Delaware Ave., Holloman AFB, NM 88330-8014 DSN 572-3244, C575-5	49 OSS/OSOS, 744 Delaware Ave., Holloman AFB, NM 88330-8014 DSN 572-3536, C575-5	Sunrise-0600Z++	198
IR200	Commander Naval Air Warfare Center, Weapons Division, Code P529800E, (Naval Base	Commander Naval Air Warfare Center, Weapons Division, Code P529800E, (Naval Base	Sunrise-Sunset by NOTAM	650
IR203	Commander Strike Fighter Wing, US, Pacific Fleet, 001 (K) Street, Room 121, NAS	Same as Originating Activity	Daylight hours, OT by NOTAM	410
IR206	Commander Naval Air Warfare Center, Weapons Division, Code P3524, NAWAS, Pt. Mugu	Commander Naval Air Warfare Center, Weapons Division, Code P3506, NAWAS, Pt. Mugu	Daylight hours by NOTAM	120
IR207	Commander Strike Fighter Wing, US, Pacific Fleet, 001 (K) Street, Room 121, NAS	Same as Originating Activity	Daylight hours, OT by NOTAM	449
IR211	G-3, 3D MAW, MCAS Miramar, San Diego, CA 92145 DSN 267-9462, C858-577-9462. Non-	Same as Originating Activity	Continuous	152
IR212	G-3, 3D MAW, MCAS Miramar, San Diego, CA 92145 DSN 267-9462, C858-577-9462. Non-	Same as Originating Activity	Continuous	136
IR213	G-3, 3D MAW, MCAS Miramar, San Diego, CA 92145 DSN 267-9462, C858-577-9462. Non-	Same as Originating Activity	Continuous	269
IR214	G-3, 3D MAW, MCAS Miramar, San Diego, CA 92145 DSN 267-9462, C858-577-9462. Non-	Same as Originating Activity	Even numbered days only	265
IR216	G-3, 3D MAW, MCAS Miramar, San Diego, CA 92145 DSN 267-9462, C858-577-9462. Non-	Same as Originating Activity	Even numbered days- daylight only	53
IR217	G-3, 3D MAW, MCAS Miramar, San Diego, CA 92145 DSN 267-9462, C858-577-9462. Non-	Same as Originating Activity	Continuous	283
IR218	G-3, 3D MAW, MCAS Miramar, San Diego, CA 92145 DSN 267-9462, C858-577-9462. Non-	Same as Originating Activity	Continuous	229
IR234	Commander AFFTC, 412 OSS/OSAA, 235 S Flightline Rd, Edwards AFB, CA 93523-6460 D	Commander AFFTC, 412 OSS/OSR, 300 E Yeager Blvd, Edwards AFB, CA 93524 DSN 527-4	Daylight hours by NOTAM	164
IR235	Commander AFFTC, 412 OSS/OSAA, 235 S Flightline Rd, Edwards AFB, CA 93523-6460 D	Commander AFFTC, 412 OSS/OSR, 300 E Yeager Blvd, Edwards AFB, CA 93524 DSN 527-4	Daylight hours by NOTAM	164
IR236	Commander AFFTC, 412 OSS/OSAA, 235 S Flightline Rd, Edwards AFB, CA 93523-6460 D	Commander AFFTC, 412 OSS/OSR, 300 E Yeager Blvd, Edwards AFB, CA 93524 DSN 527-4	0600-2200 local, daily	320
IR237	Commander AFFTC, 412 OSS/OSAA, 235 S Flightline Rd, Edwards AFB, CA 93523-6460 D	Commander AFFTC, 412 OSS/OSR, 300 E Yeager Blvd, Edwards AFB, CA 93524 DSN 527-4	Daylight hours by NOTAM	130
IR238	Commander AFFTC, 412 OSS/OSAA, 235 S Flightline Rd, Edwards AFB, CA 93523-6460 D	Commander AFFTC, 412 OSS/OSCS, 306 E. Popson, Edwards AFB, CA 93524-6680 DSN 527	Daylight hours by NOTAM	130
IR250	G-3, 3D MAW, MCAS Miramar, San Diego, CA 92145 DSN 267-9462, C858-577-9462. Non-	Same as Originating Activity	Daylight hours on even even numbered days	251
IR252	G-3, 3D MAW, MCAS Miramar, San Diego, CA 92145 DSN 267-9462, C858-577-9462. Non-	Same as Originating Activity	Daylight hours on odd numbered days	158

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** Length calculations were performed using an appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: May 2010)).

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
IR254	G-3, 3D MAW, MCAS Miramar, San Diego, CA 92145 DSN 267-9462, C858-577-9462. Non-	Same as Originating Activity	Daylight hours, Mon-Fri	99
IR255	G-3, 3D MAW, MCAS Miramar, San Diego, CA 92145 DSN 267-9462, C858-577-9462. Non-	Same as Originating Activity	Daylight hours, daily	67
IR264	60 OSS/OSO, 611 E St., Travis AFB, CA 94535 DSN 837-1073, C707-424-1073.	60 OSS/OSO, 611 E St., Travis AFB, CA 94535 DSN 837-5582, C707-424-5582.	By NOTAM	339
IR266	7 OSS/OSOR, 966 Ave. D-4, Ste. 118, Dyess AFB, TX 79607 DSN 461-3666, C325-696-3	7 OSS/OSOR, 966 Ave. D-4, Ste. 117, Dyess AFB, TX 79607 DSN 461-3663, C325-696-3	Continuous	458
IR275	60 OSS/OSO, 611 E St., Travis AFB, CA 94535 DSN 837-1073, C707-424-1073.	60 OSS/OSO, 611 E St., Travis AFB, CA 94535 DSN 837-5582, C707-424-5582.	By NOTAM	379
IR279	57 OSS/OSM, Nellis AFB, NV 89191 DSN 682-7891, C702-652-7891.	57 OSS/OSOS, 4450 Tyndall Ave., Nellis AFB, NV 89191 DSN 682-2040, C702-652-2040	Continuous	48
IR280	60 OSS/OSO, 611 E St., Travis AFB, CA 94535 DSN 837-1073, C707-424-1073.	60 OSS/OSO, 611 E St., Travis AFB, CA 94535 DSN 837-5582, C707-424-5582.	By NOTAM	283
IR281	60 OSS/OSO, 611 E St., Travis AFB, CA 94535 DSN 837-1073, C707-424-1073.	60 OSS/OSO, 611 E St., Travis AFB, CA 94535 DSN 837-5582, C707-424-5582.	By NOTAM	296
IR282	60 OSS/OSO, 611 E St., Travis AFB, CA 94535 DSN 837-1073, C707-424-1073.	60 OSS/OSO, 611 E St., Travis AFB, CA 94535 DSN 837-5582, C707-424-5582.	By NOTAM	191
IR286	57 OSS/OSM, Nellis AFB, NV 89191 DSN 682-7891, C702-652-7891.	57 OSS/OSOS, 4450 Tyndall Ave., Nellis AFB, NV 89191 DSN 682-2040, C702-652-2040	Continuous	385
IR293	388 RANS/RST, 6606 Cedar Ln. bldg 1274, Hill AFB, UT 84056-5812 DSN 777-4401 C80	Same as Originating Activity.	By NOTAM	311
IR300	366 OSS/OSOS, Mountain Home AFB, ID 83648 DSN 728-2172/4607 C208-828-2172. Airsp	Same as Originating Activity. Scheduling requests 0730-1630 local Mon-Fri. After	By NOTAM	390
IR301	124 WG/OGAM (ANG), 3996 W. Aeronca St., Boise Air Terminal, ID 83705-8004 DSN 42	124 WG/OSS (ANG), 3996 W. Aeronca St., Boise Air Terminal, ID 83705-8004 DSN 422	Continuous or by NOTAM	402
IR302	124 WG/OGAM (ANG), 3996 W. Aeronca St., Boise Air Terminal, ID 83705-8004 DSN 42	124 WG/OSS (ANG), 3996 W. Aeronca St., Boise Air Terminal, ID 83705-8004 DSN 422	Continuous or by NOTAM	452
IR303	366 OSS/OSOS, Mountain Home AFB, ID 83648 DSN 728-2172/4607 C208-828-2172. Airsp	Same as Originating Activity. Scheduling requests 0730-1630 local Mon-Fri. After	By NOTAM	278
IR304	366 OSS/OSOS, Mountain Home AFB, ID 83648 DSN 728-2172/4607 C208-828-2172. Airsp	Same as Originating Activity. Scheduling requests 0730-1630 local Mon-Fri. After	By NOTAM	314
IR305	124 WG/OGAM (ANG), 3996 W. Aeronca St., Boise Air Terminal, ID 83705-8004 DSN 42	124 WG/OSS (ANG), 3996 W. Aeronca St., Boise Air Terminal, ID 83705-8004 DSN 422	Continuous or by NOTAM	421
IR307	124 WG/OGAM (ANG), 3996 W. Aeronca St., Boise Air Terminal, ID 83705-8004 DSN 42	124 WG/OSS (ANG), 3996 W. Aeronca St., Boise Air Terminal, ID 83705-8004 DSN 422	Continuous or by NOTAM	402
IR308	58 OSS/D00, Kirtland AFB, NM 87117-5861 DSN 263-5979/5888, C505-853-5979/5888/57	Same as Originating Activity	Continuous	219

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** Length calculations were performed using an the appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: May 2010)).

Appendix C: Maps and Inventory of Ranges, Range Complexes, Military Training Routes, and Special Use Areas

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
IR313	366 OSS/OSOA, 1050 Desert St., Building 2215, Mountain Home AFB, ID 83648 DSN 72	Same as Originating Activity, Scheduling requests 0730-1630 local Mon-Fri., After	By NOTAM	409
IR320	7 OSS/OSOR, 966 Ave. D-4, Ste. 118, Dyess AFB, TX 79607 DSN 461-3666, C325-696-3	7 OSS/OSOR, 1001 Ave. D-4, Ste. 107, Dyess AFB, TX 79607 DSN 461-3665, C325-696-	Continuous	853
IR324	62 OSS/OSK, 1172 Levitow Blvd., McCord AFB, WA 98438 DSN 382-3615, C253-982-3615	62 OSS/OSO, 100 Main St., McChord AFB, WA 98438 DSN 382-9925, C253-982-9925. Dut	Continuous	174
IR325	62 OSS/OSK, 1172 Levitow Blvd., McCord AFB, WA 98438 DSN 382-3615, C253-982-3615	62 OSS/OSO, 100 Main St., McChord AFB, WA 98438 DSN 382-9925, C253-982-9925. Dut	Continuous	162
IR326	62 OSS/OSK, 1172 Levitow Blvd., McCord AFB, WA 98438 DSN 382-3615, C253-982-3615	62 OSS/OSO, 100 Main St., McChord AFB, WA 98438 DSN 382-9925, C253-982-9925. Dut	Continuous	185
IR327	62 OSS/OSK, 1172 Levitow Blvd., McCord AFB, WA 98438 DSN 382-3615, C253-982-3615	62 OSS/OSO, 100 Main St., McChord AFB, WA 98438 DSN 382-9925, C253-982-9925. Dut	Continuous	167
IR328	62 OSS/OSK, 1172 Levitow Blvd., McCord AFB, WA 98438 DSN 382-3615, C253-982-3615	62 OSS/OSO, 100 Main St., McChord AFB, WA 98438 DSN 382-9925, C253-982-9925. Dut	Continuous	156
IR329	62 OSS/OSK, 1172 Levitow Blvd., McCord AFB, WA 98438 DSN 382-3615, C253-982-3615	62 OSS/OSO, 100 Main St., McChord AFB, WA 98438 DSN 382-9925, C253-982-9925. Dut	Continuous	156
IR330	62 OSS/OSK, 1172 Levitow Blvd., McCord AFB, WA 98438 DSN 382-3615, C253-982-3615	62 OSS/OSO, 100 Main St., McChord AFB, WA 98438 DSN 382-9925, C253-982-9925. Dut	Continuous	112
IR341	Commanding Officer (N38), NAS Whidbey Island, 3730 N. Charles Porter Ave., Oak H	Same as Originating Activity, Scheduling hours 0700-1600 local, Mon-Fri only. Sa	Continuous	293
IR342	Commanding Officer (N38), NAS Whidbey Island, 3730 N. Charles Porter Ave., Oak H	Same as Originating Activity, Scheduling hours 0700-1600 local, Mon-Fri only. Sa	Continuous	329
IR343	Commanding Officer (N38), NAS Whidbey Island, 3730 N. Charles Porter Ave., Oak H	Same as Originating Activity, Scheduling hours 0700-1600 local, Mon-Fri only. Sa	Continuous	472
IR344	Commanding Officer (N38), NAS Whidbey Island, 3730 N. Charles Porter Ave., Oak H	Same as Originating Activity, Scheduling hours 0700-1600 local, Mon-Fri only. Sa	Continuous	322
IR346	Commanding Officer (N38), NAS Whidbey Island, 3730 N. Charles Porter Ave., Oak H	Same as Originating Activity, Scheduling hours 0700-1600 local, Mon-Fri only. Sa	Continuous	333
IR348	Commanding Officer (N38), NAS Whidbey Island, 3730 N. Charles Porter Ave., Oak H	Same as Originating Activity, Scheduling hours 0700-1600 local, Mon-Fri only. Sa	Continuous	297
IR409	140th OG/CC Buckley ANGB Aurora, CO 80011-9546 DSN 847-9466, C720-847-9466.	140th OG/CC Buckley AFB Aurora, CO 80011-9546. Duty Hrs 0700-1700 DSN 847-9472.	0800-1600 local, Tue-Sat	194
IR414	140th Wing/Airspace Office Buckley AFB Aurora, CO 80011-9546 DSN 847-9470/9471,	140th Wing/Airspace Office Buckley AFB Aurora, CO 80011-9546. Duty Hrs 0700-1700	0800-1600 local, Tue-Sat: OT by NOTAM	106
IR415	140th OG/CC Buckley ANGB Aurora, CO 80011-9546 DSN 847-9466, C720-847-9466.	140th OG/CC Buckley AFB Aurora, CO 80011-9546. Duty Hrs 0700-1700 DSN 847-9472.	0800-1600 local, Tue-Sat: OT by NOTAM	174

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Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
IR416	140th Wing/Airspace Office Buckley AFB Aurora, CO 80011-9546 DSN 847-9470/9471,	140th Wing/Airspace Office Buckley AFB Aurora, CO 80011-9546. Duty Hrs 0700-1700	0800-1600 local, Tue-Sat. OT by NOTAM	320
IR418	388 RANS/RST, 6066 Cedar Lane, Hill AFB, UT 84056-5812 DSN 777-9384, C801-777-93	388 RANS/RST, 6066 Cedar Lane, Hill AFB, UT 84056-5812 DSN 777-4401, C801-777-44	0700-2400 local Mon-Thu, 0700-1800 local Fri, 0800-1700 local Sat	45
IR420	388 RANS/RST, 6066 Cedar Lane, Hill AFB, UT 84056-5812 DSN 777-9384, C801-777-93	388 RANS/RST, 6066 Cedar Lane, Hill AFB, UT 84056-5812 DSN 777-4401, C801-777-44	0700-2400 local Mon-Thu, 0700-1800 local Fri, 0800-1700 local Sat	40
IR424	140th Wing/Airspace Office Buckley AFB Aurora, CO 80011-9546 DSN 847-9470/9471,	140th Wing/Airspace Office Buckley AFB Aurora, CO 80011-9546. Duty Hrs 0700-1700	0800-1600 local, Tue-Sat. OT by NOTAM	152
IR425	Commander AFFTC, 412 OSS/OSAA, 235 S. Flightline Rd. Edwards AFB, CA 93523-6460	Commander AFFTC, 412 OSS/OSR, 300 E Yeager Blvd, Edwards AFB, CA 93524 DSN 527-4	Sunrise-Sunset by NOTAM	650
IR473	28 OSS/OSXA, 1956 Scott Dr., Ste. 201, Ellsworth AFB, SD 57706-4710 DSN 675-1230	28 OSS/OSXS, 1956 Scott Dr., Ste. 201, Ellsworth AFB, SD 57706-4710 DSN 675-4246	Continuous	708
IR479	120 FW/OSAD (ANG) 2800 Airport Ave. B, Great Falls, MT 59404 DSN 791-0186, C406-	Same as Originating Activity	By NOTAM	576
IR480	120 FW/OSAD (ANG) 2800 Airport Ave. B, Great Falls, MT 59404 DSN 791-0186, C406-	Same as Originating Activity	By NOTAM	418
IR485	28 OSS/OSXA, 1956 Scott Dr., Ste. 201, Ellsworth AFB, SD 57706-4710 DSN 675-1230	28 OSS/OSXS, 1956 Scott Dr., Ste. 201, Ellsworth AFB, SD 57706-4710 DSN 675-4246	Continuous	305
IR492	28 OSS/OSXA, 1956 Scott Dr., Ste. 201, Ellsworth AFB, SD 57706-4710 DSN 675-1230	28 OSS/OSXS, 1956 Scott Dr., Ste. 201, Ellsworth AFB, SD 57706-4710 DSN 675-4246	Continuous	582
IR499	28 OSS/OSXA, 1956 Scott Dr., Ste. 201, Ellsworth AFB, SD 57706-4710 DSN 675-1230	28 OSS/OSXS, 1956 Scott Dr., Ste. 201, Ellsworth AFB, SD 57706-4710 DSN 675-4246	Continuous	355
IR500	7 OSS/OSOR, 966 Ave. D-4, Ste. 117, Dyess AFB, TX 79607 DSN 461-3666, C325-696-3	7 OSS/OSOR, 966 Ave. D-4, Ste. 117, Dyess AFB, TX 79607 DSN 461-3665, C325-696-3	Continuous	542
IR501	7 OSS/OSOR, 966 Ave. D-4, Ste. 117, Dyess AFB, TX 79607 DSN 461-3666, C325-696-3	7 OSS/OSOR, 966 Ave. D-4, Ste. 117, Dyess AFB, TX 79607 DSN 461-3665, C325-696-3	Continuous	724
IR504	509 OSS/OSKA, 905 Spirit Blvd., Whiteman AFB, MO 65305 DSN 975-1713/1754, C660-6	Same as Originating Activity	Continuous	91
IR504	509 OSS/OSOS, 905 Spirit Blvd., Whiteman AFB, MO 65305 DSN 975-1713/1754, C660-6	Same as Originating Activity	Continuous	178
IR505	114 FW (ANG), Joe Foss Field, Sioux Falls, SD 57104-0264 DSN 798-7754/46, C605-9	Same as Originating Activity	Daylight hours, Mon-Sat, OT By NOTAM	138
IR508	114 FW (ANG), Joe Foss Field, Sioux Falls, SD 57104-0264 DSN 798-7745, C605-988-	114 FW (ANG), Joe Foss Field, Sioux Falls, SD 57104-0264 DSN 798-7754/7746, C605	Daylight hours, Mon-Sat, OT By NOTAM	239
IR509	114 FW (ANG), Joe Foss Field, Sioux Falls, SD 57104-0264 DSN 798-7745, C605-988-	114 FW (ANG), Joe Foss Field, Sioux Falls, SD 57104-0264 DSN 798-7754/7746, C605	Daylight hours, Tue-Sat, OT by NOTAM	306
IR513	DET 1, 184 IW, Smoky Hill ANG Range, 8429 W Farrelly Rd, Salina, KS 67401-9407.	Same as Originating Activity	Continuous	383
IR514	114 FW (ANG), Joe Foss Field, Sioux Falls, SD 57104-0264 DSN 798-7754/46, C605-9	Same as Originating Activity	Daylight hours, Tue-Sat, OT by NOTAM	223
IR518	114 FW (ANG), Joe Foss Field, Sioux Falls, SD 57104-0264 DSN 798-7745, C605-988-	114 FW (ANG), Joe Foss Field, Sioux Falls, SD 57104-0264 DSN 798-7754/7746, C605	Daylight hours, Mon-Sat, OT By NOTAM	239

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Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: May 2010)).

Appendix C: Maps and Inventory of Ranges, Range Complexes, Military Training Routes, and Special Use Areas

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
IR526	DET 1, 184 IW, Smoky Hill ANG Range, 8429 W Farrelly Rd, Salina, KS 67401-9407.	Same as Originating Activity	Continuous	308
IR527	183 FW/OSF, Capital Airport, Springfield, IL 62707 DSN 892-8202.	Same as Originating Activity	Sunrise-Sunset	173
IR592	509 OSS/OSKA, 905 Spirit Blvd., Whiteman AFB, MO 65305 DSN 975-1713/1754, C660-6	509 OSS/OSOS, 905 Spirit Blvd., Whiteman AFB, MO 65305 DSN 975-1713/1754, C660-6	Continuous	649
IR605	148th FIG (ANG), Duluth Intl., MN 55811 DSN 825-7265.	Same as Originating Activity	Daily 1400-0500Z++, available OT	135
IR606	148th FIG (ANG), Duluth Intl., MN 55811 DSN 825-7265.	Same as Originating Activity	Daily 1400-0500Z++, Usage between 0500-1400Z++ is allowable	135
IR608	FACSFAC, Pensacola, FL 32508-5217 DSN 922-2735, C850-452-2735.	Same as Originating Activity	1200-0400Z++ Mon-Fri, weekends by NOTAM	258
IR609	5 OSS/OSTC, 300 Summit Dr., Minot AFB, ND 58705-5044 DSN 453-2967, C701-723-2967	23 BS/DOS, 300 Summit Dr., Minot AFB, ND 58705 DSN 453-2002/3527, C701-723-2002.	Continuous	795
IR610	5 OSS/OSTC, 300 Summit Dr., Minot AFB, ND 58705-5044 DSN 453-2967, C701-723-2967	23 BS/DOS, 300 Summit Dr., Minot AFB, ND 58705 DSN 453-2002/3527, C701-723-2002/	Continuous	777
IR613	114 FW (ANG), Joe Foss Field, Sioux Falls, SD 57104-0264 DSN 798-7754/46, C605-9	Same as Originating Activity	Daylight hours, Tue-Sat, OT by NOTAM	198
IR614	183 FW/OSF, Capital Airport, Springfield, IL 62707 DSN 892-8202.	Same as Originating Activity	Daylight hours	135
IR618	181 FW (ANG), Hulman Regional Airport, 1100 S. Petercheff St., Terre Haute, IN 47	Same as Originating Activity	Sunrise-Sunset, Tue-Sun, OT by NOTAM	134
IR644	5 OSS/OSTC, 300 Summit Dr., Minot AFB, ND 58705-5044 DSN 453-2967, C701-723-2967	23 BS/DOS, 300 Summit Dr., Minot AFB, ND 58705 DSN 453-2639/3527, C701-723-2639/	Continuous	606
IR649	5 OSS/OSTC, 300 Summit Dr., Minot AFB, ND 58705-5044 DSN 453-2967, C701-723-2967	23 BS/DOS, 300 Summit Dr., Minot AFB, ND 58705 DSN 453-2639/3527, C701-723-2639/	Continuous	186
IR654	5 OSS/OSTC, 300 Summit Dr., Minot AFB, ND 58705-5044 DSN 453-2967, C701-723-2967	23 BS/DOS, 300 Summit Dr., Minot AFB, ND 58705 DSN 453-2002/3527, C701-723-2002/	Continuous	688
IR655	5 OSS/OSTC, 300 Summit Dr., Minot AFB, ND 58705-5044 DSN 453-2967, C701-723-2967	23 BS/DOS, 300 Summit Dr., Minot AFB, ND 58705 DSN 453-2002/3527, C701-723-2002/	Continuous	1,035
IR656	5 OSS/OSTC, 300 Summit Dr., Minot AFB, ND 58705-5044 DSN 453-2967, C701-723-2967	23 BS/DOS, 300 Summit Dr., Minot AFB, ND 58705 DSN 453-2002/3527, C701-723-2002/	Continuous	940
IR678	5 OSS/A-3C, 300 Summit Dr., Minot AFB, ND 58705-5044 DSN 453-2967, C701-723-2967	23 BS/DOS, 300 Summit Dr., Minot AFB, ND 58705-5044 DSN 453-2967, C701-723-2967	Continuous	524
IR714	COMSTRKFIGHTWINGLANT, Oceana NAS, Virginia Beach, VA 23460 DSN 433-4013, C7157-43	FACSFAC VACAPES, Oceana NAS, Virginia Beach, VA 23460 DSN 433-1228, C757-433-122	Continuous	335
IR715	COMSTRKFIGHTWINGLANT, Oceana NAS, Virginia Beach, VA 23460 DSN 433-4013, C7157-43	FACSFAC VACAPES, Oceana NAS, Virginia Beach, VA 23460 DSN 433-1228, C757-433-122	Continuous	397
IR718	COMSTRKFIGHTWINGLANT, Oceana NAS, Virginia Beach, VA 23460 DSN 433-4013, C7157-43	FACSFAC VACAPES, Oceana NAS, Virginia Beach, VA 23460 DSN 433-1228, C757-433-122	Continuous	493

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** Length calculations were performed using an the appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: May 2010)).

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
IR719	COMSTRKFIGHTWINGLANT, Oceana NAS, Virginia Beach, VA 23460 DSN 433-4013, C757-43	FACSFAC VACAPES, Oceana NAS, Virginia Beach, VA 23460 DSN 433-1228, C757-433-122	Continuous	424
IR720	COMSTRKFIGHTWINGLANT, Oceana NAS, Virginia Beach, VA 23460 DSN 433-4013, C757-43	FACSFAC VACAPES, Oceana NAS, Virginia Beach, VA 23460 DSN 433-1228, C757-433-122	Continuous	407
IR721	20 OSS/OSOA, Shaw AFB, SC 29152-5000 DSN 965-1121/1122, C803-895-1121/1122, Fax	20 OSS/OSOA, Shaw AFB, SC 29152 Duty hrs DSN 965-1118/1119, C803-895-1118/1119.	Continuous	199
IR723	FACSFAC, Penscola, FL 32508-5217, DSN 922-2735, C850-452-2735.	Same as Originating Activity	1200-0400Z++ Mon-Fri, occasionally weekends	262
IR726	20 OSS/OSOA, Shaw AFB, SC 29152-5000 DSN 965-1121/1122, C803-895-1121/1122, Fax	20 OSS/OSOA, Shaw AFB, SC 29152-5000 Duty hours DSN 965-1118/1119, C803-895-1118	Continuous	144
IR743	20 OSS/OSOA, Shaw AFB, SC 29152-5000 DSN 965-1121/1122, C803-895-1121/1122, Fax	20 OSS/OSOA, Shaw AFB, SC 29152 Duty hrs DSN 965-1118/1119, C803-895-1118/1119.	Continuous	144
IR760	COMSTRKFIGHTWINGLANT, Oceana NAS, Virginia Beach, VA 23460 DSN 433-4013, C757-43	FACSFAC VACAPES, Oceana NAS, Virginia Beach, VA 23460 DSN 433-1228, C757-433-122	Continuous	362
IR761	COMSTRKFIGHTWINGLANT, Oceana NAS, Virginia Beach, VA 23460 DSN 433-4013, C757-43	FACSFAC VACAPES, Oceana NAS, Virginia Beach, VA 23460 DSN 433-1228, C757-433-122	Continuous	324
IR762	COMSTRKFIGHTWINGLANT, Oceana NAS, Virginia Beach, VA 23460 DSN 433-4013, C757-43	FACSFAC VACAPES, Oceana NAS, Virginia Beach, VA 23460 DSN 433-1228, C757-433-122	Continuous	324
IR800	104 FW, Barnes ANGB, Westfield, MA 01085-1385 DSN 636-9228/9229, C413-568-9151 e	Same as Originating Activity	Continuous	894
IR801	174 FW, Det 1, Ft. Drum, NY 13608 DSN 772-5990/2835, C315-772-5990.	Same as Originating Activity	Continuous	296
IR802	5 OSS/OSTC, 300 Summit Dr., Minot AFB, ND 58705-5044 DSN 453-2967, C701-723-2967	23 BS/DOS, 300 Summit Dr., Minot AFB, ND 58705 DSN 453-2002/3527, C701-723-2002/	Continuous	542
IR803	5 OSS/OSTC, 300 Summit Dr., Minot AFB, ND 58705-5044 DSN 453-2967, C701-723-2967	23 BS/DOS, 300 Summit Dr., Minot AFB, ND 58705 DSN 453-2002/3527, C701-723-2002/	Continuous	384
IR804	5 OSS/OSTC, 300 Summit Dr., Minot AFB, ND 58705-5044 DSN 453-2967, C701-723-2967	23 BS/DOS, 300 Summit Dr., Minot AFB, ND 58705 DSN 453-2002/3527, C701-723-2002/	Continuous	1,217
IR805	5 OSS/OSTC, 300 Summit Dr., Minot AFB, ND 58705-5044 DSN 453-2967, C701-723-2967	23 BS/DOS, 300 Summit Dr., Minot AFB, ND 58705 DSN 453-2002/3527, C701-723-2002/	Continuous	587
IR850	Commander, Naval Air Warfare Center Weapons Division, Code 52E000E, NAWWS, Pt. Mu	Commander, Naval Air Warfare Center Weapons Division, Code 52911GE, NAWWS, Pt. Mu	Sunrise-Sunset by NOTAM	295
IR851	Commander, Naval Air Warfare Center Weapons Division, Code 52E000E, NAWWS, Pt. Mu	Commander, Naval Air Warfare Center Weapons Division, Code 52911GE, NAWWS, Pt. Mu	Daily Sunrise-Sunset	390
IR852	Commander, Naval Air Warfare Center Weapons Division, Code 52E000E, NAWWS, Pt. Mu	Commander, Naval Air Warfare Center Weapons Division, Code 52911GE, NAWWS, Pt. Mu	Sunrise-Sunset	199

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** Length calculations were performed using an appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: May 2010)).

Appendix C: Maps and Inventory of Ranges, Range Complexes, Military Training Routes, and Special Use Areas

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
IR900	611 AOG/CC, 9480 Pease Ave., Ste. 102, Elmendorf AFB, AK 99506-2100 DSN 317-552-3005, C907-377-3005.	353 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-3005, C907-377-3005.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	160
IR901	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506 DSN 317-552-2430, C	3 OSS/OSOS, Elmendorf AFB, AK 99506 DSN 317-552-2406, C907-552-2406.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	67
IR902	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506 DSN 317-552-2430, C	3 OSS/OSOS, Elmendorf AFB, AK 99506 DSN 317-552-2406, C907-552-2406.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	175
IR903	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506 DSN 317-552-2430, C	3 OSS/OSOS, Elmendorf AFB, AK 99506 DSN 317-552-2406, C907-552-2406.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	206
IR905	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506 DSN 317-552-2430, C	3 OSS/OSOS, Elmendorf AFB, AK 99506 DSN 317-552-2406, C907-552-2406.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	363
IR909	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506 DSN 317-552-2430, C	353 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-3005, C907-377-3005.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	76
IR911	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506 DSN 317-552-2430, C	3 OSS/OSOS, Elmendorf AFB, AK 99506 DSN 317-552-2406, C907-552-2406.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	67
IR912	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506 DSN 317-552-2430, C	3 OSS/OSOS, Elmendorf AFB, AK 99506 DSN 317-552-2406, C907-552-2406.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	175
IR913	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506 DSN 317-552-2430, C	3 OSS/OSOS, Elmendorf AFB, AK 99506 DSN 317-552-2406, C907-552-2406.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	206
IR915	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506 DSN 317-552-2430, C	3 OSS/OSOS, Elmendorf AFB, AK 99506 DSN 317-552-2406, C907-552-2406.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	175
IR916	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506 DSN 317-552-2430, C	353 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-3005, C907-377-3005.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	137
IR917	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506 DSN 317-552-2430, C	353 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-3005, C907-377-3005.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	147
IR918	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506 DSN 317-552-2430, C	353 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-3005, C907-377-3005.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	127
IR919	611 AOG/CC, 9480 Pease Ave., Ste. 102, Elmendorf AFB, AK 99506-2100 DSN 317-552-3005, C907-377-3005.	353 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-3005, C907-377-3005.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	207
IR921	611 AOG/CC, 9480 Pease Ave., Ste. 102, Elmendorf AFB, AK 99506-2100 DSN 317-552-3005, C907-377-3005.	353 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-3005, C907-377-3005.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	161
IR922	611 AOG/CC, 9480 Pease Ave., Ste. 102, Elmendorf AFB, AK 99506-2100 DSN 317-552-3005, C907-377-3005.	353 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-3005, C907-377-3005.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	106
IR923	611 AOG/CC, 9480 Pease Ave., Ste. 102, Elmendorf AFB, AK 99506-2100 DSN 317-552-3005, C907-377-3005.	353 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-3005, C907-377-3005.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	106
IR926	611 AOG/CC, 9480 Pease Ave., Ste. 102, Elmendorf AFB, AK 99506-2100 DSN 317-552-3005, C907-377-3005.	353 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-3005, C907-377-3005.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	101

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** Length calculations were performed using an appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: May 2010)).

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
IR927	611 AOG/CC, 9480 Pease Ave., Ste. 102, Elmendorf AFB, AK 99506-2100 DSN 317-552-	353 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-3005, C907-377-3005.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	52
IR928	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506 DSN 317-552-2430, C	353 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-3005, C907-377-3005.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	37
IR929	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506 DSN 317-552-2430, C	353 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-3005, C907-377-3005.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	37
IR939	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506 DSN 317-552-2430, C	353 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-3005, C907-377-3005.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	76
IR952	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506 DSN 317-552-2430, C	353 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-3005, C907-377-3005.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	672
IR953	611 AOG/CC, 9480 Pease Ave., Ste. 102, Elmendorf AFB, AK 99506-2100 DSN 317-552-	353 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-3005, C907-377-3005.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	477
IR983	PACAF/DOCS, 25 E ST, SUITE 1232, HICKAM AFB, HI 96853-5426 DSN 449-4173.	36 OSS/OSA, UNIT 14035, APO AP 96542-4035 DSN(315)-366-2770.	Continuous	552
SR038	Base Operations, Lawson AAF, Fort Benning, Ga. DSN 835-3524/2857 C706-545-3524.	Same as Originating Activity	Continuous	159
SR039	Base Operations, Lawson AAF, Fort Benning, Ga. DSN 835-3524/2857 C706-545-3524.	Same as Originating Activity	Continuous	95
SR040	94/OSS Dobbins AFB, GA 30069-5009 DSN 625-3498, C678-655-3498.	Same as Originating Activity	1200-0300Z ++	107
SR059	118 AW, 240 Knapp Blvd, Nashville, TN 37217, DSN 778-6362/6342, C615-399-5662/56	Same as Originating Activity	Continuous	178
SR060	118 AW, 240 Knapp Blvd, Nashville, TN 37217, DSN 778-6362/6342, C615-399-5662/56	Same as Originating Activity	Continuous	173
SR061	118 AW, 240 Knapp Blvd, Nashville, TN 37217, DSN 778-6362/6342, C615-399-5662/56	Same as Originating Activity	Continuous	125
SR062	118 AW, 240 Knapp Blvd, Nashville, TN 37217, DSN 778-6362/6342, C615-399-5662/56	Same as Originating Activity	Continuous	122
SR069	908 OSF/DOO, 430 W Maxwell Blvd, Bldg 1050, Maxwell AFB, AL 36112-6591 DSN 493-7	Same as Originating Activity	1400-0400Z ++	124
SR070	908 OSF/DOO, 430 W Maxwell Blvd, Bldg 1050, Maxwell AFB, AL 36112-6591 DSN 493-7	Same as Originating Activity	1400-0400Z ++	155
SR071	908 OSF/DOO, 430 W Maxwell Blvd, Bldg 1050, Maxwell AFB, AL 36112-6591 DSN 493-7	Same as Originating Activity	1300-0500Z ++	150
SR072	908 OSF/DOO, 430 W Maxwell Blvd, Bldg 1050, Maxwell AFB, AL 36112-6591 DSN 493-7	Same as Originating Activity	1300-0500Z ++	156
SR073	164 AW (ANG), Memphis Intl, TN 38118 DSN 726-7131.	Columbus AFB, MS DSN 742-7840/7847 C662-434-7840/7847.	Continuous	148
SR074	164 AW (ANG), Memphis Intl, TN 38118 DSN 726-7131.	Columbus AFB, MS DSN 742-7840/7847 C662-434-7840/7847.	Continuous	164
SR075	164 AW (ANG), Memphis Intl, TN 38118 DSN 726-7131.	Columbus AFB, MS DSN 742-7840/7847 C662-434-7840/7847.	Continuous	120
SR1001	3 OSS/DOH, 10460 L Street, Elmendorf AFB, AK 99506-2670 DSN 317-552-4658, C907-5	3 OSS/DOTS, DSN 317-552-3457, C907-552-3457.	Continuous	172
SR1002	3 OSS/DOH, 10460 L Street, Elmendorf AFB, AK 99506-2670 DSN 317-552-4658, C907-5	3 OSS/DOTS, DSN 317-552-3457, C907-552-3457.	Continuous	77
SR1003	3 OSS/DOH, 10460 L Street, Elmendorf AFB, AK 99506-2670 DSN 317-552-4658, C907-5	3 OSS/DOTS, DSN 317-552-3457, C907-552-3457.	Continuous	109

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** Length calculations were performed using an appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: May 2010)).

Appendix C: Maps and Inventory of Ranges, Range Complexes, Military Training Routes, and Special Use Areas

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
SR1004	3 OSS/DOH, 10460 L Street, Elmendorf AFB, AK 99506-2670 DSN 317-552-4658, C907-5	3 OSS/DOTS, DSN 317-552-3457, C907-552-3457.	Continuous	77
SR1005	3 OSS/DOH, 10460 L Street, Elmendorf AFB, AK 99506-2670 DSN 317-552-4658, C907-5	3 OSS/DOTS, DSN 317-552-3457, C907-552-3457.	Continuous	139
SR1006	3 OSS/DOH, 10460 L Street, Elmendorf AFB, AK 99506-2670 DSN 317-552-4658, C907-5	3 OSS/DOTS, DSN 317-552-3457, C907-552-3457.	Continuous	53
SR1007	3 OSS/DOH, 10460 L Street, Elmendorf AFB, AK 99506-2670 DSN 317-552-4658, C907-5	3 OSS/DOTS, DSN 317-552-3457, C907-552-3457.	Continuous	71
SR1008	3 OSS/DOH, 10460 L Street, Elmendorf AFB, AK 99506-2670 DSN 317-552-4658, C907-5	3 OSS/DOTS, DSN 317-552-3457, C907-552-3457.	Continuous	110
SR1009	3 OSS/DOH, 10460 L Street, Elmendorf AFB, AK 99506-2670 DSN 317-552-4658, C907-5	3 OSS/DOTS, DSN 317-552-3457, C907-552-3457.	Continuous	182
SR101	16 OSS/D00, Hurlburt Field, FL 32544 DSN 579-6877/7812, C850-884-6877/7812.	Same as Originating Activity	Continuous	907
SR1010	3 OSS/DOH, 10460 L Street, Elmendorf AFB, AK 99506-2670 DSN 317-552-4658, C907-5	3 OSS/DOTS, DSN 317-552-3457, C907-552-3457.	Continuous	147
SR102	16 OSS/D00, Hurlburt Field, FL 32544 DSN 579-6877/7812, C850-884-6877/7812.	Same as Originating Activity	Continuous	291
SR103	16 OSS/D00, Hurlburt Field, FL 32544 DSN 579-6877/7812, C850-884-6877/7812.	Same as Originating Activity	Continuous	433
SR104	16 OSS/D00, Hurlburt Field, FL 32544 DSN 579-6877/7812, C850-884-6877/7812.	Same as Originating Activity	Continuous	823
SR105	16 OSS/D00, Hurlburt Field, FL 32544 DSN 579-6877/7812, C850-884-6877/7812.	Same as Originating Activity	Continuous	227
SR106	16 OSS/D00, Hurlburt Field, FL 32544 DSN 579-6877/7812, C850-884-6877/7812.	Same as Originating Activity	Continuous	426
SR119	16 OSS/D00, Hurlburt Field, FL 32544 DSN 579-6877/7812, C850-884-6877/7812.	Same as Originating Activity	Continuous	800
SR137	14 OSS/OSOP, Columbus AFB, MS 39710-5000 DSN 742-7560/7633, C662-434-7560/7633.	37/41 FTS, Columbus AFB, MS 39710-5000 DSN 742-7666/7667, C662-434-7666/7667.	SR-SS, Daily	143
SR138	14 OSS/OSOP, Columbus AFB, MS 39710 DSN 742-7560/7633, C662-434-7560/7633.	37/41 FTS, Columbus AFB, MS 39710 DSN 742-7666/7667, C662-434-7666/7667.	SR-SS, Daily	143
SR166	437 OSS/OSTA, Charleston AFB, SC 29404-5054 DSN 673-5613, C843-963-5613.	20 OSS/OSOS, Shaw AFB, SC 29152-5000 DSN 965-1118/1119, C803-895-1118/1119, FAX	Continuous	153
SR200	58 OSS/D00, Kirtland AFB, NM 87117-5861 DSN 263-5979/5888/5701, C505-853-5979/58	Same as Originating Activity	Continuous	242
SR201	58 OSS/D00, Kirtland AFB, NM 87117-5861 DSN 263-5979/5888/5701, C505-853-5979/58	Same as Originating Activity	Continuous	421
SR205	97 OSS/DOA, 400 N. 6th Street, Altus AFB, OK 73521 DSN 866-6098, C580-481-6098.	97 OSS/OSK 400 N. 6th Street, Suite 12, Altus AFB, OK 73521 DSN 866-7110, C580-4	0830-0230 local Mon-Fri	88
SR206	97 OSS/DOA, 400 N. 6th Street, Altus AFB, OK 73521 DSN 866-6098, C580-481-6098.	97 OSS/OSK 400 N. 6th Street, Suite 12, Altus AFB, OK 73521 DSN 866-7110, C580-4	0830-0230 local Mon-Fri	99
SR208	97 OSS/DOA, 400 N. 6th Street, Altus AFB, OK 73521 DSN 866-6098, C580-481-6098.	97 OSS/OSK, 400 N. 6th Street, Suite 12, Altus AFB, OK DSN 866-7110, C580-481-71	0830-0230 local Mon-Fri	116
SR210	58 OSS/D00, Kirtland AFB, NM 87117-5861 DSN 263-5979/5888/5701, C505-853-5979/58	Same as Originating Activity	Continuous	148
SR211	58 OSS/D00, Kirtland AFB, NM 871175861 DSN 263-5979/5888/5701, C505-853-5979/588	Same as Originating Activity	Continuous	189
SR212	27 SOSS/OSTA, 110 E Sexton Ave., Suite 1081, Cannon AFB, NM 88103 DSN 681-2521.	27 SOSS/OSTA, 110 E Sexton Ave., Suite 1081, Cannon AFB, NM 88103 DSN 681-2276,	Continuous	230

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** Length calculations were performed using an appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: May 2010)).

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
SR213	27 SOSS/OSTA, 110 E Sexton Ave., Suite 1081, Cannon AFB, NM 88103 DSN 681-2521,	27 SOSS/OSTA, 110 E Sexton Ave., Suite 1081, Cannon AFB, NM 88103 DSN 681-2276,	Continuous	235
SR214	27 SOSS/OSTA, 110 E Sexton Ave., Suite 1081, Cannon AFB, NM 88103 DSN 681-2521,	27 SOSS/OSTA, 110 E Sexton Ave., Suite 1081, Cannon AFB, NM 88103 DSN 681-2276,	Continuous	249
SR216	97 OSS/DOA, 400 N. 6th Street, Altus AFB, OK 73521 DSN 866-6098, C580-481-6098.	97 OSS/OSK, 400 N. 6th Street, Suite 12, Altus AFB, OK 73521 DSN 866-7110, C580-	0830-0230 local Mon-Fri	111
SR217	97 OSS/DOA, 400 N. 6th Street, Altus AFB, OK 73521 DSN 866-6098, C580-481-6098.	97 OSS/OSK, 400 N. 6th Street, Suite 12, Altus AFB, OK 73521 DSN 866-7110, C580-	0830-0230 local Mon-Fri	114
SR218	314 OSS/OSK, 380 Chief Williams Drive, Little Rock AFB, AR 72099-4976 DSN 731-33	Same as Originating Activity	Continuous	303
SR219	314 OSS/OSK, 380 Chief Williams Drive, Little Rock AFB, AR 72099-4976 DSN 731-330	Same as Originating Activity.	Continuous	262
SR220	314 OSS/OSK, 380 Chief Williams Drive, Little Rock AFB, AR 72099-4976 DSN 731-33	Same as Originating Activity	Continuous	198
SR221	314 OSS/OSK, 380 Chief Williams Drive, Little Rock AFB, AR 72099-4976 DSN 731-33	Same as Originating Activity	Continuous	840
SR222	314 OSS/OSK, 380 Chief Williams Drive, Little Rock AFB, AR 72099-4976 DSN 731-33	Same as Originating Activity	Continuous	131
SR223	314 OSS/OSK, 380 Chief Williams Drive, Little Rock AFB, AR 72099-4976 DSN 731-33	Same as Originating Activity	Continuous	137
SR224	314 OSS/OSK, 380 Chief Williams Drive, Little Rock AFB, AR 72099-4976 DSN 731-33	Same as Originating Activity	Continuous	292
SR225	314 OSS/OSK, 380 Chief Williams Drive, Little Rock AFB, AR 72099-4976 DSN 731-33	Same as Originating Activity	Continuous	362
SR226	314 OSS/OSK, 380 CMSGT Williams Street, Little Rock AFB, AR 72099-4976 DSN 731-3	314 OSS/OSK, 380 CMSGT Williams Street, Little Rock AFB, AR 72099-4976 DSN 731-3	Continuous	73
SR227	314 OSS/OSK, 380 Chief Williams Drive, Little Rock AFB, AR 72099-4976 DSN 731-33	Same as Originating Activity	Continuous	279
SR228	301 OG/SUA, NAS JRB Fort Worth, TX DSN 739-6903/6904/6905, C817-782-6903/6904/69	Same as Originating Activity	Continuous	193
SR229	314 OSS/OSK, 380 Chief Williams Drive, Little Rock AFB, AR 72099-4976 DSN 731-33	Same as Originating Activity	Continuous	248
SR230	314 OSS/OSK, 380 Chief Williams Drive, Little Rock AFB, AR 72099-4976 DSN 731-33	Same as Originating Activity	Continuous	311
SR231	314 OSS/OSK, 380 Chief Williams Drive, Little Rock AFB, AR 72099-4976 DSN 731-33	Same as Originating Activity.	Continuous	302
SR232	314 OSS/OSK, 380 Chief Williams Drive, Little Rock AFB, AR 72099-4976 DSN 731-33	Same as Originating Activity	Continuous	239
SR233	7 WG, Dyess AFB, TX 79607 DSN 461-2318.	Same as Originating Activity	Continuous	203
SR234	7 WG, Dyess AFB, TX 79607 DSN 461-2318.	Same as Originating Activity	Continuous	126
SR235	71 FTW/OSOP, Vance AFB, OK 73705-5202 DSN 448-7850 C580-213-7850.	8 FTS/DOO, Vance AFB, OK 73705-5202 DSN 448-6037 C580-213-6037	Sunrise -Sunset and active days per local directives	126
SR236	317 AG, Dyess AFB, TX 79607 DSN 461-2318.	Same as Originating Activity	Continuous	196
SR237	314 OSS/OSK, 380 Chief Williams Drive, Little Rock AFB, AR 72099-4976 DSN 731-33	Same as Originating Activity	Continuous	107
SR238	314 OSS/OSK, 380 Chief Williams Drive, Little Rock AFB, AR 72099-4976 DSN 731-33	Same as Originating Activity	Continuous	98
SR239	314 OSS/OSK, 380 CMSGT Williams Street, Little Rock AFB, AR 72099-4976 DSN 731-3	314 OSS/OSK, 380 CMSGT Williams Street, Little Rock AFB, AR 72099-4976 DSN 731-3	Continuous	139

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** Length calculations were performed using an the appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: May 2010)).

Appendix C: Maps and Inventory of Ranges, Range Complexes, Military Training Routes, and Special Use Areas

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
SR240	7 WG, Dyess AFB, TX 79607 DSN 461-2318.	Same as Originating Activity	Continuous	134
SR241	71 FTW/OSOP, Vance AFB, OK 73705-5202 DSN 448-7850 C580-213-7850.	8 FTS/D00, Vance AFB, OK 73705-5202 DSN 448-6037 C580-213-6037.	Sunrise-Sunset and active days per local directives	143
SR242	317 AG, Dyess AFB, TX 79607 DSN 461-2318.	Same as Originating Activity	Continuous	193
SR243	7 WG, Dyess AFB, TX 79607 DSN 461-2318.	Same as Originating Activity	Continuous	163
SR244	317 AG, Dyess AFB, TX 79607 DSN 461-2318.	Same as Originating Activity	Continuous	119
SR245	7 WG, Dyess AFB, TX 79607 DSN 461-2318.	Same as Originating Activity	Continuous	129
SR246	314 OSS/O SK, 380 Chief Williams Drive, Little Rock AFB, AR 72099-4976 DSN 731-33	Same as Originating Activity.	Continuous	230
SR247	71 FTW/OSOP, Vance AFB, OK 73705-5202 DSN 448-7850 C580-213-7850.	8 FTS/D00, Vance AFB, OK 73705-5202 DSN 448-6037 C580-213-6037.	Sunrise-Sunset and active days per local directives	143
SR249	7 WG, Dyess AFB, TX 79607 DSN 461-2318.	Same as Originating Activity	Continuous	197
SR250	317 AG, Dyess AFB, TX 79607 DSN 461-2318.	Same as Originating Activity	Continuous	81
SR251	7 WG, Dyess AFB, TX 79607 DSN 461-2318.	Same as Originating Activity	Continuous	73
SR253	71 FTS/OSOP, Vance AFB, OK 73705-5202 DSN 448-7850 C580-213-7850.	8 FTS/D00, Vance AFB, OK 73705-5202 DSN 448-6037 C580-213-6037.	Sunrise-Sunset and active days per local directives	126
SR255	7 WG, Dyess AFB, TX 79607 DSN 461-2318.	Same as Originating Activity	Continuous	85
SR258	317 WG, Dyess AFB, TX 79607 DSN 461-2318.	Same as Originating Activity	Continuous	171
SR261	317 WG, Dyess AFB, TX 79607 DSN 461-2318.	Same as Originating Activity	Continuous	133
SR267	7 WG, Dyess AFB, TX 79607 DSN 461-2318.	Same as Originating Activity	Continuous	171
SR270	301 OG/SUA, NAS JRB Fort Worth, TX DSN 739-6903/6904/6905, C817-782-6903/6904/69	Same as Originating Activity	0700-2200 local	182
SR273	7 WG, Dyess AFB, TX 79607 DSN 461-2318.	Same as Originating Activity	Continuous	156
SR274	71 FTW/OSOP, Vance AFB, OK 73705-5202 DSN 448-7850, C580-213-7850.	Same as Originating Activity	Sunrise to Sunset daily	169
SR275	71 FTW/OSOP, Vance AFB, OK 73705-5202 DSN 448-7850, C580-213-7850.	Same as Originating Activity	Sunrise to Sunset daily	169
SR276	47 OSS/OSOR, 570 2nd St., Ste 6, Laughlin AFB, TX 78843-5222 DSN 732-5864, C830-	86 FTS/DOS, 80 Rio Lobo Ln, Laughlin AFB, TX 78843 DSN 732-5584, C830-298-5584.	Sunrise-Sunset daily	184
SR277	47 OSS/OSOR, 570 2nd St., Ste. 6, Laughlin AFB, TX 78843-5222 DSN 732-5864, C830	86 FTS/DOS, 80 Rio Lobo Ln, Laughlin AFB, TX 78843 DSN 732-5584, C830-298-5584.	Sunrise-Sunset daily	183
SR280	7 WG, Dyess AFB, TX 79607 DSN 461-2318.	Same as Originating Activity	Continuous	47
SR281	47 OSS/OSOR, 570 2nd St., Ste 6, Laughlin AFB, TX 78843-5222 DSN 732-5864/5337,	85 FTS/DOS, 570 2nd St., Laughlin AFB, TX 78843-5220 DSN 732-5121/5429, C830-298	Sunrise-Sunset daily	761
SR282	47 OSS/OSOR, 570 2nd St., Ste. 6, Laughlin AFB, TX 78843-5222 DSN 732-5864/5337,	85 FTS/DOS, 570 2nd St., Laughlin AFB, TX 78843-5220 DSN 732-5121/5429, C830-298	Sunrise-Sunset daily	667

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** Length calculations were performed using an appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: May 2010)).

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
SR283	47 OSS/OSOR, 570 2nd St., Ste 6, Laughlin AFB, TX 78843-5222 DSN 732-5864, C830-5220 DSN 732-5121, C830-298-5121	85 FTS/DOS, 570 2nd St., Laughlin AFB, TX 78843-5220 DSN 732-5121, C830-298-5121	Sunrise-Sunset daily	133
SR284	47 OSS/OSOR, 570 2nd St., Ste. 6, Laughlin AFB, TX 78843-5222 DSN 732-5864, C830	85 FTS/DOS, 570 2nd St., Laughlin AFB, TX 78843-5220 DSN 732-5121, C830-298-5121	Close UFN	133
SR286	12 OSS/OSOA, Randolph AFB, TX 78150-5000 DSN 487-5580, C210-652-5580.	559 FTS, Randolph AFB, TX 78150 DSN 487-5661, C210-652-5661.	Sunrise-Sunset Daily, except holidays	115
SR287	12 OSS/OSOA, Randolph AFB, TX 78150-5000 DSN 487-5580, C210-652-5580.	559 FTS, Randolph AFB, TX 78150 DSN 487-5661, C210-652-5661.	Sunrise-Sunset Daily, except holidays	117
SR290	12 OSS/OSOA, Randolph AFB, TX 78150-5000 DSN 487-5580, C210-652-5580.	559 FTS, Randolph AFB, TX 78150 DSN 487-5661, C210-652-5661.	Sunrise-Sunset Daily, except holidays	120
SR292	12 OSS/OSOA, Randolph AFB, TX 78150-5000 DSN 487-5580, C210-652-5580.	559 FTS, Randolph AFB, TX 78150 DSN 487-5661, C210-652-5661.	Sunrise-Sunset daily except holidays	114
SR293	12 OSS/OSOA, Randolph AFB, TX 78150-5000 DSN 487-5580, C210-652-5580.	559 FTS, Randolph AFB, TX 78150 DSN 487-5661, C210-652-5661.	Sunrise- Sunset daily	108
SR294	71 FTW/OSOP, Vance AFB, OK 73705-5202 DSN 448-7850 C580-213-7850.	8 FTS/DOO, Vance AFB, OK 73705-5202 DSN 448-6037 C580-213-6037.	Sunrise-Sunset	198
SR295	71 FTW/OSOP, Vance AFB, OK 73705-5202 DSN 448-7850 C580-213-7850.	8 FTS/DOO, Vance AFB, OK 73705-5202 DSN 448-6037 C580-213-6037.	Sunrise-Sunset	194
SR296	71 FTW/OSOP, Vance AFB, OK 73705-5202 DSN 448-7850 C580-213-7850.	8 FTS/DOO, Vance AFB, OK 73705-5202 DSN 448-6037 C580-213-6037.	Sunrise-Sunset	179
SR300	60 OSS/OSO, 611 E. St., Travis AFB, CA 94535 DSN 837-1075, C707-424-1075.	60 OSS/OSO, 611 E. St., Travis AFB, CA 94535 DSN 837-5582, C707-424-5582.	Continuous	763
SR301	60 OSS/OSO, 611 E. St., Travis AFB, CA 94535 DSN 837-1075, C707-424-1075.	60 OSS/OSO, 611 E. St., Travis AFB, CA 94535 DSN 837-5582, C707-424-5582.	Continuous	763
SR311	129 RQW/DOW, PO Box 103, Stop 14, Moffett Federal Afd, CA 94035-5000 DSN 359-93	Same as Originating Activity	Continuous	145
SR353	129 RQW/DOW, PO Box 103, Stop 14, Moffett Federal Afd, CA 94035-5000 DSN 359-93	Same as Originating Activity	Continuous	110
SR359	129 RQW/DOW, PO Box 103, Stop 14, Moffett Federal Afd, CA 94035-5000 DSN 359-93	Same as Originating Activity	Continuous	145
SR381	129 RQW/DOW, PO Box 103, Stop 14, Moffett Federal Afd, CA 94035-5000 DSN 359-93	Same as Originating Activity	Continuous	142
SR390	146 AW/DOXT (ANG), 106 Mulcahey Dr., Port Hueneme, CA 93041-4003 DSN 893-7590/75	Same as Originating Activity	Continuous	97
SR397	146 AW/DOXT (ANG), 106 Mulcahey Dr., Port Hueneme, CA 93041-4003 DSN 893-7590/75	Same as Originating Activity	Continuous	114
SR398	129 RQW/DOW, PO Box 103, Stop 14, Moffett Federal Afd, CA 94035-5000 DSN 359-93	Same as Originating Activity	Continuous	43
SR488	62 OSS/OSO, McChord AFB, WA 98438-1109 DSN 382-9925, C253-982-9925. During non-d	Same as Originating Activity	Continuous	30
SR489	62 OSS/OSO, McChord AFB, WA 98438-1109 DSN 382-9925, C253-982-9925. During non-d	Same as Originating Activity	Continuous	23
SR616	139 Airlift Wg., 705 Memorial Drive, St. Joseph, MO 64503-9307 DSN 356-3225/3470	Same as Originating Activity	1300-0500Z++ daily	148

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** Length calculations were performed using an the appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: May 2010)).

Appendix C: Maps and Inventory of Ranges, Range Complexes, Military Training Routes, and Special Use Areas

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
SR617	139 Airlift Wg., 705 Memorial Drive, St. Joseph, MO 64503-9307 DSN 356-3225/3470	Same as Originating Activity	1300-0500Z++ daily	147
SR618	139 Airlift Wg., 705 Memorial Drive, St. Joseph, MO 64503-9307 DSN 356-3225/3470	Same as Originating Activity	1300-0500Z++ daily	129
SR619	139 Airlift Wg., 705 Memorial Drive, St. Joseph, MO 64503-9307 DSN 356-3225/3470	Same as Originating Activity	1300-0500Z++ daily	137
SR701	191 AG, Selfridge ANGB, MI 48045 DSN 273-4498/4441, C810-463-3664.	Same as Originating Activity	1600-0400Z++ Tue-Sat, 1600-2200Z++ Sun	177
SR702	191 AG, Selfridge ANGB, MI 48045 DSN 273-4498/4441, C810-463-3664.	Same as Originating Activity	1600-0400Z++ Tue-Sat, 1600-2200Z++ Sun	166
SR703	191 AG, Selfridge ANGB, MI 48045 DSN 273-4498/4441, C810-463-3664.	Same as Originating Activity	1600-0400Z++ Tue-Sat, 1600-2200Z++ Sun	75
SR707	179 AW, Mansfield Lahm Airport, OH 44903-0179 DSN 696-6165.	Same as Originating Activity	0700-2300 local daily	142
SR708	179 AW, Mansfield Lahm Airport, OH 44903-0179 DSN 696-6165.	Same as Originating Activity	0700-2300 local daily	164
SR709	179 AW, Mansfield Lahm Airport, OH 44903-0179 DSN 696-6165.	Same as Originating Activity	0700-2300 local daily	105
SR710	179 AW, Mansfield Lahm Airport, OH 44903-0179 DSN 696-6165.	Same as Originating Activity	0700-2300 local daily	110
SR711	179 AW, Mansfield Lahm Airport, OH 44903-0179 DSN 696-6165.	Same as Originating Activity	0700-2300 local daily	115
SR712	179 AW, Mansfield Lahm Airport, OH 44903-0179 DSN 696-6165.	Same as Originating Activity	0700-2300 local daily	140
SR713	179 AW, Mansfield Lahm Airport, OH 44903-0179 DSN 696-6165.	Same as Originating Activity	0700-2300 local daily	117
SR714	179 AW, Mansfield Lahm Airport, OH 44903-0179 DSN 696-6165.	Same as Originating Activity	0700-2300 local daily	88
SR715	179 AW, Mansfield Lahm Airport, OH 44903-0179 DSN 696-6165.	Same as Originating Activity	0700-2300 local daily	148
SR727	133 TAW, Minneapolis-St. Paul Intl, MN 55111, DSN 825-5680.	Same as Originating Activity	1930-2230 lcl Tue and Thu; 1000-1500 Lcl third Sat each month; OT by NOTAM	200
SR728	133 TAW, Minneapolis-St. Paul Intl, MN 55111, DSN 825-5680.	Same as Originating Activity	1930-2230 lcl Tue and Thu; 1000-1500 Lcl third Sat each month; OT by NOTAM	179
SR729	133 TAW, Minneapolis-St. Paul Intl, MN 55111, DSN 825-5680.	Same as Originating Activity	1930-2230 lcl Tue and Thu; 1000-1500 Lcl third Sat each month; OT by NOTAM	142
SR730	133 TAW, Minneapolis-St. Paul Intl, MN 55111, DSN 825-5680.	Same as Originating Activity	1930-2230 lcl Tue and Thu; 1000-1500 Lcl third Sat each month; OT by NOTAM	136
SR731	133 TAW, Minneapolis-St. Paul Intl, MN 55111, DSN 825-5680.	Same as Originating Activity	1930-2230 lcl Tue and Thu; 1000-1500 Lcl third Sat each month; OT by NOTAM	88
SR771	440 AW/D00, General Mitchell IAP, Milwaukee, WI 53207, DSN 741-5155/5157, FAX DS	Same as Originating Activity	2200-0330Z++ Tue-Fri; 1500-2200Z++ Sat-Sun	255
SR776	440 AW/D00, General Mitchell IAP, Milwaukee, WI 53207, DSN 741-5155/5157, FAX DS	Same as Originating Activity	2000-0400Z++ Tue-Fri; 1600-2200Z++ Sat-Sun	159
SR781	Alpena CRTC/OTM (ANG), 5884 A Street, Alpena MI 49707-8125 DSN 741-3509/3226.	Same as Originating Activity	0700-2300 local daily	118
SR782	Alpena CRTC/OTM (ANG), 5884 A Street, Alpena MI 49707-8125 DSN 741-3509/3226.	Same as Originating Activity	0700-2300 local daily	152

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** Length calculations were performed using an the appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: May 2010)).

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
SR785	440 AW/D00, General Mitchell IAP, Milwaukee, WI 53207, DSN 741-5155/5157, FAX DS	Same as Originating Activity	2000-0400Z++ Tue-Fri; 1600-2200Z++ Sat-Sun	141
SR800	166 OSF/OSK, 2805 Spruance Drive, New Castle 19720-1615 DSN 445-7554 C302-323-35	Same as Originating Activity	0800-2300 local	156
SR801	166 OSF/OSK, 2805 Spruance Drive, New Castle 19720-1615 DSN 445-7554 C302-323-35	Same as Originating Activity	0800-2300 local	208
SR802	167 AW, Eastern West Virginia Regional, Martinsburg, WV 25401 DSN 242-5250.	Same as Originating Activity	Continuous	81
SR803	167 AW, Eastern West Virginia Regional, Martinsburg, WV 25401 DSN 242-5250.	Same as Originating Activity	Continuous	87
SR804	167 AW, Eastern West Virginia Regional, Martinsburg, WV 25401 DSN 242-5250.	Same as Originating Activity	Continuous	95
SR805	166 OSF/OSK, 2805 Spruance Drive, New Castle 19720-1615 DSN 445-7554 C302-323-35	Same as Originating Activity	0800-2300 local	156
SR806	167 AW, Eastern West Virginia Regional, Martinsburg, WV 25401 DSN 242-5250.	Same as Originating Activity	Continuous	122
SR807	167 AW, Eastern West Virginia Regional, Martinsburg, WV 25401 DSN 242-5250.	Same as Originating Activity	Continuous	141
SR808	167 AW, Eastern West Virginia Regional, Martinsburg, WV 25401 DSN 242-5250.	Same as Originating Activity	Continuous	171
SR820	166 OSF/OSK, 2805 Spruance Drive, New Castle 19720-1615 DSN 445-7554 C302-323-35	Same as Originating Activity	0900-2300 local daily	141
SR821	166 OSF/OSK, 2805 Spruance Drive, New Castle 19720-1615 DSN 445-7554 C302-323-35	Same as Originating Activity	0900-2300 local daily	129
SR822	911 AW, Pittsburgh Intl, PA DSN 277-8722/8761.	Same as Originating Activity	1000-0300Z Mon-Sat	125
SR823	914 AW/328 AS, 10460 Wagner Dr, Niagra Falls Intl Airport, NY 14304-5010, DSN 238	Same as Originating Activity	1500-0300Z++	183
SR825	914 AW/328 AS, 10460 Wagner Dr, Niagra Falls Intl Airport, NY 14304-5010, DSN 238	Same as Originating Activity	1500-0300Z++	181
SR835	166 OSF/OSK, 2805 Spruance Drive, New Castle 19720-1615 DSN 445-7554 C302-323-35	Same as Originating Activity	0900-2300 local	132
SR844	166 Airlift Gp, 166 OSF/DOW, 2600 Spruance Dr, Corporate Commons, New Castle, DE	Same as Originating Activity	0800-2359 local	153
SR845	166 Airlift Gp, 166 OSF/DOW, 2600 Spruance Dr, Corporate Commons, New Castle, DE	Same as Originating Activity	0800-2359 local	200
SR846	166 Airlift Gp, 166 OSF/DOW, 2600 Spruance Dr, Corporate Commons, New Castle, DE	Same as Originating Activity	0800-2359 local	111
SR847	166 Airlift Gp, 166 OSF/DOW, 2600 Spruance Dr, Corporate Commons, New Castle, DE	Same as Originating Activity	0800-2359 local	67
SR867	Commander, Ft Pickett, VA 23824-5000 DSN 438-8506, C804-292-8506.	Same as Originating Activity	Continuous	196
SR871	130 AG (ANG), Kanawha County, Charleston, WV 25311 DSN 366-6291.	Same as Originating Activity	0800-2300 local	150
SR872	130 AG (ANG), Kanawha County, Charleston, WV 25311 DSN 366-6291.	Same as Originating Activity	0800-2300 local	156
SR873	130 AG (ANG), Kanawha County, Charleston, WV 25311 DSN 366-6291.	Same as Originating Activity	0800-2300 local	155
SR874	130 AG (ANG), Kanawha County, Charleston, WV 25311 DSN 366-6291.	Same as Originating Activity	0800-2300 local	130
SR900	143 AW/Operations, 7 Flightline Dr, North Kingstown, RI 02852-7548 DSN 476-3405,	Same as Originating Activity	1200-0400Z++ Daily	153
SR901	143 AW/Operations, 7 Flightline Dr, North Kingstown, RI 02852-7548 DSN 476-3405,	Same as Originating Activity	1200-0400Z++ Daily	98
SR902	143 AW/Operations, 7 Flightline Dr, North Kingstown, RI 02852-7548 DSN 476-3405,	Same as Originating Activity	1200-0400Z++ Daily	160
SR904	143 AW/Operations, 7 Flightline Dr, North Kingstown, RI 02852-7548 DSN 476-3405,	Same as Originating Activity	1000-2200 local	184
SR905	143 AW/Operations, 7 Flightline Dr, North Kingstown, RI 02852-7548 DSN 476-3405,	Same as Originating Activity	1000-2200 local	97

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Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
VR025	GA ANG/CRTC/OTR Townsend Range P.O. BOX 220, GA 31331 DSN 860-3303 C912-963-3303	GA ANG/CRTC/OTR Townsend Range P.O. BOX 220, GA 31331 DSN 860-3007 C912-963-3007	0700-2200 LCL, other times by NOTAM	55
VR041	4 OSS/OSOR, Seymour Johnson AFB, NC 27531-5004 DSN 722-2672, C919-722-2672.	4 OSS/OSOS, Seymour Johnson AFB, NC 27531-5004 DSN 722-2129/2124, C919-722-2129/	Continuous	424
VR042	4 OSS/OSOR, Seymour Johnson AFB, NC 27531-5004 DSN 722-2672, C919-722-2672.	4 OSS/OSOS, Seymour Johnson AFB, NC 27531-5004 DSN 722-2129/2124, C919-722-2129/	Continuous	503
VR043	4 OSS/OSOR, Seymour Johnson AFB, NC 27531-5004 DSN 722-2672, C919-722-2672.	4 OSS/OSOS, Seymour Johnson AFB, NC 27531-5004 DSN 722-2129/2124, C919-722-2129/	Continuous	369
VR045	GA ANG/CRTC/OTR Townsend Range, P.O. BOX 220, Townsend, GA 31331, DSN 860-3007 C9	GA ANG/CRTC/OTR Townsend Range, P.O. BOX 220, Townsend, GA 31331, DSN 860-3303 C9	0700-2200 LCL, Mon-Fri, other time by NOTAM	55
VR054	4 OSS/OSR, Seymour Johnson AFB, NC 27531-5004 DSN 722-2672, C919-722-2672.	4 OSS/OSOSF, Seymour Johnson AFB, NC 27531-5004 DSN 722-2129/2124, C919-722-2129	0700-2100 local Mon-Fri, OT by NOTAM	34
VR058	20 OSS/OSTA, Shaw AFB, SC 29152 DSN 965-1121/1122, C803-895-1121/1122, Fax DSN 9	20 OSS/OSOS, Shaw AFB, SC 29152 DSN 965-1118/1119, C803-895-1118/1119. Non-duty	Continuous (Jan, Mar, May, Jul, Sep, Nov) VR-092 reverse direction other months	199
VR060	187 FW, 5187 Selma Highway, Montgomery, AL 36108-4824 DSN 358-9255, C334-394-72	Same as Originating Activity	0700-1700 Local or by NOTAM	123
VR071	4 OSS/OSR, Seymour Johnson AFB, NC 27531-5004 DSN 722-2672, C919-722-2672.	4 OSS/OSOSF, Seymour Johnson AFB, NC 27531-5004 DSN 722-2129/2124, C919-722-2129	0700-2100 local Mon-Fri, OT by NOTAM	29
VR073	4 OSS/OSR, Seymour Johnson AFB, NC 27531-5004 DSN 722-2672, C919-722-2672.	4 OSS/OSOSF, Seymour Johnson AFB, NC 27531-5004 DSN 722-2129/2124, C919-722-2129	Continuous	222
VR083	4 OSS/OSE, Seymour Johnson AFB, NC 27531 DSN 722-2672, C919-722-2672	4 OSS/OSOSF, Seymour Johnson AFB, NC 27531-5004 DSN 722-2129/2124, C919-722-2129	Continuous	238
VR084	4 OSS/OSR, Seymour Johnson AFB, NC 27531-5004 DSN 722-2672, C919-722-2672.	4 OSS/OSOSF, Seymour Johnson AFB, NC 27531-5004 DSN 722-2129/2124, C919-722-2129	Continuous	204
VR085	4 OSS/OSR, Seymour Johnson AFB, NC 27531 DSN 722-2672, C919-722-2672.	4 OSS/OSOSF, Seymour Johnson AFB, NC 27531-5004 DSN 722-2129/2124, C919-722-2129	Continuous	168
VR086	4 OSS/OSR, Seymour Johnson AFB, NC 27531 DSN 722-2672, C919-722-2672.	4 OSS/OSOSF, Seymour Johnson AFB, NC 27531-5004 DSN 722-2129/2124, C919-722-2129	Continuous	203
VR087	20 OSS/OSTA, Shaw AFB, SC 29152 DSN 965-1121/1122, C803-895-1121/1122, Fax DSN 9	20 OSS/OSOS, Shaw AFB, SC 29152 Duty hrs DSN 965-1118/1119, C803-895-1118/1119.	Continuous	185
VR088	20 OSS/OSTA, Shaw AFB, SC 29152 DSN 965-1121/1122, C803-895-1121/1122, Fax DSN 9	20 OSS/OSOS, Shaw AFB, SC 29152 Duty hrs DSN 965-1118/1119, C803-895-1118/1119.	Continuous	164
VR092	20 OSS/OSTA, Shaw AFB, SC 29152 DSN 965-1121/1122, C803-895-1121/1122, Fax DSN 9	20 OSS/OSOS, Shaw AFB, SC 29152 Duty hrs DSN 965-1118/1119, C803-895-1118/1119.	Continuous (Feb, Apr, Jun, Aug, Oct, Dec) VR-058 opposite direction other months	199
VR093	20 OSS/OSTA, Shaw AFB, SC 29152 DSN 965-1121/1122, C803-895-1121/1122, Fax DSN 9	20 OSS/OSOS, Shaw AFB, SC 29152 Duty hrs DSN 965-1118/1119, C803-895-1118/1119.	Continuous	210

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** Length calculations were performed using an appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: May 2010)).

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
VR094	1st Aviation Group (GA ARNG), Dobbins ARB, GA 30069, DSN 753-3609, C678-569-3609	1st Aviation Group (GA ARNG), Dobbins ARB, GA 30069, DSN 753-3602/3611, C678-569	Continuous	152
VR095	1st Aviation Group (GA ARNG), Dobbins ARB, GA 30069 DSN 753-3609, C678-569-3609,	1st Aviation Group (GA ARNG), Dobbins ARB, GA 30069 DSN 753-3602/3611 C678-569-3	Continuous	267
VR096	4 OSS/OSR, Seymour Johnson AFB, NC 27531 DSN 722-2672, C919-722-2672.	4 OSS/OSOSF, Seymour Johnson AFB, NC 27531-5004 DSN 722-2129/2124, C919-722-2129	Continuous	145
VR097	20 OSS/OSTA, Shaw AFB, SC 29152 DSN 965-1121/1122, C803-895-1121/1122, Fax DSN 9	20 OSS/OSOS, Shaw AFB, SC 29152, Duty hrs DSN 965-1118/1119, C803-895-1118/1119.	0600-2400 local daily	341
VR100	27 SOSS/OSTA, 110 E. Sextant Ave, Suite 1081, Cannon AFB, NM 88103 DSN 681-2521.	27 SOSS/OSOS, 110 E. Sextant Ave, Suite 1080, Cannon AFB, NM 88103 DSN 681-2276.	Continuous	318
VR1001	FACSFAC-JAX, P.O. Box 40, NAS Jacksonville, FL 32212-0040 DSN 942-2004/2005, C904	Same as Originating Activity	Continuous	389
VR1002	FACSFAC-JAX, P.O. Box 40, NAS Jacksonville, FL 32212-0040 DSN 942-2004/2005, C904	Same as Originating Activity	Continuous	434
VR1003	FACSFAC-JAX, P.O. Box 40, NAS Jacksonville, FL 32212-0040 DSN 942-2004/2005, C904	Same as Originating Activity	Continuous	488
VR1004	FACSFAC-JAX, P.O. Box 40, NAS Jacksonville, FL 32212-0040 DSN 942-2004/2005, C904	Same as Originating Activity	Continuous	569
VR1005	FACSFAC-JAX, P.O. Box 40, NAS Jacksonville, FL 32212-0040 DSN 942-2004/2005, C904	Same as Originating Activity	Continuous	280
VR1006	FACSFAC-JAX, P.O. Box 40, NAS Jacksonville, FL 32212-0040 DSN 942-2004/2005, C904	Same as Originating Activity	Continuous	682
VR1007	FACSFAC-JAX, P.O. Box 40, NAS Jacksonville, FL 32212-0040 DSN 942-2004/2005, C904	Same as Originating Activity	Continuous	173
VR1008	FACSFAC-JAX, P.O. Box 40, NAS Jacksonville, FL 32212-0040 DSN 942-2004/2005, C904	Same as Originating Activity	Continuous	74
VR1009	FACSFAC-JAX, P.O. Box 40, NAS Jacksonville, FL 32212-0040 DSN 942-2004/2005, C904	Same as Originating Activity	Continuous	76
VR101	301 OG/SUA, NAS JRB, Fort Worth, TX 76127 DSN 739-6903/04/05, C817-782-6903/04/0	Same as Originating Activity	0700-2200 local	72
VR1010	FACSFAC-JAX, P.O. Box 40, NAS Jacksonville, FL 32212-0040 DSN 942-2004/2005, C904	Same as Originating Activity	Continuous	26
VR1013	FACSFAC-JAX, P.O. Box 40, NAS Jacksonville, FL 32212-0040 DSN 942-2004/2005, C904	Same as Originating Activity	Continuous	62
VR1014	14 OSS/OSOP, Columbus AFB, MS 39710-5000 DSN 742-7560/7633, C662-434-7560/7633.	37/41 FTS, Columbus AFB, MS 39710-5000 DSN 742-7666/7667, C662-434-7666/7667.	Sunrise-Sunset daily	177
VR1016	14 OSS/OSOP Columbus AFB, MS 39710 DSN 742-7560/7633 C662-434-7560/7633	48 FTS Columbus AFB, MS 39710 DSN 742-7840/7847 C662-434-7840/7847	Sunrise-Sunset daily	395
VR1017	187 FW, 5187 Selma Highway, Montgomery, AL 36108-4824 DSN 358-9255, C334-394-725	Same as Originating Activity	0700-1730 local, OT by NOTAM	175
VR1020	FACSFAC, Pensacola, FL 32508-5217 DSN 922-2735, C850-452-2735.	Same as Originating Activity	1200-0400Z++ weekdays, occasional weekends	147
VR1021	FACSFAC, Pensacola, FL 32508-5217 DSN 922-2735, C850-452-2735.	Same as Originating Activity	1200-0400Z++ weekdays, occasional weekends	418
VR1022	FACSFAC, Pensacola, FL 32508-5217 DSN 922-2735, C850-452-2735.	Same as Originating Activity	1200-0400Z++ weekdays, occasional weekends	173

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** Length calculations were performed using an the appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: May 2010)).

Appendix C: Maps and Inventory of Ranges, Range Complexes, Military Training Routes, and Special Use Areas

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
VR1023	FACSFAC, Pensacola, FL 32508-5217 DSN 922-2735, C850-452-2735.	Same as Originating Activity	1200-0400Z++ weekdays, occasional weekends	300
VR1024	FACSFAC, Pensacola, FL 32508-5217 DSN 922-2735, C850-452-2735.	Same as Originating Activity	1200-0400Z++ weekdays, occasional weekends	297
VR1030	COMTRAWING ONE, NAS MERIDIAN, MS 39309-0136 DSN 637-2487, C601-679-2487.	Same as Originating Activity	1100-0600Z++ daily	255
VR1031	COMTRAWING ONE, NAS MERIDIAN, MS 39309-0136 DSN 637-2487, C601-679-2487.	Same as Originating Activity	1100-0600Z++ daily	341
VR1032	COMTRAWING ONE, NAS MERIDIAN, MS 39309 DSN 637-2854, C601-679-2854.	Same as Originating Activity	1100-0600Z++ daily	211
VR1033	COMTRAWING ONE, NAS MERIDIAN, MS 39309 DSN 637-2854, C601-679-2854.	Same as Originating Activity	1100-0600Z++ daily	322
VR1039	FACSFAC-JAX, P.O. Box 40, NAS Jacksonville, FL 32212-0040 DSN 942-2004/2005, C904	Same as Originating Activity	Continuous	8
VR104	301 OG/SUA, NAS JRB, Fort Worth, TX 76127 DSN 739-6903/04/05, C817-782-6903/04/0	Same as Originating Activity	0700-2200 local	220
VR1040	CG MCAS CHERRY POINT, ATTN RAC-DIROPS, Cherry Point, NC 28533 DSN 582-3466, C252	Central Scheduling Division MCAS Cherry Point, NC 28533 DSN 582-4040/4041, C252-	Continuous	420
VR1041	CG MCAS CHERRY POINT, ATTN RAC-DIROPS, Cherry Point, NC 28533 DSN 582-3466, C252	Central Scheduling Division MCAS Cherry Point, NC 28533 DSN 582-4040/4041, C252-	Continuous	383
VR1043	CG MCAS CHERRY POINT, ATTN RAC-DIROPS, Cherry Point, NC 28533 DSN 582-3466, C252	Central Scheduling Division MCAS Cherry Point, NC 28533 DSN 582-4040/4041, C252-	0700-2300 local daily	455
VR1046	CG MCAS CHERRY POINT, ATTN RAC-DIROPS, Cherry Point, NC 28533 DSN 582-3466, C252	Central Scheduling Division MCAS Cherry Point, NC 28533 DSN 582-4040/4041, C252-	0600-1800 Local Mon-Fri	243
VR1050	14 OSS/OSOP, Columbus AFB, MS 39710-5000 DSN 742-7560/7633, C662-434-7560/7633.	48 FTS, Columbus AFB, MS 39710-5000 DSN 742-7840/7847, C662-434-7840/7847.	0700-2300 local daily	359
VR1051	14 OSS/OSOP, Columbus AFB, MS 39710-5000 DSN 742-7560/7633, C662-434-7560/7633.	48 FTS, Columbus AFB, MS 39710-5000 DSN 742-7840/7847, C662-434-7840/7847.	0700-2300 local daily	440
VR1052	FACSFAC, Pensacola, FL 32508-5217 DSN 922-2735, C850-452-2735.	Same as Originating Activity	1200-0500Z++	358
VR1054	FACSFAC, Pensacola, FL 32508-5217 DSN 922-2735, C850-452-2735.	Same as Originating Activity	1300-0500Z++ daily	293
VR1055	FACSFAC, Pensacola, FL 32508-5217 DSN 922-2735, C850-452-2735.	Same as Originating Activity	1300-0500Z++ 7 days a week	299
VR1056	FACSFAC, Pensacola, FL 32508-5217 DSN 922-2735, C850-452-2735.	Same as Originating Activity	1200-0500Z++	358
VR1059	20 OSS/OSTA, Shaw AFB, SC 29152 DSN 965-1121/1122, C803-895-1121/1122, Fax DSN 9	20 OSS/OSOS, Shaw AFB, SC 29152 Duty hrs DSN 965-1118/1119, C803-895-1118/1119.	Continuous	312
VR106	97 OSS/DOA, 400 N Sixth St., Altus AFB, OK 73521 DSN 866-6098, C580-481-6098.	97 OSS/OSK, 400 N Sixth St. Suite 12, Altus AFB, OK 73521 DSN 866-7110.	0830-0230 local Mon-Fri	142
VR1061	4 OSS/OSR, Seymour Johnson AFB, NC 27531 DSN 722-2672, C919-722-2672.	4 OSS/OSOSF, Seymour Johnson AFB, NC 27531-5004 DSN 722-2129/2124, C919-722-2129	Continuous	150
VR1065	347 OSS/OSOS, Moody AFB, GA 31699-1899 DSN 460-4544/3531, C229-257-4544/3531.	347 OSS/OSOS, Moody AFB, GA 31699-1899 DSN 460-4544/3531 C229-257-4544/3531, Mon	0700-2400L daily	163

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** Length calculations were performed using an appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: May 2010)).

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
VR1066	347 OSS/OSKA, Moody AFB, GA 31699-1899 DSN 460-4131, C229-257-4131.	347 OSS/OSOS, Moody AFB, GA 31699-1899 DSN 460-4544/3531, C229-257-4544/3531. Mo	0700-0000 local daily	207
VR1070	187 FW, 5187 Selma Highway, Montgomery, AL 36108-4824 DSN 358-9255 C334-394-7255	Same as Originating Activity	0700-2000 local, OT by NOTAM	99
VR1072	14 OSS/OSOP, Columbus AFB, MS 39710-5000 DSN 742-7560/7633, C662-434-7560/7633.	48 FTS, Columbus AFB, MS 39710-5000 DSN 742-7840/7847, C662-434-7840/7847.	Normally SR-2100 local, use OT not prohibited	240
VR1076	156 AW (PRANG) Muniz ANGB, 200 Jose A. (Tony) Santana Ave., Carolina, Puerto Ric	Same as Originating Activity	1100-0000Z++ (DAILY)	117
VR1077	156 AW (PRANG) Muniz ANGB, 200 Jose A. (Tony) Santana Ave., Carolina, Puerto Ric	Same as Originating Activity	1100-0000Z++ (DAILY)	197
VR1078	156 AW (PRANG) Muniz ANGB, 200 Jose A. (Tony) Santana Ave., Carolina, Puerto Ric	Same as Originating Activity	1100-0000Z++ (DAILY)	245
VR1079	156 AW (PRANG) Muniz ANGB, 200 Jose A. (Tony) Santana Ave., Carolina, Puerto Ric	Same as Originating Activity	1100-0000Z++ (DAILY)	209
VR108	27 SOSS/OSTA, 110 E. Sextant Ave, Suite 1081 Cannon AFB, NM 88103 DSN 681-2521.	27 SOSS/OSOS, 110 E. Sextant Ave, Suite 1080 Cannon AFB, NM 88103 DSN 681-2276.	Continuous	236
VR1080	156 AW (PRANG) Muniz ANGB, 200 Jose A. (Tony) Santana Ave., Carolina, Puerto Ric	Same as Originating Activity	1100-0000Z++ (DAILY)	117
VR1081	156 AW (PRANG) Muniz ANGB, 200 Jose A. (Tony) Santana Ave., Carolina, Puerto Ric	Same as Originating Activity	1100-0000Z++ (DAILY)	177
VR1082	46 OSS/OSCM, 505 North Barrancas Ave, Suite 104, Eglin AFB, FL 32542-6818 DSN 87	46 OSS/OSCS, 505 North Barrancas Ave, Suite 104, Eglin AFB, FL 32542-6818 DSN 87	Normally 1200-2300Z++ Mon-Fri, available OT	189
VR1083	USAFAWC-79 Test and Evaluation Group/CD, Eglin AFB, FL 32542 DSN 872-2024, C904-	85 Test and Evaluation Squadron/DOOS, Eglin AFB, FL 32542 DSN 872-2622, C904-882	Normally 1200-2300Z++ Mon-Fri, route usage is allowable OT	209
VR1084	USAFAWC-79 Test and Evaluation Group/CD, Eglin AFB, FL 32542 DSN 872-2024, C904-	85 Test and Evaluation Squadron/DOOS, Eglin AFB, FL 32542 DSN 872-2622, C904-882	Normally 1200-2300Z++ Mon-Fri, route usage is allowable OT	101
VR1085	46 OSS/OSCM, 505 North Barrancas Ave, Suite 104, Eglin AFB, FL 32542-6818 DSN 87	46 OSS/OSCS (ROCC), 505 North Barrancas Ave, Suite 104, Eglin AFB, FL 32542-6818	Normally 1200-2300Z++ Mon-Fri, route usage is allowable OT	287
VR1087	347 Rescue Wing, Detachment 1/RO, 8707 North Golf Course St., MacDill AFB, FL 33	347 Rescue Wing, Detachment 1/ROA, 8707 North Golf Course St., MacDill AFB, FL 3	Normally 0900-2400Z++ daily, available OT	90
VR1088	347 Rescue Wing, Detachment 1/RO, 8707 North Golf Course St., MacDill AFB, FL 33	347 Rescue Wing, Detachment 1/ROA, 8707 North Golf Course St., MacDill AFB, FL 3	Normally 0900-2400Z++ daily, available OT	83
VR1089	347 Rescue Wing, Detachment 1/RO, 8707 North Golf Course St., MacDill AFB, FL 33	347 Rescue Wing, Detachment 1/ROA, 8707 North Golf Course St., MacDill AFB, FL 3	Normally 0900-2400Z++ daily, available OT	107
VR1097	347 WG, Detachment 1/RO, 8707 North Golf Course St., MacDill AFB, FL 33621-5205	347 WG, Detachment 1/ROA, 8707 North Golf Course St., MacDill AFB, FL 33621-5205	Continuous	68
VR1098	347th Rescue WG, Detachment 1/RO, 8707 North Golf Course St., MacDill AFB, FL 33	347th Rescue WG, Detachment 1/ROA, 8707 North Golf Course St., MacDill AFB, FL 3	Continuous	167
VR1102	188 FW, 4850 Leigh Ave., Fort Smith, AR 72903-6096 DSN 778-5502.	Same as Originating Activity, Route scheduled no more than 24 hr in advance. Min	Continuous (except Sunday 1000-1200 local)	83
VR1103	188 FW, 4850 Leigh Ave., Fort Smith, AR 72903-6096 DSN 778-5502.	Same as Originating Activity, Route scheduled no more than 24 hr in advance. Min	Continuous (except Sunday 1000-1200 local)	120

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** Length calculations were performed using an the appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: May 2010)).

Appendix C: Maps and Inventory of Ranges, Range Complexes, Military Training Routes, and Special Use Areas

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
VR1104	188 FW, 4850 Leigh Ave., Fort Smith, AR 72903-6096 DSN 778-5502.	Same as Originating Activity. Route scheduled no more than 24 hr in advance. Min	Continuous (except Sunday 1000-1200 local)	109
VR1105	149 FTR GP (TX-ANG), Kelly AFB, TX 78241 DSN 945-5934, C210-925-5934.	Same as Originating Activity	0800-1830 local daily	93
VR1106	149 FTR GP (TX-ANG), Kelly AFB, TX 78241 DSN 969-5934.	Same as Originating Activity	0800-1830 local daily	93
VR1107	150 FW OG/CC, 2251 Air Guard Rd. SE, Kirtland AFB, NM 87117-5875 DSN 246-7426.	Same as Originating Activity	Sunrise-2200 local daily	243
VR1108	47 OSS/OSOR, 570 2nd St., Ste 6, Laughlin AFB, TX 78843-5222 DSN 732-5864, C830-	87 FTS/DOS, 570 2nd St., Laughlin AFB, TX 78843 DSN 732-5484, C830-298-5484. Sch	Sunrise-Sunset only	125
VR1109	47 OSS/OSOR, 570 2nd St., Ste. 6, Laughlin AFB, TX 78843-5222 DSN 732-5864, C830	87 FTS/DOS, 570 2nd St., Laughlin AFB, TX 78843 DSN 732-5484, C830-298-5484. Sch	Sunrise-Sunset daily	114
VR1110	301 OG/SUA, NAS JRB, Fort Worth, TX 76127 DSN 739-6903/04/05, C817-782-6903/04/0	Same as Originating Activity	0600-2200 local daily	80
VR1113	188 FW, 4850 Leigh Ave., Fort Smith, AR 72903-6096 DSN 778-5502.	Same as Originating Activity. Route scheduled no more than 24 hr in advance. Min	Continuous (except Sunday 1000-1200 local)	117
VR1113	188FW Arkansas ANG, 4850 Leigh Ave., Fort Smith, AR 72903-6096 DSN 778-5502.	Same as Originating Activity. Route scheduled no more than 72 hr in advance. Min	Continuous (except Sunday 1000-1200 local)	71
VR1116	OC-ALC/10 FLTS, 4805 West Dr, Tinker AFB, OK 73145-3300 DSN 336-7719/7710, C405-	Same as Originating Activity	Daylight hours only	164
VR1117	47 OSS/OSOR, 570 2nd St., Ste. 6, Laughlin AFB, TX 78843-5222 DSN 732-5864, C830	87 FTS/DOS, 570 2nd St., Laughlin AFB, TX 78843 DSN 732-5484, C830-298-5484. Sch	Sunrise-Sunset Sat-Sun	114
VR1120	149 FW (TX ANG), 107 Hensley Street, Kelly AFB, TX 78241-5544 DSN 945-5934, C210	Same as Originating Activity	Sunrise-Sunset	128
VR1121	149 FW (TX ANG), 107 Hensley Street, Kelly AFB, TX 78241-5544 DSN 945-5934, C210	Same as Originating Activity	Sunrise-Sunset	128
VR1122	149 FW (TX ANG), 107 Hensley Street, Kelly AFB, TX 78241-5544 DSN 945-5934, C210	Same as Originating Activity	Sunrise-Sunset	193
VR1123	149 FW (TX ANG), 107 Hensley Street, Kelly AFB, TX 78241-5544 DSN 945-5934, C210	Same as Originating Activity	Sunrise-Sunset	193
VR1124	301 OG/SUA, NAS JRB, Fort Worth, TX 76127 DSN 739-6903/04/05, C817-782-6903/04/0	Same as Originating Activity	0600-2200 local daily	57
VR1128	301 OG/SUA, NAS JRB, Fort Worth, TX 76127 DSN 739-6903/04/05, C817-782-6903/04/0	Same as Originating Activity	0600-2200 local daily	206
VR1130	188 FW, 4850 Leigh Ave., Fort Smith, AR 72903-6096 DSN 778-5502.	Same as Originating Activity. Route scheduled no more than 24 hr in advance. Min	Continuous (except Sunday 1000-1200 local)	109
VR1137	301 OG/SUA, NAS JRB, Fort Worth, TX 76127 DSN 739-6903/04/05, C817-782-6903/04/0	Same as Originating Activity	0600-2200 local daily	193
VR1138	80th Flying Training Wing, 1911 J. Ave. Ste 6, Sheppard AFB, TX 76311-2056 DSN 7	90 FTS/DOTOD, Sheppard AFB, TX 76311 DSN 736-2675/4995, C940-676-2675/4995.	Sunrise-Sunset Mon-Fri, OT by NOTAM	193
VR1139	80th Flying Training Wing, 1911 J. Ave. Ste 6, Sheppard AFB, TX 76311-2056 DSN 7	90 FTS/DOTOD, Sheppard AFB, TX 76311 DSN 736-2675/4995, C940-676-2675/4995.	Sunrise-Sunset Mon-Fri, OT by NOTAM	210
VR114	27 SOSS/OSTA, 110 E. Sextant Ave, Suite 1081, Cannon AFB, NM 88103 DSN 681-2521.	27 SOSS/OSOS, 110 E. Sextant Ave, Suite 1080, Cannon AFB, NM 88103 DSN 681-2276.	Continuous	172
VR1140	80th Flying Training Wing, 1911 J. Ave. Ste 6, Sheppard AFB, TX 76311-2056 DSN 7	90 FTS/DOTOD, Sheppard AFB, TX 76311 DSN 736-2675/4995, C940-676-2675/4995.	Sunrise-Sunset Mon-Fri, OT by NOTAM	210

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** Length calculations were performed using an appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: May 2010)).

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
VR1141	80th Flying Training Wing, 1911 J. Ave. Ste 6, Sheppard AFB, TX 76311-2056 DSN 7	90 FTS/DOTOD, Sheppard AFB, TX 76311 DSN 736-2675/4995, C940-676-2675/4995.	Sunrise-Sunset Mon-Fri, OT by NOTAM	217
VR1142	80th Flying Training Wing, 1911 J. Ave. Ste 6, Sheppard AFB, TX 76311-2056 DSN 7	90 FTS/DOTOD, Sheppard AFB, TX 76311 DSN 736-2675/4995, C940-676-2675/4995.	Sunrise-Sunset Mon-Fri, OT by NOTAM	217
VR1143	80th Flying Training Wing, 1911 J. Ave. Ste 6, Sheppard AFB, TX 76311-2056 DSN 7	90 FTS/DOTOD, Sheppard AFB, TX 76311 DSN 736-2675/4995, C940-676-2675/4995.	Sunrise-Sunset Mon-Fri, OT by NOTAM	248
VR1144	80th Flying Training Wing, 1911 J. Ave. Ste 6, Sheppard AFB, TX 76311-2056 DSN 7	90 FTS/DOTOD, Sheppard AFB, TX 76311 DSN 736-2675/4995, C940-676-2675/4995.	Sunrise-Sunset Mon-Fri, OT by NOTAM	248
VR1145	80th Flying Training Wing, 1911 J. Ave. Ste 6, Sheppard AFB, TX 76311-2056 DSN 7	90 FTS/DOTOD, Sheppard AFB, TX 76311 DSN 736-2675/4995, C940-676-2675/4995.	Sunrise-Sunset Mon-Fri, OT by NOTAM	230
VR1146	80th Flying Training Wing, 1911 J. Ave. Ste 6, Sheppard AFB, TX 76311-2056 DSN 7	90 FTS/DOTOD, Sheppard AFB, TX 76311 DSN 736-2675/4995, C940-676-2675/4995.	Sunrise-Sunset Mon-Fri, OT by NOTAM	230
VR1175	OC-ALC/10 Flight Test Sqdn, 4805 West Dr, Tinker AFB, OK 73145-3300 DSN 336-7719	Same as Originating Activity	Sunrise-Sunset	315
VR1176	OC-ALC/10 Flight Test Sqdn, 4805 West Dr, Tinker AFB, OK 73145-3300 DSN 336-7719	Same as Originating Activity	Sunrise-Sunset	315
VR1118	301 OG/SUA, NAS JRB, Fort Worth, TX 76127 DSN 739-6903/04/05, C817-782-6903/04/0	Same as Originating Activity	Sunrise-Sunset Mon-Sat	82
VR1182	188 FW, 4850 Leigh Ave., Fort Smith, AR 72903-6096 DSN 778-5502.	Same as Originating Activity. Route scheduled no more than 24 hr in advance. Min	Continuous	187
VR1119	71 OSS/OSOP, 301 Gritz Street, Vance AFB, OK 73705-5202 DSN 448-7850, C580-213-7	32 FTS/DOOT, Vance AFB, OK 73705-5202 DSN 448-6251, C580-213-6251.	Sunrise-Sunset daily	165
VR1195	150 FW OG/CC, 2251 Air Guard Rd. SE, Kirtland AFB, NM 87117-5875 DSN 246-7426.	Same as Originating Activity	Sunrise-2200 local daily	243
VR1196	ANG CRTG-Gulfport/OSA, 4715 Hewes Ave, Gulfport, MS 39507-4324 DSN 363-6027, C22	Same as Originating Activity	Continuous	201
VR1205	COMMANDER AFFTC, 412 OSS/OSAA, 235 E. Flightline Rd., Edwards AFB, CA 93523-6460	COMMANDER AFFTC, 412 OSS/OSR, 300 E. Yeager Blvd., Edwards AFB, CA 93524 DSN 527	Continuous	193
VR1206	COMMANDER AFFTC, 412 OSS/OSAA, 235 S. Flightline Rd, Edwards AFB, CA 93523-6460	COMMANDER AFFTC, 412 OSS/OSR, 300 E. Yeager Blvd, Edwards AFB, CA 93524 DSN 527-	Continuous	45
VR1211	452 OSS/DO1, March Fld, CA 92518 DSN 447-3846, C909-655-3846.	22 OSS/DOB, March Fld, CA 92518 DSN 447-4404/2422, C951-655-4404/2422.	Continuous	106
VR1214	COMMANDER AFFTC, 412 OSS/OSAA, 235 S. Flightline Rd, Edwards AFB, CA 93523-6460	COMMANDER AFFTC, 412 OSS/OSR, 300 E. Yeager Blvd, Edwards AFB, CA 93524 DSN 527-	Continuous	224
VR1215	COMMANDER AFFTC, 412 OSS/OSAA, 235 S. Flightline Rd, Edwards AFB, CA 93523-6460	COMMANDER AFFTC, 412 OSS/OSR, 300 E. Yeager Blvd, Edwards AFB, CA 93524 DSN 527-	Sunrise-Sunset daily	118
VR1217	COMMANDER AFFTC, 412 OSS/OSAA, 235 S. Flightline Rd, Edwards AFB, CA 93523-6460	COMMANDER AFFTC, 412 OSS/OSR, 300 E. Yeager Blvd, Edwards AFB, CA 93524 DSN 527-	Sunrise-Sunset daily	111
VR1218	COMMANDER AFFTC, 412 OSS/OSAA, 235 S. Flightline Rd, Edwards AFB, CA 93523-6460	COMMANDER AFFTC, 412 OSS/OSR, 300 E. Yeager Blvd, Edwards AFB, CA 93524 DSN 527-	Sunrise-Sunset daily	207

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** Length calculations were performed using an appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: May 2010)).

Appendix C: Maps and Inventory of Ranges, Range Complexes, Military Training Routes, and Special Use Areas

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
VR1233	355 OSS/OSOA, 3895 S. 6th St. Suite 200, Davis-Monthan AFB, AZ 85707 DSN 228-468	355 OSS/OSOSO, Davis-Monthan AFB, AZ 85707 1500-2300Z Mon-Fri, no earlier than 0	1300-0530Z	275
VR125	27 SOSS/OSTA, 110 E.Sextant Ave, Suite 1081, Cannon AFB, NM 88103 DSN 681-2521.	27 SOSS/OSOS, 110 E.Sextant Ave, Suite 1080, Cannon AFB, NM 88103 DSN 681-2276.	Continuous	318
VR1250	Commander, Strike Fighter Wing, U.S. Pacific Fleet, 001 K Street, NAS Lemoore, C	Same as Originating Activity	Daylight hours, OT by NOTAM	355
VR1251	Commander, Strike Fighter Wing, U.S. Pacific Fleet, 001 K Street, NAS Lemoore, C	Same as Originating Activity	Daylight hours, OT by NOTAM	518
VR1252	Commander, Strike Fighter Wing, U.S. Pacific Fleet, 001 K Street, NAS Lemoore, C	Same as Originating Activity	Daylight hours, OT by NOTAM	185
VR1253	Commander, Strike Fighter Wing, U.S. Pacific Fleet, 001 K Street, NAS Lemoore, C	Same as Originating Activity	Daylight hours, OT by NOTAM	443
VR1254	Commander, Strike Fighter Wing, U.S. Pacific Fleet, 001 K Street, NAS Lemoore, C	Same as Originating Activity	Daylight hours, OT by NOTAM	246
VR1255	Commander, Strike Fighter Wing, U.S. Pacific Fleet, 001 K Street, NAS Lemoore, C	Same as Originating Activity	Daylight hours, OT by NOTAM	296
VR1256	Commander, Strike Fighter Wing, U.S. Pacific Fleet, 001 K Street, NAS Lemoore, C	Same as Originating Activity	Daylight hours, OT by NOTAM	91
VR1257	Commander, Strike Fighter Wing, U.S. Pacific Fleet, 001 K Street, Rm 121, NAS Le	Same as Originating Activity	Daylight hours, OT by NOTAM	437
VR1259	Commander, Strike Fighter Wing, U.S. Pacific Fleet, 001 K Street, NAS Lemoore, C	Same as Originating Activity	Daylight hours, OT by NOTAM	425
VR1260	Commander, Strike Fighter Wing, U.S. Pacific Fleet, 001 K Street, NAS Lemoore, C	Same as Originating Activity	Daylight hours, OT by NOTAM	293
VR1261	Commander, Strike Fighter Wing, U.S. Pacific Fleet, 001 K Street, NAS Lemoore, C	Same as Originating Activity	Daylight hours, OT by NOTAM	386
VR1262	Commander, Strike Fighter Wing, U.S. Pacific Fleet, 001 K Street, NAS Lemoore, C	Same as Originating Activity	Daylight hours, OT by NOTAM	339
VR1264	Commander, Strike Fighter Wing, U.S. Pacific Fleet, 001 K Street, NAS Lemoore, C	Same as Originating Activity	Daylight hours, OT by NOTAM	150
VR1265	G-3, 3D MAW, MCAS Miramar, San Diego, CA 92145 DSN 267-9462, C858-577-9462. Non-	Same as Originating Activity	Continuous	406
VR1266	Commanding Officer, Yuma MCAS, Box 99160 Yuma, AZ 85369-9160 DSN 269-2326/2077,	Same as Originating Activity	0700-1800 local (daylight hours)	158
VR1267	Commanding Officer, Yuma MCAS, Box 99160 Yuma, AZ 85369-9160 DSN 269-2326/2077,	Same as Originating Activity	0700-1800 local	216
VR1267A	Commanding Officer, Yuma MCAS, Box 99160 Yuma, AZ 85369-9160 DSN 269-2326/2077,	Same as Originating Activity	0700-1800 local	101
VR1268	Commanding Officer, Yuma MCAS, Box 99160 Yuma, AZ 85369-9160 DSN 269-2326/2077,	Same as Originating Activity	0700-1800 local	371
VR1293	COMMANDER AFFTC, 412 OSS/OSAA, 235 S. Flightline Rd, Edwards AFB, CA 93523-6460	COMMANDER AFFTC, 412 OSS/OSR, 300 E. Yeager Blvd, Edwards AFB, CA 93524 DSN 527-	Continuous	20
VR1300	124 WG/OGAM (ANG), 3996 W. Aeronca St., Boise, ID 83705-8004 DSN 422-5310, C208-	124 WG/OSS (ANG), 3996 W. Aeronca St., Boise, ID 83705-8004 DSN 422-5348, C208-4	Continuous or by NOTAM	421
VR1301	124 WG/OGAM (ANG), 3996 W. Aeronca St., Boise, ID 83705-8004 DSN 422-5310, C208-	124 WG/OSS (ANG), 3996 W. Aeronca St., Boise, ID 83705-8004 DSN 422-5348, C208-4	Continuous	319
VR1302	124 WG/OGAM (ANG), 3996 W. Aeronca St., Boise, ID 83705-8004 DSN 422-5310, C208-	124 WG/OSS (ANG), 3996 W. Aeronca St., Boise, ID 83705-8004 DSN 422-5348, C208-4	Continuous	190
VR1303	124 WG/OGAM (ANG), 3996 W. Aeronca St., Boise, ID 83705-8004 DSN 422-5310, C208-	124 WG/OSS (ANG), 3996 W. Aeronca St., Boise, ID 83705-8004 DSN 422-5348, C208-4	Continuous or by NOTAM	432

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** Length calculations were performed using an appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: May 2010)).

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
VR1304	124 WG/OGAM (ANG), 3996 W. Aeronca St., Boise, ID 83705-8004 DSN 422-5310, C208-	124 WG/OSS (ANG), 3996 W. Aeronca St., Boise, ID 83705-8004 DSN 422-5348, C208-4	Continuous or by NOTAM	452
VR1305	124 WG/OGAM (ANG), 3996 W. Aeronca St., Boise, ID 83705-8004 DSN 422-5310, C208-	124 WG/OSS (ANG), 3996 W. Aeronca St., Boise, ID 83705-8004 DSN 422-5348, C208-4	Continuous or by NOTAM	452
VR1350	Commanding Officer (N38), NAS Whidbey Island, 3730 N. Charles Porter Ave, Oak Ha	Same as Originating Activity	Continuous	261
VR1351	Commanding Officer (N38), NAS Whidbey Island, 3730 N. Charles Porter Ave, Oak Ha	Same as Originating Activity	Continuous	373
VR1352	Commanding Officer (N38), NAS Whidbey Island, 3730 N. Charles Porter Ave, Oak Ha	Same as Originating Activity	Continuous	315
VR1353	Commanding Officer (N38), NAS Whidbey Island, 3730 N. Charles Porter Ave, Oak Ha	Same as Originating Activity	Continuous	315
VR1354	Commanding Officer (N38), NAS Whidbey Island, 3730 N. Charles Porter Ave, Oak Ha	Same as Originating Activity	Continuous	129
VR1355	Commanding Officer (N38), NAS Whidbey Island, 3730 N. Charles Porter Ave, Oak Ha	Same as Originating Activity	Continuous	222
VR138	DET 1, 184 IW, Smokey Hill Ang Range, 84 W Farrelly Rd, Salina, KS 67401-9407, P	Same as Originating Activity	Continuous	190
VR140	12 OSS/OSOA, 501 I Street East, Randolph AFB, TX 78150-4333 DSN 487-5580, C210-6	560 FTS, 1450 5th Street East, Randolph AFB, TX 78150, DSN 487-3518, C210-652-35	Sunrise-Sunset, daily	241
VR142	12 OSS/OSOA, 501 I Street East, Randolph AFB, TX 78150-4333 DSN 487-5580, C210-6	99 FTS, 1450 5th Street East, Randolph AFB, TX 78150-5000 DSN 487-6746.	Sunrise-Sunset, daily	177
VR1422	388 RANS/RST, 6606 Cedar Lane, Hill AFB, UT 84056-5812, DSN 777-4401, C801-777-4	Same as Originating Activity.	0700-2400 lcl Mon-Thurs, 0700-1800 lcl Fri, 0800-1700 lcl Sat	152
VR1423	388 RANS/RST, 6606 Cedar Lane, Hill AFB, UT 84056-5812, DSN 777-4401, C801-777-4	Same as Originating Activity.	0700-2400 lcl Mon-Thurs, 0700-1800 lcl Fri, 0800-1700 lcl Sat	90
VR1427	140th Wing /DOT, Buckley ANGB, Aurora, CO 80011-9546 DSN 847-9466, C303-340-9470	140th Wing /DOT, Buckley ANGB, Aurora, CO 80011-9546 DSN 847-9472, C720-847-9472	0800-1600 local Tue-Sat, OT by NOTAM	196
VR143	301 OG/SUA, NAS JRB, Fort Worth, TX 76127 DSN 739-6903/04/05, C817-782-6903/04/0	Same as Originating Activity	0700-2200 local	371
VR144	97 OSS/DOA, 400 N Sixth St., Altus AFB, OK 73521 DSN 866-6098, C580-481-6098.	97 OSS/OSK, 400 N Sixth St, Suite 12, Altus AFB, OK 73521 DSN 866-7110.	0830-0230 local Mon-Fri	72
VR1445	388 RANS/RST, 6606 Cedar Lane, Hill AFB, UT 84056-5812, DSN 777-4401, C801-777-4	Same as Originating Activity.	0700-2400 lcl Mon-Thurs, 0700-1800 lcl Fri, 0800-1700 lcl Sat	10
VR1446	388 RANS/RST, 6606 Cedar Lane, Hill AFB, UT 84056-5812, DSN 777-4401, C801-777-4	Same as Originating Activity.	0700-2400 lcl Mon-Thurs, 0700-1800 lcl Fri, 0800-1700 lcl Sat	10
VR151	COMTRAWING TWO, NAS Kingsville, TX 78363 DSN 876-6518/6283, C381-516-6518/6283/6	Same as Originating Activity	Daily 0600-2200 local	137
VR151	COMTRAWING TWO, NAS Kingsville, TX 78363 DSN 876-6518, C381-516-6518.	Same as Originating Activity, Scheduling hrs-0800-1600 local Mon-Fri ONLY (exclu	Daily 0600-2200 local	91
VR152	DET 1, 184 IW, Smokey Hill Ang Range, 84 W Farrelly Rd, Salina, KS 67401-9407, P	Same as Originating Activity	Continuous	190
VR1520	114 FW (ANG), Joe Foss Field, Sioux Falls, SD 57104-0264 DSN 798-7745/7746, C605	Same as Originating Activity.	Daylight hours, Mon-Sat, OT By NOTAM	279

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** Length calculations were performed using an the appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: May 2010)).

Appendix C: Maps and Inventory of Ranges, Range Complexes, Military Training Routes, and Special Use Areas

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
VR1521	114 FW (ANG), Joe Foss Field, Sioux Falls, SD 57104-0264 DSN 798-7745/7746, C605	Same as Originating Activity.	Daylight hours, Mon-Sat, OT by NOTAM	279
VR1525	509 OSS/OSSKA, 905 Spirit Blvd, Whiteman AFB, MO 65305 DSN 975-1713/1754, C660-68	Same as Originating Activity	Sunrise-Sunset Tue-Sun	124
VR1546	188 FW, 4850 Leigh Ave., Fort Smith, AR 72903-6096 DSN 778-5502.	Same as Originating Activity, Route scheduled no more than 24 hr in advance. Min	Continuous (except Sunday 1000-1200 local)	123
VR156	149 FTR GP (TX-ANG), Kelly AFB, TX 78241 DSN 945-5934, C210-925-5934.	Same as Originating Activity	0800-1830 local daily, Prior coordination required for Sun-Mon operations	210
VR158	80th Flying Training Wing, 1911 J. Ave. Ste 6, Sheppard AFB, TX 76311-2056 DSN 7	90 FTS/DOTOD, Sheppard AFB, TX 76311 DSN 736-2675/4995, C940-676-2675/4995.	Sunrise-Sunset Mon-Fri; OT by NOTAM	210
VR159	80th Flying Training Wing, 1911 J. Ave. Ste 6, Sheppard AFB, TX 76311-2056 DSN 7	90 FTS/DOTOD, Sheppard AFB, TX 76311 DSN 736-2675/4995, C940-676-2675/4995.	Sunrise-Sunset Mon-Fri, OT by NOTAM	206
VR1616	ANG CRTIC, Camp Douglas, WI 54618-5001 DSN 871-1445 C608-427-1445.	Same as Originating Activity	Sunrise to Sunset Mon-Sat, OT by NOTAM	169
VR1617	180th TFG/DO (ANG), Toledo Express Airport, Swanton, OH 43558 DSN 580-4084.	Same as Originating Activity	Sunrise-2100 local	190
VR162	80th Flying Training Wing, 1911 J. Ave. STE 6, Sheppard AFB, TX 76311-2056 DSN73	90 FTS/DOTOD, Sheppard AFB, TX 76311 DSN 736-2675/4995, C817-676-2675/4995.	Sunrise-Sunset Mon-Fri, OT by NOTAM	233
VR1624	127th OG/CC, Selfridge ANGB, MI 48045-5029 DSN 273-5055.	Same as Originating Activity	Sunrise-Sunset	233
VR1625	127th OG/CC, Selfridge ANGB, MI 48045-5029 DSN 273-5055.	Same as Originating Activity	Sunrise-Sunset	167
VR1626	127th OG/CC, Selfridge ANGB, MI 48045-5029 DSN 273-5055/5719.	Same as Originating Activity	Sunrise-Sunset	145
VR1627	127th OG/CC, Selfridge ANGB, MI 48045-5029 DSN 273-5055.	Same as Originating Activity	Sunrise-Sunset	226
VR1628	127th OG/CC, Selfridge ANGB, MI 48045-5029 DSN 273-5055.	Same as Originating Activity	Sunrise-Sunset	283
VR1629	127th OG/CC, Selfridge ANGB, MI 48045 DSN 273-5055/5719.	Same as Originating Activity	Sunrise-Sunset	218
VR163	80th Flying Training Wing, 1911 J. Ave. Ste 6, Sheppard AFB, TX 76311-2056 DSN 7	90 FTS/DOTOD, Sheppard AFB, TX 76311 DSN 736-2675/4995, C940-676-2675/4995.	Sunrise-Sunset Mon-Fri, OT by NOTAM	195
VR1631	123 ACS, Blue Ash, OH 45242 DSN 340-2950, C513-936-2950.	Same as Originating Activity	Continuous	230
VR1632	123 ACS, Blue Ash, OH 45242 DSN 340-2950, C513-936-2950.	Same as Originating Activity	Continuous	202
VR1633	123 ACS, Blue Ash, OH 45242 DSN 340-2950, C513-936-2950.	Same as Originating Activity	Continuous	217
VR1635	183 FW/OSF, Capital Airport, Springfield, IL 62707 DSN 892-8202.	Same as Originating Activity	Sunrise-Sunset only	135
VR1636	Alpena CRTIC/OTM (ANG), 5884 A. Street, Alpena, MI 49707-8125 DSN 741-3509/3226.	Same as Originating Activity	Continuous	137
VR1638	180TH TFG/DO, Toledo Express Airport, Swanton, OH 43558 DSN 580-4084.	Same as Originating Activity	Sunrise-2100 local	152
VR1639	127th OG/CC, Selfridge ANGB, MI 48045 DSN 273-5055.	Same as Originating Activity	Sunrise-Sunset	218
VR1640	122 FW, Ft. Wayne IAP, IN 46809-0122 DSN 786-1202.	Same as Originating Activity	1300-0300Z++ daily	228
VR1641	122 FW, Ft. Wayne IAP, IN 46809-0122 DSN 786-1202.	Same as Originating Activity	1300-0300Z++ daily	135
VR1642	122 FW, Ft. Wayne IAP, IN 46809-0122 DSN 786-1202.	Same as Originating Activity	1300-0100Z++ daily	176

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Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
VR1644	127th OG/CC, Selfridge ANGB, MI 48045-5029 DSN 273-5055.	Same as Originating Activity	Sunrise-Sunset	190
VR1645	127th OG/CC, Selfridge ANGB, MI 48045-5029 DSN 273-5055.	Same as Originating Activity	Sunrise-Sunset	167
VR1647	127th OG/CC, Selfridge ANGB, MI 48045-5029 DSN 273-5055.	Same as Originating Activity	Sunrise-Sunset	226
VR1648	127th OG/CC, Selfridge ANGB, MI 48045-5029 DSN 273-5055.	Same as Originating Activity	Sunrise-Sunset	283
VR1650	ANG CRTG, Camp Douglas, WI 54618-5001 DSN 871-1445 C608-427-1445.	Same as Originating Activity	0730 local-Sunset Tue-Sat, OT by NOTAM	84
VR1666	Alpena CRTG/OTM (ANG), 5884 A. Street, Alpena, MI 49707-8125 DSN 741-3509/3226.	Same as Originating Activity	Continuous	137
VR1667	180 TFG/DO, Toledo Express Airport, Swanton, OH 43558 DSN 580-4084.	Same as Originating Activity	Sunrise - 0200Z++	190
VR1668	180 TFG/DO, Toledo Express Airport, Swanton, OH 43558 DSN 580-4084.	Same as Originating Activity	Sunrise-2100 local	152
VR1679	181st TFG (ANG), Hulman Regional, Terre Haute, IN 47803 DSN 724-1234.	Same as Originating Activity	Sunrise-Sunset Tue-Sun, OT by NOTAM	264
VR1688	COMTRAWING TWO, NAS Kingsville, TX 78363 DSN 876-6518/6283, C361-516-6518/6283/6	Same as Originating Activity	0600-2400 local daily	248
VR1709	177th FW/Det 1 (ANG), Atlantic City ANGB, NJ 08234-9500 DSN 455-6707, E-mail wgr	Same as Originating Activity	Sunrise-Sunset daily	294
VR1711	113 WG, Andrews AFB, MD 20331 DSN 857-3307/08, C240-857-3307/3308/4190.	Same as Originating Activity	0730 local-Sunset daily	158
VR1712	113 WG, Andrews AFB, MD 20331 DSN 857-3307/08, C240-857-3307/3308/4190.	Same as Originating Activity	0730 local-Sunset daily	186
VR1713	113 WG, Andrews AFB, MD 20331 DSN 857-3307/08, C240-857-3307/3308/4190.	Same as Originating Activity	0730 local-Sunset daily	194
VR1721	20 OSS/OSTA, Shaw AFB, SC 29152 DSN 965-1121/1122, C803-895-1121/1122, Fax DSN 9	20 OSS/OSOS, Shaw AFB, SC 29152-5000 DSN 965-1118/1119, C803-895-1118, Fax DSN 9	Continuous	172
VR1722	192nd FG (ANG), Byrd Intl, Richmond, VA 23150 DSN 864-6411/6410.	Same as Originating Activity	Sunrise-Sunset	303
VR1726	20 OSS/OSTA, Shaw AFB, SC 29152 DSN 965-1121/1122, C803-895-1121/1122, Fax DSN 9	20 OSS/OSOS, Shaw AFB, SC 29152-5000 DSN 965-1118/1119, C803-895-1118, Fax DSN 9	Continuous	144
VR1743	20 OSS/OSTA, Shaw AFB, SC 29152 DSN 965-1121/1122, C803-895-1121/1122, Fax DSN 9	20 OSS/OSOS, Shaw AFB, SC 29152-5000 DSN 965-1118/1119, C803-895-1118, Fax DSN 9	Continuous	144
VR1753	COMSTRKFIGHTWINGLANT NAS Oceana, Virginia Beach, VA 23460-5200 DSN 433-4013, C75	FACSFAC/VACAPES, NAS Oceana, Virginia Beach, VA 23460 DSN 433-1228 C757-433-1228	Continuous	172
VR1754	COMSTRKFIGHTWINGLANT NAS Oceana, Virginia Beach, VA 23460-5200 DSN 433-4013, C75	FACSFAC/VACAPES, NAS Oceana, Virginia Beach, VA 23460 DSN 433-1228 C757-433-1228	Continuous	371
VR1755	COMSTRKFIGHTWINGLANT, NAS Oceana, Virginia Beach, VA 23460-5200 DSN 433-4013, C7	FACSFAC/VACAPES, NAS Oceana, Virginia Beach, VA 23460 DSN 433-1228 C757-433-1228	Continuous	224
VR1756	COMSTRKFIGHTWINGLANT, NAS Oceana, Virginia Beach, VA 23460-5200 DSN 433-4013, C7	FACSFAC/VACAPES, NAS Oceana, Virginia Beach, VA 23460 DSN 433-1228 C757-433-1228	Continuous	362
VR1757	COMSTRKFIGHTWINGLANT, NAS Oceana, Virginia Beach, VA 23460-5200 DSN 433-4013, C7	FACSFAC/VACAPES, NAS Oceana, Virginia Beach, VA 23460 DSN 433-1228 C757-433-1228	Continuous	168
VR1759	COMSTRKFIGHTWINGLANT, NAS Oceana, Virginia Beach, VA 23460-5200 DSN 433-4013, C7	FACSFAC/VACAPES, NAS Oceana, Virginia Beach, VA 23460 DSN 433-1228, C757-433-122	Continuous	194

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Appendix C: Maps and Inventory of Ranges, Range Complexes, Military Training Routes, and Special Use Areas

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
VR176	150 FW 0G/CC 2251, Air Guard Rd. SE, Kirtland AFB, NM 87117-5875 DSN 246-7426.	Same as Originating Activity	Normally 1500-2400Z++ daily, usage between 2400-1500Z++ is available	470
VR179	ANG CRTG-Gulfport/OSA, 4715 Hewes Ave, Gulfport, MS 39507-4324 DSN 363-6027, C22	Same as Originating Activity	Continuous	171
VR1800	174th FW, 6001 E. Molloy Rd, Syracuse, NY 13211-7099 DSN 489-9217.	174th FW, Det. 1, Ft. Drum, NY 13608 DSN 772-5990/2835 C315-772-5990.	0800 local-Sunset daily	136
VR1801	174th FW, 6001 E. Molloy Rd, Syracuse, NY 13211-7099 DSN 489-9217.	174th FW, Det. 1, Ft. Drum, NY 13608 DSN 772-5990/2835, C315-772-5990.	0800 local-Sunset daily	130
VR184	97 OSS/DOA, 400 N. Sixth Street, Altus AFB, OK 73521 DSN 866-6098 C580-481-6098.	97 OSS/OSK, 400 N. Sixth Street, Suite 12, Altus AFB, OK 73521 DSN 866-7110.	0830-0230 local, Mon-Fri	71
VR186	301 OG/SUA, NAS JRB, Fort Worth, TX 76127 DSN 739-6903/04/05, C817-782-6903/04/0	Same as Originating Activity	0700-2200 local	295
VR187	12 OSS/OSOA, 501 I Street East, Randolph AFB, TX 78150-4333 DSN 487-5580, C210-6	99 FTS, 1450 5th Street East, Randolph AFB, TX 78150-5000 DSN 487-6746.	Sunrise-Sunset, daily	243
VR188	12 OSS/OSOA, 501 I Street East, Randolph AFB, TX 78150-4333 DSN 487-5580, C210-6	99 FTS, 1450 5th Street East, Randolph AFB, TX 78150-5000 DSN 487-6746.	Sunrise-Sunset, daily	213
VR189	188 FW, 4850 Leigh Ave., Fort Smith, AR 72903-6096 DSN 778-5502.	Same as Originating Activity, Route scheduled no more than 24 hr in advance. Min	Continuous	219
VR190	97 OSS/DOA, 400 N. Sixth Street, Altus AFB, OK 73521 DSN 866-6098 C580-6098.	97 OSS/OSK, 400 N. Sixth Street, Suite 12, Altus AFB, OK 73521 DSN 866-7110.	0830-0230 local Mon-Fri	152
VR1900	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506 DSN 317-552-2430, C	353 CTS/JSO, Eielson AFB, AK 99702 C907-377-3005 DSN 317-377-3005.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	160
VR1902	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506 DSN 317-552-2430, C	3 OSS/OSOS, Elmendorf AFB, AK 99506 DSN 317-552-2406 C907-552-2406.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	175
VR1905	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506 DSN 317-552-2430, C	3 OSS/OSOS, Elmendorf AFB, AK 99506 DSN 317-552-2406, C907-552-2406.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	372
VR1909	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506 DSN 317-552-2430, C	353 CTS/JSO, Eielson AFB, AK 99702 C907-377-3005 DSN 317-377-3005.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	76
VR191	97 OSS/DOA, 400 N. Sixth Street, Altus AFB, OK 73521 DSN 866-6098 C580-6098.	97 OSS/OSK, 400 N. Sixth Street, Suite 12, Altus AFB, OK 73521 DSN 866-7110.	0830-0230 local Mon-Fri	152
VR1912	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506 DSN 317-552-2430, C	3 OSS/OSOS, Elmendorf AFB, AK 99506 DSN 317-552-2406, C907-552-2406.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	175
VR1915	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506 DSN 317-552-2430, C	3 OSS/OSOS, Elmendorf AFB, AK 99506 DSN 317-552-2406, C907-552-2406.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	339
VR1916	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506 DSN 317-552-2430, C	353 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-3005, C907-377-3005.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	137

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** Length calculations were performed using an appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: May 2010)).

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
VR1926	611 AOG/CC, 9480 Pease Ave., Ste 102, Elmendorf AFB, AK 99506-2100 DSN 317-552-2	353 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-3005, C907-377-3005.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	101
VR1927	611 AOG/CC, 9480 Pease Ave., Ste 102, Elmendorf AFB, AK 99506-2100 DSN 317-552-2	353 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-3005, C907-377-3005.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	52
VR1928	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506 DSN 317-552-2430, C	353 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-3005, C907-377-3005.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	37
VR1929	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506 DSN 317-552-2430, C	353 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-3005, C907-377-3005.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	37
VR1939	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506 DSN 317-552-2430, C	353 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-3005, C907-377-3005.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	76
VR196	47 OSS/OSOR, 570 2nd Street, Ste. 6, Laughlin AFB, TX 78843-5222 DSN 732-5864, C	86 FTS/DOS, 307 2nd St, Laughlin AFB, TX 78843 DSN 732-5584, C630-298-5584, Sche	Sunrise-Sunset daily	189
VR197	47 OSS/OSOR, 570 2nd Street, Ste. 6, Laughlin AFB, TX 78843-5222 DSN 732-5864, C	86 FTS/DOS, 307 2nd St, Laughlin AFB, TX 78843 DSN 732-5584, C630-298-5584, Sche	Sunrise-Sunset daily	189
VR198	97 OSS/DOA, 400 N. 6th St., Ste. A, Altus AFB, OK 73521 DSN 866-6098, C580-481-6	Same as Originating Activity	0600-0300 local, Mon-Fri, OT by NOTAM	195
VR199	97 OSS/DOA, 400 N. 6th St., Ste. A, Altus AFB, OK 73521 DSN 866-6098, C580-481-6	Same as Originating Activity	0600-0300 local, Mon-Fri, OT by NOTAM	195
VR201	Commander, Strike Fighter Wing, U.S. Pacific Fleet, 001 K Street, NAS Lemoore, C	Same as Originating Activity	Daylight hours, OT by NOTAM	168
VR202	Commander, Strike Fighter Wing, U.S. Pacific Fleet, 001 K Street, NAS Lemoore, C	Same as Originating Activity	Daylight hours, OT by NOTAM	312
VR208	Commander, Strike Fighter Wing, U.S. Pacific Fleet, 001 K Street, NAS Lemoore, C	Same as Originating Activity	0800-1630 local	194
VR209	Commander, Strike Fighter Wing, U.S. Pacific Fleet, 001 K Street, NAS Lemoore, C	Same as Originating Activity	Daylight hours, OT by NOTAM	593
VR222	57 OSS/OSOS, Nellis AFB, NV 89191-7001 DSN 682-2040, C702-652-2040.	Same as Originating Activity	Continuous	359
VR223	56 RMO/ASM, 7224 N. 139th Drive, Luke AFB, AZ 85309-1420 DSN 896-5855, C623-856-	56 RMO/ASMS, 7224 N. 139th Drive, Luke AFB, AZ 85309-1420 DSN 896-7654, C623-856	0600-2400 Mon-Fri local, Wkend/hol when sked with Goldwater Rng/Sell MOA Msn	127
VR231	56 RMO/ASM, 7224 N. 139th Drive, Luke AFB, AZ 85309-1420 DSN 896-5855, C623-856-	56 RMO/ASMS, 7224 N. 139th Drive, Luke AFB, AZ 85309-1420 DSN 896-7654, C623-856	0600-2400 Mon-Fri local, Wkend/hol when sked with Goldwater Rng/Sell MOA Msn	109
VR239	56 RMO/ASM, 7224 N. 139th Drive, Luke AFB, AZ 85309-1420 DSN 896-5855, C623-856-	56 RMO/ASMS, 7224 N. 139th Drive, Luke AFB, AZ 85309-1420 DSN 896-7654, C623-856	0600-2400 Mon-Fri local, Wkend/hol when sked with Goldwater Rng/Sell MOA Msn	300
VR241	56 RMO/ASM, 7224 N. 139th Drive, Luke AFB, AZ 85309-1420 DSN 896-5855, C623-856-	56 RMO/ASMS, 7224 N. 139th Drive, Luke AFB, AZ 85309-1420 DSN 896-7654, C623-856	0600-2400 Mon-Fri local, Wkend/hol when sked with Goldwater Rng/Sell MOA Msn	218
VR242	56 RMO/ASM, 7224 N. 139th Drive, Luke AFB, AZ 85309-1420 DSN 896-5855, C623-856-	56 RMO/ASMS, 7224 N. 139th Drive, Luke AFB, AZ 85309-1420 DSN 896-7654, C623-856	0600-2400 Mon-Fri local, Wkend/hol when sked with Goldwater Rng/Sell MOA Msn	217

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** Length calculations were performed using an appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: May 2010)).

Appendix C: Maps and Inventory of Ranges, Range Complexes, Military Training Routes, and Special Use Areas

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
VR243	56 RMO/ASM, 7224 N. 139th Drive, Luke AFB, AZ 85309-1420 DSN 896-5855, C623-856-	56 RMO/ASMS, 7224 N. 139th Drive, Luke AFB, AZ 85309-1420 DSN 896-7654, C623-856	0600-2400 Mon-Fri local, Wkend/hol when sked with Goldwater Rng/Sell MOA Msn	269
VR244	56 RMO/ASM, 7224 N. 139th Drive, Luke AFB, AZ 85309-1420 DSN 896-5855, C623-856-	56 RMO/ASMS, 7224 N. 139th Drive, Luke AFB, AZ 85309-1420 DSN 896-7654, C623-856	0600-2400 Mon-Fri local, Wkend/hol when sked with Goldwater Rng/Sell MOA Msn	272
VR245	56 RMO/ASM, 7224 N. 139th Drive, Luke AFB, AZ 85309-1420 DSN 896-5855, C623-856-	56 RMO/ASMS, 7224 N. 139th Drive, Luke AFB, AZ 85309-1420 DSN 896-7654, C623-856	0600-2400 Mon-Fri local, Wkend/hol when sked with Goldwater Rng/Sell MOA Msn	208
VR249	G-3, 3D MAW, MCAS Miramar, San Diego, CA 92145 DSN 267-9462, C858-577-9462. Non-	Same as Originating Activity	Continuous	101
VR259	162 FW/OGC, 1660 E. El Tigre Way, Tucson, AZ 85706-6086 DSN 844-6371, C520-295-6	Same as Originating Activity	Continuous	309
VR260	162 FW/OGC, 1660 E. El Tigre Way, Tucson, AZ 85706-6086 DSN 844-6371 C520-295-63	Same as Originating Activity	Continuous	276
VR263	162 FW/OGC, 1660 E. El Tigre Way, Tucson, AZ, 85706-6086 DSN 844-6371 C520-295-6	Same as Originating Activity	Continuous	433
VR267	355 OSS/OSOA, 3895 S. 6th St. Suite 200, Davis-Monthan AFB, AZ 85707 DSN 228-468	355 OSS/OSOSO, Davis-Monthan AFB, AZ 85707 1500-2300Z Mon-Fri, no earlier than 0	1300-0530Z	199
VR268	355 OSS/OSOA, 3895 S. 6th St. Suite 200, Davis-Monthan AFB, AZ 85707 DSN 228-468	355 OSS/OSOSO, Davis-Monthan AFB, AZ 85707 1500-2300Z Mon-Fri, no earlier than 0	1300-0530Z++	155
VR269	355 OSS/OSOA, 3895 S. 6th St. Suite 200, Davis-Monthan AFB, AZ 85707 DSN 228-468	355 OSS/OSOSO, Davis-Monthan AFB, AZ 85707 1500-2300Z Mon-Fri, no earlier than 0	1300-0530Z++	181
VR288	452 OSS/OSK, March ARB, CA 92518 DSN 447-4376, C909-655-4376.	452 OSS/OSAA, March ARB, CA 92518 DSN 447-4404/2422, C951-655-4404/2422.	Continuous	110
VR289	452 OSS/OSK, March ARB, CA 92518 DSN 447-4376, C909-655-4376.	452 OSS/OSAA, March ARB, CA 92518 DSN 447-4404/2422, C951-655-4404/2422.	Continuous	157
VR296	452 OSS/OSK, March ARB, CA 92518 DSN 447-4404/2422, C909-655-4404/2422.	452 OSS/OSAA, March ARB, CA 92518 DSN 447-4404/2422, C909-655-4404/2422.	Continuous	226
VR299	452 OSS/DOT, March Fld, CA 92518 DSN 447-3846, C951-655-3846.	22 OSS/DOB, March Fld, CA 92518 DSN 447-4404/2422, C951-655-4404/2422.	Continuous	208
VR316	124 WG/OGAM (ANG), 3996 W. Aeronca St., Boise, ID 83705-8004 DSN 422-5310, C208-	124 WG/OSS (ANG), 3996 W. Aeronca St., Boise, ID 83705-8004 DSN 422-5348, C208-4	Continuous or by NOTAM	301
VR319	124 WG/OGAM (ANG), 3996 W. Aeronca St., Boise, ID 83705-8004 DSN 422-5310, C208-	124 WG/OSS (ANG), 3996 W. Aeronca St., Boise, ID 83705-8004 DSN 422-5348, C208-4	Continuous or by NOTAM	301
VR331	62 OSS/OSK, 1172 Levitow Blvd., McChord AFB, WA 98438 DSN 382-3615, C253-982-361	62 OSS/OSO, 100 Main St., McChord AFB, WA 98438 DSN 382-9925, C263-982-9925. Dut	Continuous	179
VR410	140th Wing /Airspace Office, Buckley AFB, Aurora Co. 80011-9546 DSN 847-9470/947	Same as Originating Activity.	0800-1600 local Tue-Sat, OT by NOTAM	15
VR411	140th Wing /Airspace Office, Buckley AFB, Aurora Co. 80011-9546 DSN 847-9470/947	Same as Originating Activity.	0800-1600 local Tue-Sat, OT by NOTAM	15

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** Length calculations were performed using an appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: May 2010)).

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
VR413	140th Wing /Airspace Office, Buckley AFB, Aurora Co. 80011-9546 DSN 847-9470/947	140th Wing /Airspace Office, Buckley AFB, Aurora Co. 80011-9546 DSN 847-9470/947	0800-1600 local Tue-Sat, OT by NOTAM	184
VR510	114 FW (ANG), Joe Foss Field, Sioux Falls, SD 57104-0264 DSN 798-7754/7746, C605	Same as Originating Activity	Daylight Hours Tue-Sat, OT by NOTAM	315
VR511	132 FW OG/CC (ANG), 3100 McKinley Ave, Des Moines, IA 50321-2799 DSN 256-8250 C5	Same as Originating Activity	By NOTAM, (2 hr prior notification required)	264
VR512	132 FW OG/CC (ANG), 3100 McKinley Ave, Des Moines, IA 50321-2799 DSN 256-8250 C5	Same as Originating Activity	By NOTAM, 2hr prior notification required	264
VR531	DET 1, 184 IW, Smokey Hill Ang Range, 84 W Farrelly Rd, Salina, KS 67401-9407, P	Same as Originating Activity	Continuous	181
VR532	DET 1, 184 IW, Smokey Hill Ang Range, 84 W Farrelly Rd, Salina, KS 67401-9407, P	Same as Originating Activity	Continuous	329
VR533	DET 1, 184 IW, Smokey Hill Ang Range, 84 W Farrelly Rd, Salina, KS 67401-9407, P	Same as Originating Activity	Continuous	165
VR534	DET 1, 184 IW, Smokey Hill Ang Range, 84 W Farrelly Rd, Salina, KS 67401-9407, P	Same as Originating Activity	Continuous	169
VR535	DET 1, 184 IW, Smokey Hill Ang Range, 84 W Farrelly Rd, Salina, KS 67401-9407, P	Same as Originating Activity	Continuous	179
VR536	DET 1, 184 IW, Smokey Hill Ang Range, 84 W Farrelly Rd, Salina, KS 67401-9407, P	Same as Originating Activity	Continuous	157
VR540	132 FW OG/CC (ANG), 3100 McKinley Ave, Des Moines, IA 50321-2799 DSN 256-8250 C5	Same as Originating Activity	By NOTAM, 2 hr prior notification required	319
VR541	132 FW OG/CC (ANG), 3100 McKinley Ave, Des Moines, IA 50321-2799 DSN 256-8250 C5	Same as Originating Activity	By NOTAM, 2 hr prior notification required	289
VR544	114 FW (ANG), Joe Foss Field, Sioux Falls, SD 57104-0264 DSN 798-7754/7746, C605	Same as Originating Activity	By NOTAM, 2 hours and 15 minutes prior to entry time required	121
VR545	114 FW (ANG), Joe Foss Field, Sioux Falls, SD 57104-0264 DSN 798-7754/7746, C605	Same as Originating Activity	By NOTAM, 2 hours and 15 minutes prior to entry time required	121
VR552	DET 1, 184 IW, Smokey Hill Ang Range, 84 W Farrelly Rd, Salina, KS 67401-9407, P	Same as Originating Activity	Continuous	190
VR604	148TH FIG (ANG), Duluth Intl, MN 55811 DSN 825-7265.	Same as Originating Activity	1400-0500Z++ daily, 0500-1400Z++ allowable	680
VR607	148TH FIG (ANG), Duluth Intl, MN 55811 DSN 825-7265.	Same as Originating Activity	1400-0500Z++ daily, 0500-1400Z++ allowable	680
VR615	183 FW/OSF, Capital Airport, Springfield, IL 62707 DSN 892-8202.	Same as Originating Activity	Daylight hours	167
VR619	181 TFG (ANG), Hulman Regional Airport, Terre Haute, IN 47803 DSN 724-1234.	Same as Originating Activity	Sunrise-Sunset Tue-Sun, OT by NOTAM	136
VR634	Alpena CRTC/OTM (ANG), 5884 A. Street, Alpena, MI 49707-8125 DSN 741-3509/3226.	Same as Originating Activity	Continuous	180
VR664	Alpena CRTC/OTM (ANG), 5884 A. Street, Alpena, MI 49707-8125 DSN 741-3509/3226.	Same as Originating Activity	Continuous	181
VR704	DET 1, 193 SOG, 26139 Ammo Road, Annville, PA 17003-5180 C717-861-2475/2912 Toll	Same as Originating Activity	0800 local to Sunset daily	285
VR705	DET 1, 193 SOG, 26139 Ammo Road, Annville, PA 17003-5180 C717-861-2475/2912 Toll	Same as Originating Activity	0800 local-Sunset daily	214
VR707	DET 1, 193 SOG, 26139 Ammo Road, Annville, PA 17003-5180 C717-861-2475/2912 Toll	Same as Originating Activity	0800 local-Sunset daily	287
VR708	175 FG (ANG), Baltimore, MD 21220-2899 DSN 243-6375.	Same as Originating Activity	Sunrise-Sunset	126
VR724	174th FW, 6001 E. Molloy Rd, Syracuse, NY 13211-7099 DSN 489-9217.	174 FW, Det 1, Ft. Drum, NY 13608 DSN 772-5990/2835, C315-772-5990.	0800-Sunset daily, OT by NOTAM	141

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** Length calculations were performed using an the appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: May 2010)).

Appendix C: Maps and Inventory of Ranges, Range Complexes, Military Training Routes, and Special Use Areas

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
VR725	174th FW, 6001 E. Molloy Rd, Syracuse, NY 13211-7099 DSN 489-9217.	174 FW, Det 1. Ft. Drum, NY 13608 DSN 772-5990/2835, C315-772-5990.	0800-Sunset daily, OT by NOTAM	114
VR840	104 FW, Barnes ANGB, Westfield, MA 01085-1482 DSN 698-1228/1229, C413-568-9151 e	Same as Originating Activity	0800 local-Sunset daily	175
VR841	104 FW, Barnes ANGB, Westfield, MA 01085-1482 DSN 698-1228/1229, C413-568-9151 e	Same as Originating Activity	0800 local-Sunset daily	97
VR842	104 FW, Barnes ANGB, Westfield, MA 01085-1482 DSN 698-1228/1229, C413-568-9151 e	Same as Originating Activity	0800 local-Sunset daily	87
VR931	611 AOG/CC, 9480 Pease Ave., Ste 102, Elmendorf AFB, AK 99506-2100 DSN 317-552-2	3 OSS/OSOS, Elmendorf AFB, AK 99506 DSN 317-552-2406, C907-552-2406.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	67
VR932	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506 DSN 317-552-2430, C	3 OSS/OSOS, Elmendorf AFB, AK 99506 DSN 317-552-2406, C907-552-2406.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	67
VR933	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506 DSN 317-552-2430, C	3 OSS/OSOS, Elmendorf AFB, AK 99506 DSN 317-552-2406, C907-552-2406.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	206
VR934	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506 DSN 317-552-2430, C	3 OSS/OSOS, Elmendorf AFB, AK 99506-2130 DSN 317-552-2406, C907-552-2406.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	206
VR935	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506 DSN 317-552-2430, C	353 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-3005, C907-377-3005.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	193
VR936	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506 DSN 317-552-2430, C	353 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-3005, C907-377-3005.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	210
VR937	611 AOG/CC, 9480 Pease Ave., Ste 102, Elmendorf AFB, AK 99506-2100 DSN 317-552-2	353 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-3005, C907-377-3005.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	184
VR938	611 AOG/CC, 9480 Pease Ave., Ste 102, Elmendorf AFB, AK 99506-2100 DSN 317-552-2	353 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-3005, C907-377-3005.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	167
VR940	611 AOG/CC, 9480 Pease Ave., Ste 102, Elmendorf AFB, AK 99506-2100 DSN 317-552-2	353 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-3005, C907-377-3005.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	106
VR941	611 AOG/CC, 9480 Pease Ave., Ste 102, Elmendorf AFB, AK 99506-2100 DSN 317-552-2	353 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-3005, C907-377-3005.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	106
VR954	611 AOG/CC, 9480 Pease Ave., Ste 102, Elmendorf AFB, AK 99506-2100 DSN 317-552-2	353 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-3005, C907-377-3005.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	371
VR955	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506 DSN 317-552-2430, C	353 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-3005, C907-377-3005.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	271

* Data fields are limited to 80 characters in the source database (National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File)), therefore, some data field entries are not complete. Please refer to DoD Flight Information Publications for complete originating and scheduling activity information.

** Length calculations were performed using an the appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: May 2010)).

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Table C-3 Special Use Airspace (SUA) Inventory

2011 SUA Name	Controlling Agency	Range Complex/Installation Name	Upper Altitude	Lower Altitude	Military Service	Area (nm2)*
AZ11	USA, CAIRNES APP	Fort Rucker	005000AMSL	SURFACE	USA	4580
A311	FAA, HONOLULU CERAP	Schofield, Kahuku, Kawaihoa	000500AGL	SURFACE	USA	71
A371	USA, CAMPBELL AAF APP	Fort Campbell	002000AMSL	SURFACE	USA	1193
A531	USA, FORT BRAGG	Fort Bragg	001500AGL	00200AGL	USA	698
A685	FAA, ATLANTA ARTCC	Camp Merrill	000700AGL	SURFACE	USA	490
BENNING MOA, GA	FAA, COLUMBUS TWR	Fort Benning	008000AMSL	00500AGL	USA	107
CAMPBELL 1 MOA, KY	FAA, MEMPHIS ARTCC	Fort Campbell	010000AMSL	00500AGL	USA	396
CAMPBELL 2 MOA, KY	FAA, MEMPHIS ARTCC	Fort Campbell	010000AMSL	01500AGL	USA	311
FORT BRAGG NORTH AREA A MOA, NC	FAA, FAYETTEVILLE TWR	Fort Bragg	006000AMSL	00500AGL	USA	42
FORT BRAGG NORTH AREA B MOA, NC	FAA, FAYETTEVILLE TWR	Fort Bragg	006000AMSL	04000AMSL	USA	30
FORT BRAGG SOUTH AREA A MOA, NC	FAA, FAYETTEVILLE TWR	Fort Bragg	006000AMSL	00500AGL	USA	53
FORT BRAGG SOUTH AREA B MOA, NC	FAA, FAYETTEVILLE TWR	Fort Bragg	006000AMSL	01500AGL	USA	36
FORT STEWART B1 MOA, GA	FAA, JACKSONVILLE ARTCC	Fort Stewart	004999AMSL	00500AGL	USA	146
FORT STEWART B2 MOA, GA	FAA, JACKSONVILLE ARTCC	Fort Stewart	010000AMSL	05000AMSL	USA	146
FORT STEWART C1 MOA, GA	FAA, JACKSONVILLE ARTCC	Fort Stewart	002999AMSL	00500AGL	USA	31
FORT STEWART C2 MOA, GA	FAA, JACKSONVILLE ARTCC	Fort Stewart	010000AMSL	03000AMSL	USA	70
GRAY MOA, TX	FAA, HOUSTON ARTCC	Fort Hood	010000AMSL	02000AMSL	USA	28
HILL MOA, VA	FAA, POTOMAC APP	Fort A.P. Hill	003000AMSL	SURFACE	USA	36
HOOD MOA, TX	FAA, HOUSTON ARTCC	Fort Hood	010000AMSL	02000AMSL	USA	267
HOWARD EAST MOA, IL	FAA, KANSAS CITY ARTCC	Springfield	018000AMSL	09000AMSL	USA	1853
HOWARD WEST MOA, IL	FAA, KANSAS CITY ARTCC	Springfield	018000AMSL	10000AMSL	USA	322
LAKE ANDES MOA, SD	FAA, MINNEAPOLIS ARTCC	Sioux Falls	018000AMSL	06000AMSL	USA	3498
PICKETT 1 MOA, VA	FAA, WASHINGTON, DC ARTCC	Fort Pickett	006000AMSL	00500AGL	USA	45
PICKETT 2 MOA, VA	FAA, WASHINGTON, DC ARTCC	Fort Pickett	010000AMSL	00500AGL	USA	93
PICKETT 3 MOA, VA	FAA, WASHINGTON, DC ARTCC	Fort Pickett	010000AMSL	04000AMSL	USA	23
PINON CANYON MOA, CO	FAA, DENVER ARTCC	Fort Carson	010000AMSL	00100AGL	USA	1031
PRUIJT A MOA, IL	FAA, KANSAS CITY ARTCC	Springfield	006000AMSL	00500AGL	USA	980
PRUIJT B MOA, IL	FAA, KANSAS CITY ARTCC	Springfield	003000AMSL	00500AGL	USA	426
R2101	FAA, ATLANTA ARTCC	Anniston Army Depot	005000AMSL	SURFACE	USA	2
R2102A	FAA, ATLANTA ARTCC	Fort McClellan	008000AMSL	SURFACE	USA	27
R2102B	FAA, ATLANTA ARTCC	Fort McClellan	014000AMSL	08000AMSL	USA	27
R2102C	FAA, ATLANTA ARTCC	Fort McClellan	FL240	14000AMSL	USA	27
R2103A	USA, CAIRNS APP	Fort Rucker	009999AMSL	SURFACE	USA	50

* Area calculations were performed using the appropriate Universal Transverse Mercator zones.

2011 SUA Name	Controlling Agency	Range Complex/Installation Name	Upper Altitude	Lower Altitude	Military Service	Area (nm2)*
R2103B	FAA, JACKSONVILLE ARTCC	Fort Rucker	015000AMSL	10000AMSL	USA	50
R2104A	FAA, MEMPHIS ARTCC	Redstone Arsenal	012000AMSL	SURFACE	USA	17
R2104B	FAA, MEMPHIS ARTCC	Redstone Arsenal	002400AMSL	SURFACE	USA	4
R2104C	FAA, MEMPHIS ARTCC	Redstone Arsenal	012000AMSL	SURFACE	USA	4
R2104D	FAA, MEMPHIS ARTCC	Redstone Arsenal	FL300	12000AMSL	USA	17
R2104E	FAA, MEMPHIS ARTCC	Redstone Arsenal	FL300	12000AMSL	USA	4
R2202A	FAA, ANCHORAGE ARTCC	Fort Greely	009999AMSL	SURFACE	USA	170
R2202B	FAA, ANCHORAGE ARTCC	Fort Greely	009999AMSL	SURFACE	USA	395
R2202C	FAA, ANCHORAGE ARTCC	Fort Greely	FL310	10000AMSL	USA	565
R2202D	FAA, ANCHORAGE ARTCC	Fort Greely	UNLTD	FL310	USA	566
R2203A	FAA, ANCHORAGE TWR	Fort Richardson	011000AMSL	SURFACE	USA	6
R2203B	FAA, ANCHORAGE TWR	Fort Richardson	011000AMSL	SURFACE	USA	20
R2203C	FAA, ANCHORAGE TWR	Fort Richardson	005000AMSL	SURFACE	USA	1
R2205	FAA, FAIRBANKS APP	Fort Richardson	020000AMSL	SURFACE	USA	137
R2302	FAA, ALBUQUERQUE ARTCC	Navajo Ordnance Depot	010000AMSL	SURFACE	USA	4
R2303A	FAA, ALBUQUERQUE ARTCC	Fort Huachuca	015000AMSL	SURFACE	USA	266
R2303B	FAA, ALBUQUERQUE ARTCC	Fort Huachuca	FL300	08000AMSL	USA	495
R2303C	FAA, ALBUQUERQUE ARTCC	Fort Huachuca	FL300	15000AMSL	USA	233
R2306A	FAA, LOS ANGELES ARTCC	Yuma Proving Ground	FL800	SURFACE	USA	208
R2306B	FAA, LOS ANGELES ARTCC	Yuma Proving Ground	FL800	SURFACE	USA	165
R2306C	FAA, LOS ANGELES ARTCC	Yuma Proving Ground	FL400	SURFACE	USA	37
R2306D	FAA, LOS ANGELES ARTCC	Yuma Proving Ground	FL230	SURFACE	USA	15
R2306E	FAA, LOS ANGELES ARTCC	Yuma Proving Ground	FL800	SURFACE	USA	65
R2307	FAA, LOS ANGELES ARTCC	Yuma Proving Ground	UNLTD	SURFACE	USA	292
R2308A	FAA, LOS ANGELES ARTCC	Yuma Proving Ground	FL800	01500AGL	USA	552
R2308B	FAA, LOS ANGELES ARTCC	Yuma Proving Ground	FL800	SURFACE	USA	77
R2308C	FAA, LOS ANGELES ARTCC	Yuma Proving Ground	FL230	01500AGL	USA	29
R2310A	FAA, ALBUQUERQUE ARTCC	Florence Training Site	010000AMSL	SURFACE	USA	29
R2310B	FAA, ALBUQUERQUE ARTCC	Florence Training Site	017000AMSL	10000AMSL	USA	18
R2310C	FAA, ALBUQUERQUE ARTCC	Florence Training Site	FL350	17000AMSL	USA	15
R2311	YUMA APP, YUMA MCAS	Yuma Proving Ground	003500AMSL	SURFACE	USA	62
R2401A	FAA, MEMPHIS ARTCC	Chaffee	FL300	SURFACE	USA	16
R2401B	FAA, MEMPHIS ARTCC	Chaffee	FL300	SURFACE	USA	2
R2402A	FAA, MEMPHIS ARTCC	Chaffee	030000AMSL	SURFACE	USA	63

* Area calculations were performed using the appropriate Universal Transverse Mercator zones.

Appendix C: Maps and Inventory of Ranges, Range Complexes, Military Training Routes, and Special Use Areas

2011 SUA Name	Controlling Agency	Range Complex/Installation Name	Upper Altitude	Lower Altitude	Military Service	Area (nm2)*
R2402B	FAA, MEMPHIS ARTCC	Chaffee	FL220	10000AMSL	USA	52
R2402C	FAA, MEMPHIS ARTCC	Chaffee	FL220	13000AMSL	USA	38
R2502A	FAA, HI-DESERT TRACON, EDWARDS AFB	Fort Irwin	16000AMSL	SURFACE	USA	180
R2502E	FAA, HI-DESERT TRACON, EDWARDS AFB	Fort Irwin	UNLTD	SURFACE	USA	180
R2502N	FAA, HI-DESERT TRACON, EDWARDS AFB	Fort Irwin	UNLTD	SURFACE	USA	561
R2504A	FAA, OAKLAND ARTCC	Camp Roberts	06000AMSL	SURFACE	USA	27
R2504B	FAA, OAKLAND ARTCC	Camp Roberts	015000AMSL	06000AMSL	USA	27
R2513	FAA, OAKLAND ARTCC	Fort Hunter-Leggett	FL240	SURFACE	USA	114
R2530	FAA, OAKLAND ARTCC	Sierra Army Depot	008600AMSL	SURFACE	USA	4
R2601A	FAA, DENVER ARTCC	Fort Carson	012499AMSL	SURFACE	USA	123
R2601B	FAA, DENVER ARTCC	Fort Carson	022499AMSL	12500AMSL	USA	123
R2601C	FAA, DENVER ARTCC	Fort Carson	034999AMSL	22500AMSL	USA	123
R2601D	FAA, DENVER ARTCC	Fort Carson	059999AMSL	35000AMSL	USA	123
R3002A	FAA, ATCT, COLUMBUS	Fort Benning	004000AMSL	SURFACE	USA	104
R3002B	FAA, ATCT, COLUMBUS	Fort Benning	008000AMSL	04000AMSL	USA	104
R3002C	FAA, ATCT, COLUMBUS	Fort Benning	014000AMSL	08000AMSL	USA	104
R3002D	FAA, ATCT, COLUMBUS	Fort Benning	008000AMSL	SURFACE	USA	79
R3002E	FAA, ATCT, COLUMBUS	Fort Benning	014000AMSL	08000AMSL	USA	79
R3002F	FAA, ATLANTA ARTCC	Fort Benning	FL250	14000AMSL	USA	118
R3002G	FAA, ATLANTA TRACON	Fort Benning	004000AMSL	SURFACE	USA	14
R3004A	FAA, ATLANTA ARTCC	Fort Gordon	007000AMSL	SURFACE	USA	31
R3004B	FAA, ATLANTA ARTCC	Fort Gordon	016000AMSL	007001AMSL	USA	31
R3005A	FAA, JACKSONVILLE ARTCC	Fort Stewart	FL290	SURFACE	USA	71
R3005B	FAA, JACKSONVILLE ARTCC	Fort Stewart	FL290	SURFACE	USA	46
R3005C	FAA, JACKSONVILLE ARTCC	Fort Stewart	FL290	SURFACE	USA	107
R3005D	FAA, JACKSONVILLE ARTCC	Fort Stewart	FL290	SURFACE	USA	50
R3005E	FAA, JACKSONVILLE ARTCC	Fort Stewart	FL290	SURFACE	USA	35
R3103	FAA, HONOLULU CERAP	Pohakuloa Training Area	030000AMSL	SURFACE	USA	124
R3109A	FAA, HONOLULU TWR	Schofield-Makua	008999AMSL	SURFACE	USA	9
R3109B	FAA, HONOLULU TWR	Schofield-Makua	018999AMSL	09000AMSL	USA	15
R3109C	FAA, HONOLULU TWR	Schofield-Makua	008999AMSL	SURFACE	USA	6
R3110A	FAA, HONOLULU TWR	Schofield-Makua	008999AMSL	SURFACE	USA	11
R3110B	FAA, HONOLULU TWR	Schofield-Makua	018999AMSL	09000AMSL	USA	21
R3110C	FAA, HONOLULU TWR	Schofield-Makua	008999AMSL	SURFACE	USA	10

* Area calculations were performed using the appropriate Universal Transverse Mercator zones.

2011 SUA Name	Controlling Agency	Range Complex/Installation Name	Upper Altitude	Lower Altitude	Military Service	Area (nm2)*
R3203D	FAA, SALT LAKE CITY ARTCC	Boise	FL220	SURFACE	USA	23
R3401A	FAA, INDIANAPOLIS ARTCC	Camp Atterbury	FL400	SURFACE	USA	43
R3401B	FAA, INDIANAPOLIS ARTCC	Camp Atterbury	014000AMSL	01200AGL	USA	35
R3403A	FAA, INDIANAPOLIS ARTCC	Camp Atterbury	FL430	SURFACE	USA	53
R3403B	FAA, INDIANAPOLIS ARTCC	Camp Atterbury	FL180	01200AGL	USA	27
R3602A	FAA, KANSAS CITY ARTCC	Fort Riley	FL290	SURFACE	USA	49
R3602B	FAA, KANSAS CITY ARTCC	Fort Riley	FL290	SURFACE	USA	59
R3701	USA, CAMPBELL AAF APP	Fort Campbell	005000AMSL	SURFACE	USA	8
R3702A	FAA, MEMPHIS ARTCC	Fort Campbell	006000AMSL	SURFACE	USA	93
R3702B	FAA, MEMPHIS ARTCC	Fort Campbell	FL220	06000AMSL	USA	93
R3702C	FAA, MEMPHIS ARTCC	Fort Campbell	FL270	FL220	USA	93
R3704A	FAA, STANDIFORD TWR, LOUISVILLE	Fort Knox	010000AMSL	SURFACE	USA	113
R3704B	FAA, STANDIFORD TWR, LOUISVILLE	Fort Knox	FL220	10000AMSL	USA	113
R3803A	FAA, HOUSTON ARTCC	Fort Polk	FL180	SURFACE	USA	41
R3803B	FAA, HOUSTON ARTCC	Fort Polk	034999AMSL	FL180	USA	41
R3804A	FAA, HOUSTON ARTCC	Fort Polk	FL180	SURFACE	USA	100
R3804B	FAA, HOUSTON ARTCC	Fort Polk	003000AMSL	SURFACE	USA	14
R3804C	FAA, HOUSTON ARTCC	Fort Polk	034999AMSL	FL180	USA	100
R4001A	FAA, WASHINGTON, DC ARTCC	Aberdeen Proving Ground	UNLTD	SURFACE	USA	105
R4001B	FAA, WASHINGTON, DC ARTCC	Aberdeen Proving Ground	010000AMSL	SURFACE	USA	28
R4101	FAA, CAPE APP	Camp Edwards	009000AMSL	SURFACE	USA	14
R4102A	FAA, BOSTON ARTCC	Devens Reserve Forces Training Area	001999AMSL	SURFACE	USA	6
R4102B	FAA, BOSTON ARTCC	Devens Reserve Forces Training Area	003995AMSL	02000AMSL	USA	6
R4201A	FAA, MINNEAPOLIS ARTCC	Camp Grayling	FL230	SURFACE	USA	64
R4201B	FAA, MINNEAPOLIS ARTCC	Camp Grayling	009000AMSL	SURFACE	USA	41
R4202	FAA, MINNEAPOLIS ARTCC	Camp Grayling	008200AMSL	SURFACE	USA	5
R4301	FAA, MINNEAPOLIS ARTCC	Camp Ripley	FL270	SURFACE	USA	64
R4501A	FAA, KANSAS CITY ARTCC	Fort Leonard Wood	002199AMSL	SURFACE	USA	21
R4501B(A)	FAA, KANSAS CITY ARTCC	Fort Leonard Wood	002200AMSL	SURFACE	USA	10
R4501B(B)	FAA, KANSAS CITY ARTCC	Fort Leonard Wood	001500AMSL	SURFACE	USA	0
R4501C	FAA, KANSAS CITY ARTCC	Fort Leonard Wood	005000AMSL	02200AMSL	USA	34
R4501D	FAA, KANSAS CITY ARTCC	Fort Leonard Wood	012000AMSL	05000AMSL	USA	34
R4501E	FAA, KANSAS CITY ARTCC	Fort Leonard Wood	FL180	12000AMSL	USA	34
R4501F	FAA, KANSAS CITY ARTCC	Fort Leonard Wood	003200AMSL	SURFACE	USA	4

* Area calculations were performed using the appropriate Universal Transverse Mercator zones.

Appendix C: Maps and Inventory of Ranges, Range Complexes, Military Training Routes, and Special Use Areas

2011 SUA Name	Controlling Agency	Range Complex/Installation Name	Upper Altitude	Lower Altitude	Military Service	Area (nm2)*
R4501H	FAA, KANSAS CITY ARTCC	Fort Leonard Wood	003200AMSL	SURFACE	USA	15
R4808N	FAA, LOS ANGELES ARTCC	Nellis AFB	UNLTD	SURFACE	DOE	1280
R4808S	FAA, LOS ANGELES ARTCC	Nellis AFB	UNLTD	SURFACE	DOE	24
R4809	FAA, LOS ANGELES ARTCC	Nellis AFB	UNLTD	SURFACE	DOE	393
R4811	FAA, OAKLAND ARTCC	Hawthorne Army Ammunition Plant	015000AMSL	SURFACE	USA	7
R5001A	FAA, NEW YORK ARTCC	Fort Dix	004000AMSL	SURFACE	USA	23
R5001B	FAA, NEW YORK ARTCC	Fort Dix	008000AMSL	04000AMSL	USA	21
R5103A	FAA, ALBUQUERQUE ARTCC	Fort Bliss	018000AMSL	SURFACE	USA	43
R5103B	FAA, ALBUQUERQUE ARTCC	Fort Bliss	012500AMSL	SURFACE	USA	235
R5103C	FAA, ALBUQUERQUE ARTCC	Fort Bliss	UNLTD	SURFACE	USA	653
R5107A	FAA, ALBUQUERQUE ARTCC	Fort Bliss	UNLTD	SURFACE	USA	281
R5107B	FAA, ALBUQUERQUE ARTCC	White Sands Missile Range	UNLTD	SURFACE	USA	3140
R5107C	FAA, ALBUQUERQUE ARTCC	White Sands Missile Range	UNLTD	09000AMSL	USA	892
R5107D	FAA, ALBUQUERQUE ARTCC	White Sands Missile Range	022000AMSL	SURFACE	USA	551
R5107E	FAA, ALBUQUERQUE ARTCC	White Sands Missile Range	UNLTD	SURFACE	USA	127
R5107F	FAA, ALBUQUERQUE ARTCC	White Sands Missile Range	FL450	FL240	USA	1195
R5107G	FAA, ALBUQUERQUE ARTCC	White Sands Missile Range	FL450	FL240	USA	957
R5107H	FAA, ALBUQUERQUE ARTCC	White Sands Missile Range	009000AMSL	SURFACE	USA	814
R5107J	FAA, ALBUQUERQUE ARTCC	White Sands Missile Range	009000AMSL	SURFACE	USA	77
R5107K	FAA, ALBUQUERQUE ARTCC	Camp Atterbury	UNLTD	SURFACE	USA	205
R5109A	FAA, ALBUQUERQUE ARTCC	White Sands Missile Range	UNLTD	24000AMSL	USA	1682
R5109B	FAA, ALBUQUERQUE ARTCC	White Sands Missile Range	UNLTD	24000AMSL	USA	1004
R5111A	FAA, ALBUQUERQUE ARTCC	White Sands Missile Range	UNLTD	13000AMSL	USA	404
R5111B	FAA, ALBUQUERQUE ARTCC	White Sands Missile Range	013000AMSL	SURFACE	USA	404
R5111C	FAA, ALBUQUERQUE ARTCC	White Sands Missile Range	UNLTD	13000AMSL	USA	318
R5111D	FAA, ALBUQUERQUE ARTCC	White Sands Missile Range	012999AMSL	SURFACE	USA	318
R5117	FAA, ALBUQUERQUE ARTCC	White Sands Missile Range	UNLTD	SURFACE	USA	22
R5119	FAA, ALBUQUERQUE ARTCC	White Sands Missile Range	UNLTD	FL350	USA	393
R5121	FAA, ALBUQUERQUE ARTCC	White Sands Missile Range	UNLTD	FL200	USA	38
R5123	FAA, ALBUQUERQUE ARTCC	White Sands Missile Range	UNLTD	SURFACE	USA	152
R5201	FAA, BOSTON ARTCC	Fort Drum	023000AMSL	SURFACE	USA	110
R5206	FAA, NEW YORK APP	West Point	005000AMSL	SURFACE	USA	4
R5311A	FAA, WASHINGTON, DC ARTCC	Fort Bragg	006999AMSL	SURFACE	USA	122
R5311B	FAA, WASHINGTON, DC ARTCC	Fort Bragg	011999AMSL	07000AMSL	USA	122

* Area calculations were performed using the appropriate Universal Transverse Mercator zones.

2011 SUA Name	Controlling Agency	Range Complex/Installation Name	Upper Altitude	Lower Altitude	Military Service	Area (nm2)*
R5311C	FAA, WASHINGTON, DC ARTCC	Fort Bragg	028999AMSL	12000AMSL	USA	122
R5601A	FAA, FORT WORTH ARTCC	Fort Sill	FL400	SURFACE	USA	34
R5601B	FAA, FORT WORTH ARTCC	Fort Sill	FL400	SURFACE	USA	55
R5601C	FAA, FORT WORTH ARTCC	Fort Sill	FL400	SURFACE	USA	18
R5601D	FAA, FORT WORTH ARTCC	Fort Sill	FL400	00500AGL	USA	36
R5601E	FAA, FORT WORTH ARTCC	Fort Sill	006000AMSL	00500AGL	USA	9
R5801	FAA, WASHINGTON, DC ARTCC	Letterkenny Ordnance Depot	004000AMSL	SURFACE	USA	2
R5802A	FAA, NEW YORK ARTCC	Fort Indiantown Gap	005000AMSL	00200AGL	USA	12
R5802B	FAA, NEW YORK ARTCC	Fort Indiantown Gap	013000AMSL	SURFACE	USA	14
R5802C	FAA, NEW YORK ARTCC	Fort Indiantown Gap	016999AMSL	00500AGL	USA	33
R5802D	FAA, NEW YORK ARTCC	Fort Indiantown Gap	021999AMSL	17000AMSL	USA	33
R5802E	FAA, NEW YORK ARTCC	Fort Indiantown Gap	FL250	FL220	USA	97
R5803	FAA, WASHINGTON, DC ARTCC	Letterkenny Ordnance Depot	004000AMSL	SURFACE	USA	3
R6001A	FAA, JACKSONVILLE ARTCC	Fort Jackson	003200AMSL	SURFACE	USA	38
R6001B	FAA, JACKSONVILLE ARTCC	Fort Jackson	FL230	03200AMSL	USA	40
R6302A	FAA, HOUSTON ARTCC	Fort Hood	FL300	SURFACE	USA	126
R6302B	FAA, HOUSTON ARTCC	Fort Hood	011000AMSL	SURFACE	USA	15
R6302C	FAA, HOUSTON ARTCC	Fort Hood	FL300	SURFACE	USA	40
R6302D	FAA, HOUSTON ARTCC	Fort Hood	FL300	SURFACE	USA	24
R6302E	FAA, HOUSTON ARTCC	Fort Hood	FL450	FL300	USA	121
R6403	FAA, SALT LAKE CITY ARTCC	Tooele Army Depot	009000AMSL	SURFACE	USA	2
R6601	FAA, RICHMOND TWR	Fort A.P. Hill	005000AMSL	SURFACE	USA	40
R6602A	FAA, WASHINGTON, DC ARTCC	Fort Lee	003999AMSL	SURFACE	USA	36
R6602B	FAA, WASHINGTON, DC ARTCC	Fort Lee	010999AMSL	04000AMSL	USA	33
R6602C	FAA, WASHINGTON, DC ARTCC	Fort Lee	018000AMSL	11000AMSL	USA	33
R6714A	FAA, SEATTLE ARTCC	Fort Lewis	028999AMSL	SURFACE	USA	229
R6714B	FAA, SEATTLE ARTCC	Fort Lewis	028999AMSL	SURFACE	USA	25
R6714C	FAA, SEATTLE ARTCC	Fort Lewis	028999AMSL	SURFACE	USA	30
R6714D	FAA, SEATTLE ARTCC	Fort Lewis	028999AMSL	SURFACE	USA	4
R6714E	FAA, SEATTLE ARTCC	Yakima	054999AMSL	29000AMSL	USA	319
R6714F	FAA, SEATTLE ARTCC	Fort Lewis	028999AMSL	SURFACE	USA	14
R6714G	FAA, SEATTLE ARTCC	Fort Lewis	028999AMSL	SURFACE	USA	21
R6714H	FAA, SEATTLE ARTCC	Fort Lewis	005499AMSL	SURFACE	USA	26
R6901A	FAA, MINNEAPOLIS ARTCC	Fort McCoy	FL200	SURFACE	USA	46

* Area calculations were performed using the appropriate Universal Transverse Mercator zones.

Appendix C: Maps and Inventory of Ranges, Range Complexes, Military Training Routes, and Special Use Areas

2011 SUA Name	Controlling Agency	Range Complex/Installation Name	Upper Altitude	Lower Altitude	Military Service	Area (nm2)*
R6901B	FAA, MINNEAPOLIS ARTCC	Fort McCoy	FL200	SURFACE	USA	21
R7001A	FAA, DENVER ARTCC	Camp Guernsey	007999AMSL	SURFACE	USA	46
R7001B	FAA, DENVER ARTCC	Camp Guernsey	023500AMSL	08000AMSL	USA	46
R7001C	FAA, DENVER ARTCC	Camp Guernsey	FL300	23500AMSL	USA	46
RAINIER 1 MOA, WA	FAA, SEATTLE-TACOMA APP CON	Fort Lewis	009000AMSL	02000AMSL	USA	27
RAINIER 2 MOA, WA	FAA, SEATTLE-TACOMA APP CON	Fort Lewis	009000AMSL	02000AMSL	USA	49
RAINIER 3 MOA, WA	FAA, SEATTLE-TACOMA APP CON	Fort Lewis	009000AMSL	02000AMSL	USA	15
RILEY MOA, KS	CO, 24 Infantry Div	Fort Riley	FL180	07000AMSL	USA	325
SILVER MOA NORTH, CA	FAA, LOS ANGELES ARTCC	Fort Irwin	009000AMSL	00200AGL	USA	360
SILVER MOA SOUTH, CA	FAA, LOS ANGELES ARTCC	Fort Irwin	007000AMSL	00200AGL	USA	19
WARRIOR 1 HIGH MOA, LA	FAA, HOUSTON ARTCC	Fort Polk	018000AMSL	10000AMSL	USA	1599
WARRIOR 1 LOW MOA, LA	FAA, HOUSTON ARTCC	Fort Polk	009999AMSL	00100AGL	USA	1599
WARRIOR 2 HIGH MOA, LA	FAA, HOUSTON ARTCC	Fort Polk	018000AMSL	10000AMSL	USA	885
WARRIOR 2 LOW MOA, LA	FAA, HOUSTON ARTCC	Fort Polk	009999AMSL	00100AGL	USA	885
WARRIOR 3 HIGH MOA, LA	FAA, HOUSTON ARTCC	Fort Polk	018000AMSL	10000AMSL	USA	1009
WARRIOR 3 LOW MOA, LA	FAA, HOUSTON ARTCC	Fort Polk	009999AMSL	00100AGL	USA	1009
R2403A	FAA, MEMPHIS ARTCC	Arkansas ARNG	016000AMSL	SURFACE	USA(ARNG)	7
R2403B	FAA, MEMPHIS ARTCC	Arkansas ARNG	016000AMSL	SURFACE	USA(ARNG)	10
R4401A	FAA, HOUSTON ARTCC	Camp Shelby	004000AMSL	SURFACE	USA(ARNG)	87
R4401B	FAA, HOUSTON ARTCC	Camp Shelby	010000AMSL	04000AMSL	USA(ARNG)	87
R4401C	FAA, HOUSTON ARTCC	Camp Shelby	FL180	010000AMSL	USA(ARNG)	87
R4401D	FAA, HOUSTON ARTCC	Camp Shelby	FL230	FL180	USA(ARNG)	87
R4401E	FAA, HOUSTON ARTCC	Camp Shelby	FL290	FL230	USA(ARNG)	87
R5401	FAA, MINNEAPOLIS ARTCC	Camp Grafton	005000AMSL	SURFACE	USA(ARNG)	3
R5502A	FAA, CLEVELAND ARTCC	Camp Perry	05000AMSL	SURFACE	USA(ARNG)	20
R5502B	FAA, CLEVELAND ARTCC	Camp Perry	FL230	SURFACE	USA(ARNG)	40
R6412A	FAA, SALT LAKE CITY TRACON	Camp Williams	009000AMSL	SURFACE	USA(ARNG)	18
R6412B	FAA, SALT LAKE CITY TRACON	Camp Williams	010000AMSL	09000AMSL	USA(ARNG)	18
R6412C	FAA, SALT LAKE CITY TRACON	Camp Williams	009000AMSL	SURFACE	USA(ARNG)	13
R6412D	FAA, SALT LAKE CITY TRACON	Camp Williams	010000AMSL	09000AMSL	USA(ARNG)	13
RACER A MOA, IN	HQ IN ANG Det 1	Camp Atterbury	004000AMSL	00500AGL	USA(ARNG)	130
RACER B MOA, IN	HQ IN ANG, Det 1, CAMP ATTERBURY, IN	Camp Atterbury	008000AMSL	04000AMSL	USA(ARNG)	130
RACER C MOA, IN	HQ IN ANG, Det 1, CAMP ATTERBURY, IN	Camp Atterbury	017999AMSL	014000AMSL	USA(ARNG)	36
(RO)R177	USMC, CAMP SMEDLEY D. BUTLER	Okinawa Range Complex	003000AMSL	SURFACE	USMC	12

* Area calculations were performed using the appropriate Universal Transverse Mercator zones.

2011 SUA Name	Controlling Agency	Range Complex/Installation Name	Upper Altitude	Lower Altitude	Military Service	Area (nm2)*
(R)R201	USMC, COMDR MCB JA, OPS AND TRNG	Okinawa Range Complex	002000AMSL	SURFACE	USMC	18
(R)R202	USMC, COMDR MCB JA, OPS AND TRNG	Okinawa Range Complex	001000AMSL	SURFACE	USMC	17
(R)R203	USMC, COMDR MCB JA, OPS AND TRNG	Okinawa Range Complex	001000AMSL	SURFACE	USMC	1
(R)W178A	USMC, CAMP SMEDLEY D. BUTLER	Okinawa Range Complex	013000AMSL	SURFACE	USMC	287
A530	USMC, CHERRY POINT APP	Cherry Point/Camp Lejeune Range Complex	018000AMSL	SURFACE	USMC	405
ABEL BRAVO MDA, CA	FAA, LOS ANGELES ARTCC	Yuma Range Complex	018000AMSL	07000AMSL	USMC	89
ABEL EAST MDA, CA	FAA, LOS ANGELES ARTCC	Yuma Range Complex	012999AMSL	05000AMSL	USMC	309
ABEL NORTH MDA, CA	FAA, LOS ANGELES ARTCC	Yuma Range Complex	018000AMSL	07000AMSL	USMC	664
ABEL SOUTH MDA, CA	FAA, LOS ANGELES ARTCC	Yuma Range Complex	018000AMSL	07000AMSL	USMC	258
BEAUFORT 1 MDA, SC	FAA, JACKSONVILLE ARTCC	MCAS Beaufort/Townsend Range Complex	010000AMSL	00100AGL	USMC	255
BEAUFORT 2 MDA, SC	FAA, JACKSONVILLE ARTCC	MCAS Beaufort/Townsend Range Complex	007000AMSL	00100AGL	USMC	417
BEAUFORT 3 MDA, SC	FAA, JACKSONVILLE ARTCC	MCAS Beaufort/Townsend Range Complex	002000AMSL	00100AGL	USMC	276
BRISTOL MDA, CA	FAA, LOS ANGELES ARTCC	Twentynine Palms Range Complex	018000AMSL	05000AMSL	USMC	404
CORE MDA, NC	USMC, CHERRY POINT APP CON	Cherry Point/Camp Lejeune Range Complex	FL180	03000AMSL	USMC	129
DEMO 1 MDA, VA	FAA, POTOMAC TRACON	Quantico Range Complex	005000AMSL	00500AMSL	USMC	84
DEMO 2 MDA, VA	FAA, POTOMAC TRACON	Quantico Range Complex	015000AMSL	10000AMSL	USMC	55
DEMO 3 MDA, VA	FAA, POTOMAC TRACON	Quantico Range Complex	015000AMSL	05000AMSL	USMC	84
DOME MDA, AZ	FAA, LOS ANGELES ARTCC	Yuma Range Complex	018000AMSL	06000AMSL	USMC	193
HATTERAS F MDA, NC	FAA, WASHINGTON, DC ARTCC	Cherry Point/Camp Lejeune Range Complex	013000AMSL	03000AMSL	USMC	102
KANE EAST MDA, CA	FAA, LOS ANGELES ARTCC	Yuma Range Complex	018000AMSL	10000AMSL	USMC	469
KANE SOUTH MDA, CA	FAA, LOS ANGELES ARTCC	Yuma Range Complex	018000AMSL	10000AMSL	USMC	72
KANE WEST MDA, CA	FAA, LOS ANGELES ARTCC	Yuma Range Complex	018000AMSL	10000AMSL	USMC	611
QUAIL MDA, AZ	FAA, LOS ANGELES ARTCC	Yuma Range Complex	018000AMSL	10000AMSL	USMC	1057
R2301W	FAA, LOS ANGELES ARTCC	Yuma Range Complex	FL800	SURFACE	USMC	1176
R2501E	FAA, LOS ANGELES ARTCC	Twentynine Palms Range Complex	UNLTD	SURFACE	USMC	237
R2501N	FAA, LOS ANGELES ARTCC	Twentynine Palms Range Complex	UNLTD	SURFACE	USMC	305
R2501S	FAA, LOS ANGELES ARTCC	Twentynine Palms Range Complex	UNLTD	SURFACE	USMC	197
R2501W	FAA, LOS ANGELES ARTCC	Twentynine Palms Range Complex	UNLTD	SURFACE	USMC	76
R2503A	FAA, LOS ANGELES ARTCC	Camp Pendleton Range Complex	002000AMSL	SURFACE	USMC	72
R2503B	FAA, LOS ANGELES ARTCC	Camp Pendleton Range Complex	015000AMSL	SURFACE	USMC	108
R2503C	FAA, LOS ANGELES ARTCC	Camp Pendleton Range Complex	FL270	15000AMSL	USMC	85
R2503D	FAA, SOCIAL TRACON	Camp Pendleton Range Complex	11000AMSL	002000AMSL	USMC	72
R2507E	FAA, LOS ANGELES ARTCC	Yuma Range Complex	FL400	SURFACE	USMC	111
R2507N	FAA, LOS ANGELES ARTCC	Yuma Range Complex	FL400	SURFACE	USMC	214

* Area calculations were performed using the appropriate Universal Transverse Mercator zones.

Appendix C: Maps and Inventory of Ranges, Range Complexes, Military Training Routes, and Special Use Areas

2011 SUA Name	Controlling Agency	Range Complex/ Installation Name	Upper Altitude	Lower Altitude	Military Service	Area (nm2)*
R2507S	FAA, LOS ANGELES ARTCC	Yuma Range Complex	FL400	SURFACE	USMC	243
R5303A	USMC, CHERRY POINT APP	Cherry Point/Camp Lejeune Range Complex	006999AMSL	SURFACE	USMC	25
R5303B	USMC, CHERRY POINT APP	Cherry Point/Camp Lejeune Range Complex	009999AMSL	07000AMSL	USMC	25
R5303C	FAA, WASHINGTON, DC ARTCC	Cherry Point/Camp Lejeune Range Complex	018000AMSL	10000AMSL	USMC	25
R5304A	USMC, CHERRY POINT APP	Cherry Point/Camp Lejeune Range Complex	006999AMSL	SURFACE	USMC	24
R5304B	USMC, CHERRY POINT APP	Cherry Point/Camp Lejeune Range Complex	009999AMSL	07000AMSL	USMC	24
R5304C	FAA, WASHINGTON, DC ARTCC	Cherry Point/Camp Lejeune Range Complex	018000AMSL	10000AMSL	USMC	24
R5306A	USMC, CHERRY POINT APP	Cherry Point/Camp Lejeune Range Complex	018000AMSL	SURFACE	USMC	816
R5306C	USMC, CHERRY POINT APP	Cherry Point/Camp Lejeune Range Complex	018000AMSL	01200AMSL	USMC	164
R5306D	USMC, CHERRY POINT APP	Cherry Point/Camp Lejeune Range Complex	018000AMSL	SURFACE	USMC	98
R5306E	USMC, CHERRY POINT APP	Cherry Point/Camp Lejeune Range Complex	018000AMSL	SURFACE	USMC	4
R6608A	FAA, POTOMAC TRACON	Quantico Range Complex	010000AMSL	SURFACE	USMC	11
R6608B	FAA, POTOMAC TRACON	Quantico Range Complex	010000AMSL	SURFACE	USMC	27
R6608C	FAA, POTOMAC TRACON	Quantico Range Complex	010000AMSL	SURFACE	USMC	17
SUNDANCE MOA, CA	FAA, LOS ANGELES ARTCC	Twentynine Palms Range Complex	010000AMSL	00500AGL	USMC	50
TURTLE MOA, AZ	FAA, LOS ANGELES ARTCC	Yuma Range Complex	018000AMSL	11000AMSL	USMC	1718
W74(A)	FAA, JACKSONVILLE ARTCC	MCAS Beaufort/Townsend Range Complex	010000AMSL	SURFACE	USMC	173
W74(B)	FAA, JACKSONVILLE ARTCC	MCAS Beaufort/Townsend Range Complex	010000AMSL	03000AMSL	USMC	9
(R)JR104	USN, COMAFLOATRAGRUEWESTPAC	Japan Range Complex	020000AMSL	SURFACE	USN	606
(R)JR105	USN, COMAFLOATRAGRUEWESTPAC	Japan Range Complex	UNLTD	SURFACE	USN	671
(R)JR116A	USN, COMAFLOATRAGRUEWESTPAC	Japan Range Complex	UNLTD	SURFACE	USN	558
(R)JR116B	USN, COMAFLOATRAGRUEWESTPAC	Japan Range Complex	012000AMSL	SURFACE	USN	464
(R)JR116C	USN, COMAFLOATRAGRUEWESTPAC	Japan Range Complex	009000AMSL	SURFACE	USN	59
(R)JR121	USN, COMAFLOATRAGRUEWESTPAC	Japan Range Complex	035000AMSL	SURFACE	USN	516
(R)JR599(B) (Octagon B)	COMNAVFORJAPAN	Japan Range Complex	UNLTD	SURFACE	USN	1451
(R)JR599(C) (Octagon A)	COMNAVFORJAPAN	Japan Range Complex	UNLTD	SURFACE	USN	1115
(R)JR599(D) (Octagon A)	COMNAVFORJAPAN	Japan Range Complex	UNLTD	SURFACE	USN	1142
(R)JR599(E) (Octagon A)	COMNAVFORJAPAN	Japan Range Complex	UNLTD	SURFACE	USN	1049
(R)JR599(F) (Octagon A)	COMNAVFORJAPAN	Japan Range Complex	UNLTD	SURFACE	USN	3642
(R)OW173	USN, CFAO KADENA AB	Okinawa Range Complex	UNLTD	SURFACE	USN	6089
(R)OW173D	USN, CFAO KADENA AB	Okinawa Range Complex	UNLTD	SURFACE	USN	1048
(R)OW173E	USN, CFAO KADENA AB	Okinawa Range Complex	UNLTD	SURFACE	USN	2866
(R)OW173F	USN, CFAO KADENA AB	Okinawa Range Complex	UNLTD	SURFACE	USN	2164
(R)OW175	USN, CFAO KADENA AB	Okinawa Range Complex	004000AMSL	SURFACE	USN	0.01

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2011 SUA Name	Controlling Agency	Range Complex/Installation Name	Upper Altitude	Lower Altitude	Military Service	Area (nm2)*
(RO)W181	USN, CFAO KADENA AB	Okinawa Range Complex	004000AMSL	SURFACE	USN	3501
(RO)W183A	USN, CFAO KADENA AB	Okinawa Range Complex	UNLTD	SURFACE	USN	3706
(RO)W184	USN, CFAO KADENA AB	Okinawa Range Complex	UNLTD	SURFACE	USN	6835
(RO)W185	USN, CFAO KADENA AB	Okinawa Range Complex	UNLTD	SURFACE	USN	2769
A292	USN, COMTRAWING SIX	NAS Pensacola	003000AMSL	SURFACE	USN	3440
A632A	USN, CORPUS CHRISTI NAS	NAS Corpus Christi	018000AMSL	06000AMSL	USN	2073
A632B	USN, CORPUS CHRISTI NAS	NAS Corpus Christi	018000AMSL	SURFACE	USN	1329
A632C	USN, CORPUS CHRISTI NAS	NAS Corpus Christi	018000AMSL	SURFACE	USN	513
A632D	USN, CORPUS CHRISTI NAS	NAS Corpus Christi	010999AMSL	06000AMSL	USN	1856
A632E	USN, CORPUS CHRISTI NAS	NAS Corpus Christi	008999AMSL	06000AMSL	USN	901
A632F	USN, CORPUS CHRISTI NAS	NAS Corpus Christi	018000AMSL	03000AGL	USN	412
A680	USN, WHIDBEY NAS APP	Whidbey Island Range Complex	003000AMSL	SURFACE	USN	28
AUSTIN 1 MOA, NV	FAA, SALT LAKE CITY ARTCC	Fallon Range Complex	FL350	00200AGL	USN	2407
AUSTIN 2 MOA, NV	FAA, SALT LAKE CITY ARTCC	Fallon Range Complex	FL350	00200AGL	USN	843
BOARDMAN MOA, OR	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	018000AMSL	04000AMSL	USN	358
BRADY HIGH MOA, TX	FAA, HOUSTON ARTCC	Fort Worth NAS JRB	017999AMSL	06000AMSL	USN	966
BRADY LOW MOA, TX	FAA, HOUSTON ARTCC	Fort Worth NAS JRB	005999AMSL	00500AGL	USN	966
BRADY NORTH MOA, TX	FAA, FORT WORTH ARTCC	Fort Worth NAS JRB	017999AMSL	03600AMSL	USN	156
BROWNWOOD 1 EAST MOA, TX	FAA, FORT WORTH ARTCC	Fort Worth NAS JRB	017999AMSL	07000AMSL	USN	570
BROWNWOOD 1 WEST MOA, TX	FAA, FORT WORTH ARTCC	Fort Worth NAS JRB	017999AMSL	07000AMSL	USN	555
BROWNWOOD 2 EAST MOA, TX	FAA, FORT WORTH ARTCC	Fort Worth NAS JRB	017999AMSL	07000AMSL	USN	457
BROWNWOOD 2 WEST MOA, TX	FAA, FORT WORTH ARTCC	Fort Worth NAS JRB	017999AMSL	07000AMSL	USN	592
BROWNWOOD 3 MOA, TX	FAA, FORT WORTH ARTCC	Fort Worth NAS JRB	017999AMSL	13000AMSL	USN	697
BROWNWOOD 4 MOA, TX	FAA, FORT WORTH ARTCC	Fort Worth NAS JRB	017999AMSL	13000AMSL	USN	321
CARSON MOA, NV	FAA, OAKLAND ARTCC	Fallon Range Complex	018000AMSL	00500AGL	USN	131
CHINOOK A MOA, WA	USN, WHIDBEY IS NAS APP	Whidbey Island Range Complex	005000AMSL	00300AMSL	USN	23
CHINOOK B MOA, WA	USN, WHIDBEY IS NAS APP	Whidbey Island Range Complex	005000AMSL	00300AMSL	USN	33
CHURCHILL HIGH MOA, NV	FAA, OAKLAND ARTCC	Fallon Range Complex	018000AMSL	09000AMSL	USN	63
CHURCHILL LOW MOA, NV	FAA, OAKLAND ARTCC	Fallon Range Complex	009000AMSL	00500AGL	USN	71
D3002	NASSAU, ACC	AUTEC	00500AMSL	SURFACE	USN	94
D3003A	NASSAU, ACC	AUTEC	UNLTD	SURFACE	USN	237
D3003B	NASSAU, ACC	AUTEC	UNLTD	SURFACE	USN	146
D3003C	NASSAU, ACC	AUTEC	UNLTD	SURFACE	USN	143
DOLPHIN NORTH MOA, OR	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	018000AMSL	11000AMSL	USN	5719

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Appendix C: Maps and Inventory of Ranges, Range Complexes, Military Training Routes, and Special Use Areas

2011 SUA Name	Controlling Agency	Range Complex/Installation Name	Upper Altitude	Lower Altitude	Military Service	Area (nm2)*
DOLPHIN SOUTH MOA, OR	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	018000AMSL	11000AMSL	USN	1766
FOOTHILL 1 MOA, CA	FAA, OAKLAND ARTCC	NAS Lemoore	018000AMSL	02000AGL	USN	826
FOOTHILL 2 MOA, CA	FAA, OAKLAND ARTCC	NAS Lemoore	018000AMSL	02000AGL	USN	869
GABBS CENTRAL MOA, NV	FAA, OAKLAND ARTCC	Fallon Range Complex	018000AMSL	00100AGL	USN	921
GABBS NORTH MOA, NV	FAA, OAKLAND ARTCC	Fallon Range Complex	018000AMSL	00100AGL	USN	2695
GABBS SOUTH MOA, NV	FAA, OAKLAND ARTCC	Fallon Range Complex	018000AMSL	00100AGL	USN	286
HUNTER HIGH MOA, CA	FAA, OAKLAND ARTCC	NAS Lemoore	018000AMSL	11000AMSL	USN	997
HUNTER LOW A MOA, CA	FAA, OAKLAND ARTCC	NAS Lemoore	010999AMSL	00200AGL	USN	492
HUNTER LOW B MOA, CA	FAA, OAKLAND ARTCC	NAS Lemoore	010999AMSL	02000AGL	USN	147
HUNTER LOW C MOA, CA	FAA, OAKLAND ARTCC	NAS Lemoore	010999AMSL	03000AGL	USN	82
HUNTER LOW D MOA, CA	FAA, OAKLAND ARTCC	NAS Lemoore	006000AMSL	01500AGL	USN	207
HUNTER LOW E MOA, CA	FAA, OAKLAND ARTCC	NAS Lemoore	003000AMSL	01500AGL	USN	69
KINGSVILLE 1 MOA, TX	FAA, HOUSTON ARTCC	GOMEX Range Complex	017999AMSL	08000AMSL	USN	3324
KINGSVILLE 2 MOA, TX	FAA, HOUSTON ARTCC	GOMEX Range Complex	017999AMSL	13000AMSL	USN	383
KINGSVILLE 3 MOA, TX	FAA, HOUSTON ARTCC	GOMEX Range Complex	017999AMSL	08000AMSL	USN	1840
KINGSVILLE 4 MOA, TX	FAA, HOUSTON ARTCC	GOMEX Range Complex	017999AMSL	09000AMSL	USN	2067
Lemoore MOA A	FAA, OAKLAND ARTCC	NOCAL Range Co mplex	FL180	05000AMSL	USN	321
Lemoore MOA B	FAA, OAKLAND ARTCC	NOCAL Range Co mplex	FL180	13000AMSL	USN	441
Lemoore MOA C	FAA, OAKLAND ARTCC	NOCAL Range Co mplex	FL180	16000AMSL	USN	551
Lemoore MOA D	FAA, OAKLAND ARTCC	NOCAL Range Co mplex	FL180	05000AMSL	USN	367
Lemoore MOA E	FAA, OAKLAND ARTCC	NOCAL Range Co mplex	FL180	05000AMSL	USN	311
MAYPORT HIGH MOA, FL	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	017999AMSL	03000AMSL	USN	68
MAYPORT LOW MOA, FL	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	002999AMSL	00500AMSL	USN	68
MERIDIAN 1 EAST MOA, MS	FAA, MEMPHIS ARTCC	Meridian Complex	017999AMSL	08000AMSL	USN	709
MERIDIAN 1 WEST MOA, MS	FAA, MEMPHIS ARTCC	Meridian Complex	017999AMSL	08000AMSL	USN	3936
OKANOGAN A MOA, WA	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	018000AMSL	09000AMSL	USN	2604
OKANOGAN B MOA, WA	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	008999AMSL	00300AGL	USN	961
OKANOGAN C MOA, WA	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	008999AMSL	00300AGL	USN	741
OLYMPIC A MOA, WA	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	018000AMSL	06000AMSL	USN	921
OLYMPIC B MOA, WA	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	018000AMSL	06000AMSL	USN	698
PALATKA 1 MOA, FL	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	017999AMSL	03000AGL	USN	458
PALATKA 2 MOA, FL	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	017999AMSL	03000AGL	USN	280
PAMLICO A MOA, NC	FAA, WASHINGTON, DC ARTCC	Virginia Capes (VACAPES) Range Complex	018000AMSL	08000AMSL	USN	227
PAMLICO B MOA, NC	FAA, WASHINGTON, DC ARTCC	Virginia Capes (VACAPES) Range Complex	018000AMSL	08000AMSL	USN	855

* Area calculations were performed using the appropriate Universal Transverse Mercator zones.

2011 SUA Name	Controlling Agency	Range Complex/Installation Name	Upper Altitude	Lower Altitude	Military Service	Area (nm2)*
PENSACOLA NORTH MOA, FL	FAA, JACKSONVILLE ARTCC	GOMEX Range Complex	017999AMSL	10000AMSL	USN	1213
PENSACOLA SOUTH MOA, FL	FAA, PENSACOLA TOWER	GOMEX Range Complex	017999AMSL	10000AMSL	USN	1408
PINE HILL EAST MOA, MS	FAA, ATLANTA ARTCC	Meridian Complex	017999AMSL	10000AMSL	USN	1261
PINE HILL WEST MOA, MS	FAA, ATLANTA ARTCC	Meridian Complex	017999AMSL	10000AMSL	USN	1059
R1002	CDR, NS Guantanamo Bay	Guantanamo Complex	050000AMSL	SURFACE	USN	56
R2505	FAA, HI-DESERT TRACON, EDWARDS AFB	China Lake Range Complex	UNLTD	SURFACE	USN	779
R2506	FAA, HI-DESERT TRACON, EDWARDS AFB	China Lake Range Complex	006000AMSL	SURFACE	USN	48
R2510A	FAA, LOS ANGELES ARTCC	El Centro Range Complex	015000AMSL	SURFACE	USN	181
R2510B	FAA, LOS ANGELES ARTCC	El Centro Range Complex	FL400	15000AMSL	USN	124
R2512	FAA, LOS ANGELES ARTCC	El Centro Range Complex	FL230	SURFACE	USN	75
R2519	FAA, LOS ANGELES ARTCC	Pt. Mugu Range Complex	UNLTD	SURFACE	USN	21
R2524	FAA, HI-DESERT TRACON, EDWARDS AFB	China Lake Range Complex	UNLTD	SURFACE	USN	707
R2535A	FAA, LOS ANGELES ARTCC	Pt. Mugu Range Complex	10000AMSL	SURFACE	USN	63
R2535B	FAA, LOS ANGELES ARTCC	Pt. Mugu Range Complex	10000AMSL	SURFACE	USN	37
R2906	FAA, JACKSONVILLE TRACON	Jacksonville Range Complex	014000AMSL	SURFACE	USN	75
R2907A	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	FL230	SURFACE	USN	89
R2907B	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	009000AMSL	SURFACE	USN	52
R2908	FAA, PENSACOLA TRACON	Jacksonville Range Complex	012000AMSL	SURFACE	USN	52
R2910	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	FL230	SURFACE	USN	78
R2910(A)	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	009000AMSL	SURFACE	USN	13
R2910(B)	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	009000AMSL	SURFACE	USN	26
R2910(C)	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	006000AMSL	SURFACE	USN	57
R3101	FAA, HONOLULU CERAP	Hawaiian Islands Range Complex	UNLTD	SURFACE	USN	52
R3107	FAA, HONOLULU CERAP	Hawaiian Islands Range Complex	FL180	SURFACE	USN	28
R3404	FAA, HULMAN TWR, TERRE HAUTE	Naval Ammunitions Depot, Crane	004100AMSL	SURFACE	USN	3
R3405	FAA, HULMAN TWR, TERRE HAUTE	Naval Ammunitions Depot, Crane	001600AMSL	SURFACE	USN	3
R4002	FAA, WASHINGTON, DC ARTCC	Patuxent River Complex	FL200	SURFACE	USN	40
R4005A	FAA, WASHINGTON, DC ARTCC	Patuxent River Complex	024999AMSL	SURFACE	USN	95
R4005B	FAA, WASHINGTON, DC ARTCC	Patuxent River Complex	024999AMSL	SURFACE	USN	112
R4005C	FAA, WASHINGTON, DC ARTCC	Patuxent River Complex	024999AMSL	SURFACE	USN	45
R4005D	FAA, WASHINGTON, DC ARTCC	Patuxent River Complex	024999AMSL	SURFACE	USN	64
R4006	FAA, WASHINGTON, DC ARTCC	Patuxent River Complex	024999AMSL	03500AMSL	USN	1458
R4007	FAA, WASHINGTON, DC ARTCC	Patuxent River Complex	004999AMSL	SURFACE	USN	163
R4008	FAA, WASHINGTON, DC ARTCC	Patuxent River Complex	FL850	FL250	USN	1300

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2011 SUA Name	Controlling Agency	Range Complex/Installation Name	Upper Altitude	Lower Altitude	Military Service	Area (nm2)*
R4009	FAA, WASHINGTON, DC ARTCC	FAA, WASHINGTON, DC ARTCC	012500AMSL	05000AMSL	USN	28
R4404A	FAA, MEMPHIS ARTCC	Meridian Complex	011500AMSL	SURFACE	USN	4
R4404B	FAA, MEMPHIS ARTCC	Meridian Complex	011500AMSL	01200AGL	USN	78
R4404C	FAA, MEMPHIS ARTCC	Meridian Complex	014500AMSL	11500AMSL	USN	78
R4803	FAA, OAKLAND ARTCC	Fallon Range Complex	018000AMSL	SURFACE	USN	28
R4804A	FAA, OAKLAND ARTCC	Fallon Range Complex	018000AMSL	SURFACE	USN	88
R4804B	FAA, OAKLAND ARTCC	Fallon Range Complex	FL350	FL180	USN	88
R4810	FAA, OAKLAND ARTCC	Fallon Range Complex	017000AMSL	SURFACE	USN	87
R4812	FAA, OAKLAND ARTCC	Fallon Range Complex	018000AMSL	SURFACE	USN	107
R4813A	FAA, OAKLAND ARTCC	Fallon Range Complex	018000AMSL	SURFACE	USN	417
R4813B	FAA, OAKLAND ARTCC	Fallon Range Complex	FL350	FL180	USN	417
R4816N	FAA, OAKLAND ARTCC	Fallon Range Complex	018000AMSL	01500AGL	USN	406
R4816S	FAA, OAKLAND ARTCC	Fallon Range Complex	018000AMSL	00500AGL	USN	331
R5113	FAA, ALBUQUERQUE ARTCC	Office of Naval Research, Atmospheric Sciences	FL450	SURFACE	USN	19
R5301	FAA, WASHINGTON ARTCC	Virginia Capes (VACAPES) Range Complex	014000AMSL	SURFACE	USN	6
R5302A	FAA, WASHINGTON, DC ARTCC	Virginia Capes (VACAPES) Range Complex	014000AMSL	SURFACE	USN	11
R5302B	FAA, WASHINGTON, DC ARTCC	Virginia Capes (VACAPES) Range Complex	014000AMSL	00100AGL	USN	67
R5302C	FAA, WASHINGTON, DC ARTCC	Virginia Capes (VACAPES) Range Complex	003000AMSL	00100AGL	USN	11
R5313A	FAA, WASHINGTON, DC ARTCC	Virginia Capes (VACAPES) Range Complex	018000AMSL	SURFACE	USN	21
R5313B	FAA, WASHINGTON, DC ARTCC	Virginia Capes (VACAPES) Range Complex	013000AMSL	00100AGL	USN	78
R5313C	FAA, WASHINGTON, DC ARTCC	Virginia Capes (VACAPES) Range Complex	013000AMSL	00100AGL	USN	22
R5313D	FAA, WASHINGTON, DC ARTCC	Virginia Capes (VACAPES) Range Complex	013000AMSL	00500AGL	USN	61
R5701(A)	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	FL200	SURFACE	USN	78
R5701(B)	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	010000AMSL	SURFACE	USN	11
R5701(C)	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	006000AMSL	SURFACE	USN	31
R5701(D)	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	010000AMSL	SURFACE	USN	21
R5701(E)	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	006000AMSL	SURFACE	USN	64
R5706	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	010000AMSL	03500AMSL	USN	107
R6312(A)	FAA, HOUSTON ARTCC	GOMEX Range Complex	023000AMSL	01000AGL	USN	7
R6312(B)	FAA, HOUSTON ARTCC	GOMEX Range Complex	023000AMSL	SURFACE	USN	67
R6312(C)	FAA, HOUSTON ARTCC	GOMEX Range Complex	023000AMSL	SURFACE	USN	79
R6606	FAA, WASHINGTON, DC ARTCC	Virginia Capes (VACAPES) Range Complex	FL510	SURFACE	USN	33
R6609	FAA, WASHINGTON, DC ARTCC	Patuxent River Complex	FL200	SURFACE	USN	125
R6611A	FAA, WASHINGTON, DC ARTCC	NSWC Dahlgren	FL400	SURFACE	USN	22

* Area calculations were performed using the appropriate Universal Transverse Mercator zones.

2011 SUA Name	Controlling Agency	Range Complex/Installation Name	Upper Altitude	Lower Altitude	Military Service	Area (nm2)*
R6611B	FAA, WASHINGTON, DC ARTCC	NSWC Dahlgren	FL600	FL400	USN	22
R6612	FAA, WASHINGTON, DC ARTCC	NSWC Dahlgren	007000AMSL	SURFACE	USN	6
R6613A	FAA, WASHINGTON, DC ARTCC	NSWC Dahlgren	FL400	SURFACE	USN	18
R6613B	FAA, WASHINGTON, DC ARTCC	NSWC Dahlgren	FL600	FL400	USN	18
R6701	USN, WHIDBEY ISLAND NAS APP	Whidbey Island Range Complex	005000AMSL	SURFACE	USN	21
R6703A	FAA, SEATTLE-TACOMA APP	Whidbey Island Range Complex	014000AMSL	SURFACE	USN	14
R6703B	FAA, SEATTLE-TACOMA APP	Whidbey Island Range Complex	005000AMSL	SURFACE	USN	4
R6703C	FAA, SEATTLE-TACOMA APP	Whidbey Island Range Complex	014000AMSL	SURFACE	USN	20
R6703D	FAA, SEATTLE-TACOMA APP	Whidbey Island Range Complex	005000AMSL	SURFACE	USN	5
R7201	FAA, GUAM CENTER/RAPCON	Marianas Range Complex	FL600	SURFACE	USN	28
RANCH HIGH MOA, NV	FAA, OAKLAND ARTCC	Fallon Range Complex	013000AMSL	09000AMSL	USN	98
RANCH MOA, NV	FAA, OAKLAND ARTCC	Fallon Range Complex	009000AMSL	00500AMSL	USN	315
RENO MOA, NV	FAA, OAKLAND ARTCC	Fallon Range Complex	018000AMSL	13000AMSL	USN	1016
ROBERTS MOA, CA	FAA, OAKLAND ARTCC	Whidbey Island Range Complex	014999AMSL	00500AGL	USN	87
ROOSEVELT A MOA, WA	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	018000AMSL	09000AMSL	USN	3149
ROOSEVELT B MOA, WA	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	008999AMSL	00300AGL	USN	2191
STUMPY POINT MOA, NC	FAA, WASHINGTON, DC ARTCC	Virginia Capes (VACAPES) Range Complex	007999AMSL	SURFACE	USN	123
TORTUGAS MOA, FL	FAA, MIAMI ARTCC	Key West Range Complex	017999AMSL	05000AMSL	USN	1116
W1001	CDR, NS Guantanamo Bay	Guantanamo Complex	045000AMSL	SURFACE	USN	13118
W105A	FAA, BOSTON ARTCC	Narragansett Bay Range Complex	FL500	SURFACE	USN	10326
W105B	FAA, BOSTON ARTCC	Narragansett Bay Range Complex	FL180	SURFACE	USN	1318
W106A	FAA, BOSTON ARTCC	Narragansett Bay Range Complex	003000AMSL	SURFACE	USN	358
W106B	FAA, BOSTON ARTCC	Narragansett Bay Range Complex	008000AMSL	SURFACE	USN	506
W106C	FAA, BOSTON ARTCC	Narragansett Bay Range Complex	010000AMSL	SURFACE	USN	227
W106D	FACSFAC, Virginia Capes (VACAPES), OCEANA NAS	Narragansett Bay Range Complex	005999AMSL	SURFACE	USN	270
W107A	FAA, WASHINGTON, DC ARTCC	Atlantic City Range Complex	UNLTD	SURFACE	USN	4810
W107B	FAA, WASHINGTON, DC ARTCC	Atlantic City Range Complex	001999AMSL	SURFACE	USN	226
W107C	FAA, WASHINGTON, DC ARTCC	Atlantic City Range Complex	017999AMSL	SURFACE	USN	550
W110	USN, FACSFAC, Virginia Capes (VACAPES)	Virginia Capes (VACAPES) Range Complex	FL230	SURFACE	USN	1858
W122(1)	FAA, WASHINGTON, DC ARTCC	Cherry Point Range Complex	UNLTD	SURFACE	USN	883
W122(10)	FAA, WASHINGTON, DC ARTCC	Cherry Point Range Complex	UNLTD	SURFACE	USN	657
W122(11)	FAA, WASHINGTON, DC ARTCC	Cherry Point Range Complex	UNLTD	SURFACE	USN	838
W122(12)	FAA, WASHINGTON, DC ARTCC	Cherry Point Range Complex	UNLTD	SURFACE	USN	776

* Area calculations were performed using the appropriate Universal Transverse Mercator zones.

Appendix C: Maps and Inventory of Ranges, Range Complexes, Military Training Routes, and Special Use Areas

2011 SUA Name	Controlling Agency	Range Complex/Installation Name	Upper Altitude	Lower Altitude	Military Service	Area (nm2)*
W122(13)	FAA, WASHINGTON, DC ARTCC	Cherry Point Range Complex	UNLTD	SURFACE	USN	1090
W122(14)	FAA, WASHINGTON, DC ARTCC	Cherry Point Range Complex	UNLTD	SURFACE	USN	1087
W122(15A)	FAA, WASHINGTON, DC ARTCC	Cherry Point Range Complex	UNLTD	SURFACE	USN	953
W122(15B)	FAA, WASHINGTON, DC ARTCC	Cherry Point Range Complex	UNLTD	SURFACE	USN	41
W122(16)	FAA, WASHINGTON, DC ARTCC	Cherry Point Range Complex	UNLTD	SURFACE	USN	979
W122(17)	FAA, WASHINGTON, DC ARTCC	Cherry Point Range Complex	UNLTD	SURFACE	USN	741
W122(18)	FAA, WASHINGTON, DC ARTCC	Cherry Point Range Complex	UNLTD	SURFACE	USN	820
W122(19)	FAA, WASHINGTON, DC ARTCC	Cherry Point Range Complex	UNLTD	SURFACE	USN	890
W122(2)	FAA, WASHINGTON, DC ARTCC	Cherry Point Range Complex	UNLTD	SURFACE	USN	1062
W122(20)	FAA, WASHINGTON, DC ARTCC	Cherry Point Range Complex	UNLTD	SURFACE	USN	789
W122(21)	FAA, WASHINGTON, DC ARTCC	Cherry Point Range Complex	UNLTD	SURFACE	USN	1029
W122(22)	FAA, WASHINGTON, DC ARTCC	Cherry Point Range Complex	UNLTD	SURFACE	USN	614
W122(23)	FAA, WASHINGTON, DC ARTCC	Cherry Point Range Complex	UNLTD	SURFACE	USN	443
W122(3)	FAA, WASHINGTON, DC ARTCC	Cherry Point Range Complex	UNLTD	SURFACE	USN	931
W122(4)	FAA, WASHINGTON, DC ARTCC	Cherry Point Range Complex	UNLTD	SURFACE	USN	688
W122(5)	FAA, WASHINGTON, DC ARTCC	Cherry Point Range Complex	UNLTD	SURFACE	USN	644
W122(6)	FAA, WASHINGTON, DC ARTCC	Cherry Point Range Complex	UNLTD	SURFACE	USN	797
W122(7)	FAA, WASHINGTON, DC ARTCC	Cherry Point Range Complex	UNLTD	SURFACE	USN	798
W122(8)	FAA, WASHINGTON, DC ARTCC	Cherry Point Range Complex	UNLTD	SURFACE	USN	505
W122(9)	FAA, WASHINGTON, DC ARTCC	Cherry Point Range Complex	UNLTD	SURFACE	USN	665
W132A	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	UNLTD	SURFACE	USN	1007
W132B	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	FL240	SURFACE	USN	364
W133	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	004500AMSL	SURFACE	USN	1744
W134	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	UNLTD	04500AMSL	USN	1744
W155A	FAA, JACKSONVILLE ARTCC	GOMEX Range Complex	FL600	SURFACE	USN	2241
W155B	FAA, JACKSONVILLE ARTCC	GOMEX Range Complex	FL600	SURFACE	USN	2674
W155C	FAA, JACKSONVILLE ARTCC	GOMEX Range Complex	FL600	SURFACE	USN	525
W157A	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	FL430	SURFACE	USN	8104
W157B	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	FL240	SURFACE	USN	2311
W157C	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	005000AMSL	SURFACE	USN	10400
W158A	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	FL430	SURFACE	USN	5797
W158B	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	FL240	SURFACE	USN	2800
W158C	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	UNLTD	FL430	USN	22011
W158E	FAA, JACKSONVILLE NAS TRACON	Jacksonville Range Complex	001200AMSL	SURFACE	USN	545

* Area calculations were performed using the appropriate Universal Transverse Mercator zones.

2011 SUA Name	Controlling Agency	Range Complex/Installation Name	Upper Altitude	Lower Altitude	Military Service	Area (nm2)*
W158F	FAA, JACKSONVILLE NAS TRACON	Jacksonville Range Complex	001700AMSL	01200AMSL	USN	172
W159A	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	FL430	SURFACE	USN	1963
W159B	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	FL240	SURFACE	USN	1039
W174A	FAA, MIAMI ARTCC	Key West Range Complex	FL700	SURFACE	USN	3343
W174B(A)	FAA, MIAMI ARTCC	Key West Range Complex	FL700	SURFACE	USN	10203
W174B(B)	FAA, MIAMI ARTCC	Key West Range Complex	005500AMSL	SURFACE	USN	211
W174C(A)	FAA, MIAMI ARTCC	Key West Range Complex	FL700	SURFACE	USN	1001
W174C(B)	FAA, MIAMI ARTCC	Key West Range Complex	005500AMSL	SURFACE	USN	397
W174D	FAA, MIAMI ARTCC	Key West Range Complex	FL700	SURFACE	USN	2795
W174D(A)	FAA, MIAMI ARTCC	Key West Range Complex	FL700	05500AMSL	USN	431
W174E	FAA, MIAMI ARTCC	Key West Range Complex	010000AMSL	SURFACE	USN	281
W174F	FAA, MIAMI ARTCC	Key West Range Complex	FL700	SURFACE	USN	807
W174G	FAA, MIAMI ARTCC	Key West Range Complex	FL700	SURFACE	USN	457
W186	FAA, HONOLULU CERAP	Hawaiian Islands Range Complex	009000AMSL	SURFACE	USN	755
W187	FAA, HONOLULU CERAP	Hawaiian Islands Range Complex	FL180	SURFACE	USN	78
W188	FAA, HONOLULU CERAP	Hawaiian Islands Range Complex	UNLTD	SURFACE	USN	35535
W189	FAA, HONOLULU CERAP	Hawaiian Islands Range Complex	UNLTD	SURFACE	USN	8003
W190	FAA, HONOLULU CERAP	Hawaiian Islands Range Complex	UNLTD	SURFACE	USN	1613
W191	FAA, HONOLULU CERAP	Hawaiian Islands Range Complex	003000AMSL	SURFACE	USN	292
W192	FAA, HONOLULU CERAP	Hawaiian Islands Range Complex	UNLTD	SURFACE	USN	3469
W193	FAA, HONOLULU CERAP	Hawaiian Islands Range Complex	UNLTD	SURFACE	USN	4558
W194	FAA, HONOLULU CERAP	Hawaiian Islands Range Complex	UNLTD	SURFACE	USN	4071
W196	FAA, HONOLULU TWR	Hawaiian Islands Range Complex	002000AMSL	SURFACE	USN	91
W228A	FAA, HOUSTON ARTCC	GOMEX Range Complex	FL450	SURFACE	USN	1319
W228B	FAA, HOUSTON ARTCC	GOMEX Range Complex	FL450	SURFACE	USN	1124
W228C	FAA, HOUSTON ARTCC	GOMEX Range Complex	FL450	SURFACE	USN	3604
W228D	FAA, HOUSTON ARTCC	GOMEX Range Complex	FL450	SURFACE	USN	1937
W237A(HI)	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	FL500	FL230	USN	2039
W237A(LO)	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	FL230	SURFACE	USN	2039
W237B(HI)	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	FL500	FL230	USN	1520
W237B(LO)	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	FL230	SURFACE	USN	1520
W237C	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	UNLTD	SURFACE	USN	1542
W237D	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	UNLTD	SURFACE	USN	1631
W237E	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	FL270	SURFACE	USN	1823

* Area calculations were performed using the appropriate Universal Transverse Mercator zones.

Appendix C: Maps and Inventory of Ranges, Range Complexes, Military Training Routes, and Special Use Areas

2011 SUA Name	Controlling Agency	Range Complex/Installation Name	Upper Altitude	Lower Altitude	Military Service	Area (nm2)*
W237F	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	UNLTD	SURFACE	USN	3904
W237G	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	UNLTD	SURFACE	USN	2327
W237H	FAA, OAKLAND ARTCC	Whidbey Island Range Complex	FL270	SURFACE	USN	5902
W237J	FAA, OAKLAND ARTCC	Whidbey Island Range Complex	FL270	SURFACE	USN	4301
W260	FAA, OAKLAND ARTCC	Northern California Range Complex	FL600	SURFACE	USN	5681
W283	FAA, OAKLAND ARTCC	Northern California Range Complex	FL600	SURFACE	USN	5912
W285A	FAA, OAKLAND ARTCC	Northern California Range Complex	FL450	SURFACE	USN	1838
W285B	FAA, OAKLAND ARTCC	Northern California Range Complex	FL450	08000AMSL	USN	745
W289N	FAA, LOS ANGELES ARTCC	Pt. Mugu Range Complex	FL240	SURFACE	USN	108
W289S	FAA, LOS ANGELES ARTCC	Pt. Mugu Range Complex	UNLTD	SURFACE	USN	2773
W289E	FAA, LOS ANGELES ARTCC	Pt. Mugu Range Complex	UNLTD	SURFACE	USN	91
W289W	FAA, LOS ANGELES ARTCC	Pt. Mugu Range Complex	UNLTD	SURFACE	USN	348
W291	FAA, LOS ANGELES ARTCC	SOCAL Range Complex	FL800	SURFACE	USN	112821
W292E	FAA, LOS ANGELES ARTCC	Pt. Mugu Range Complex	UNLTD	SURFACE	USN	550
W292W	FAA, LOS ANGELES ARTCC	Pt. Mugu Range Complex	UNLTD	SURFACE	USN	330
W386	FAA, WASHINGTON, DC ARTCC	Virginia Capes (VACAPES) Range Complex	UNLTD	SURFACE	USN	9614
W386(A)	FAA, WASHINGTON, DC ARTCC	Virginia Capes (VACAPES) Range Complex	FL230	SURFACE	USN	151
W387A	USN, FACSFCAC Virginia Capes (VACAPES)	Virginia Capes (VACAPES) Range Complex	023999AMSL	SURFACE	USN	2296
W387B	USN, FACSFCAC Virginia Capes (VACAPES)	Virginia Capes (VACAPES) Range Complex	UNLTD	FL240	USN	2296
W412	FAA, LOS ANGELES ARTCC	Pt. Mugu Range Complex	003000AMSL	SURFACE	USN	376
W465A	FAA, MIAMI ARTCC	Key West Range Complex	FL700	SURFACE	USN	1474
W465B	FAA, MIAMI ARTCC	Key West Range Complex	FL700	SURFACE	USN	1452
W465C	FAA, MIAMI ARTCC	Key West Range Complex	FL700	FL210	USN	844
W50A	FAA, WASHINGTON, DC ARTCC	Virginia Capes (VACAPES) Range Complex	FL750	SURFACE	USN	27
W50B	FAA, WASHINGTON, DC ARTCC	Virginia Capes (VACAPES) Range Complex	FL750	SURFACE	USN	63
W50C	FAA, WASHINGTON, DC ARTCC	Virginia Capes (VACAPES) Range Complex	FL750	SURFACE	USN	33
W513	FAA, OAKLAND ARTCC	San Francisco Range Complex	FL600	SURFACE	USN	574
W517	FAA, GUAM CERAP	Marianas Range Complex	UNLTD	SURFACE	USN	8698
W532N	FAA, LOS ANGELES ARTCC	Pt. Mugu Range Complex	UNLTD	SURFACE	USN	4054
W532S	FAA, LOS ANGELES ARTCC	Pt. Mugu Range Complex	UNLTD	SURFACE	USN	1428
W532E	FAA, LOS ANGELES ARTCC	Pt. Mugu Range Complex	UNLTD	SURFACE	USN	3977
W537	FAA, LOS ANGELES ARTCC	Pt. Mugu Range Complex	UNLTD	SURFACE	USN	3079
W54A	FAA, HOUSTON ARTCC	New Orleans NAS JRB	FL400	SURFACE	USN	1321
W54B	FAA, HOUSTON ARTCC	New Orleans NAS JRB	FL240	SURFACE	USN	367

* Area calculations were performed using the appropriate Universal Transverse Mercator zones.

2011 SUA Name	Controlling Agency	Range Complex/ Installation Name	Upper Altitude	Lower Altitude	Military Service	Area (nm2)*
W54C	FAA, HOUSTON ARTCC	New Orleans NAS JRB	FL400	FL240	USN	367
W570	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	FL500	SURFACE	USN	4485
W59A	FAA, HOUSTON ARTCC	New Orleans NAS JRB	FL500	05000AMSL	USN	2527
W59B	FAA, HOUSTON ARTCC	New Orleans NAS JRB	027999AMSL	05000AMSL	USN	3400
W59C	FAA, HOUSTON ARTCC	New Orleans NAS JRB	FL500	FL280	USN	3400
W602	FAA, HOUSTON ARTCC	GOMEX Range Complex	FL250	SURFACE	USN	10451
W72(13A)	FAA, WASHINGTON, DC ARTCC	Virginia Capes (VACAPES) Range Complex	001999AMSL	SURFACE	USN	318
W72(13B)	FAA, WASHINGTON, DC ARTCC	Virginia Capes (VACAPES) Range Complex	UNLTD	FL600	USN	318
W72(1A)	FAA, WASHINGTON, DC ARTCC	Virginia Capes (VACAPES) Range Complex	UNLTD	SURFACE	USN	482
W72(1B)	FAA, WASHINGTON, DC ARTCC	Virginia Capes (VACAPES) Range Complex	UNLTD	SURFACE	USN	647
W72(1C)	FAA, WASHINGTON, DC ARTCC	Virginia Capes (VACAPES) Range Complex	UNLTD	SURFACE	USN	733
W72(1D)	FAA, WASHINGTON, DC ARTCC	Virginia Capes (VACAPES) Range Complex	UNLTD	SURFACE	USN	795
W72(1E)	FAA, WASHINGTON, DC ARTCC	Virginia Capes (VACAPES) Range Complex	UNLTD	SURFACE	USN	801
W72(1F)	FAA, WASHINGTON, DC ARTCC	Virginia Capes (VACAPES) Range Complex	UNLTD	SURFACE	USN	889
W72(20A)	FAA, WASHINGTON, DC ARTCC	Virginia Capes (VACAPES) Range Complex	001999AMSL	SURFACE	USN	313
W72(20B)	FAA, WASHINGTON, DC ARTCC	Virginia Capes (VACAPES) Range Complex	UNLTD	FL600	USN	313
W72(2A)	FAA, WASHINGTON, DC ARTCC	Virginia Capes (VACAPES) Range Complex	UNLTD	SURFACE	USN	513
W72(2B)	FAA, WASHINGTON, DC ARTCC	Virginia Capes (VACAPES) Range Complex	UNLTD	SURFACE	USN	694
W72(2C)	FAA, WASHINGTON, DC ARTCC	Virginia Capes (VACAPES) Range Complex	UNLTD	SURFACE	USN	790
W72(2D)	FAA, WASHINGTON, DC ARTCC	Virginia Capes (VACAPES) Range Complex	UNLTD	SURFACE	USN	861
W72(2E)	FAA, WASHINGTON, DC ARTCC	Virginia Capes (VACAPES) Range Complex	UNLTD	SURFACE	USN	871
W72(2F)	FAA, WASHINGTON, DC ARTCC	Virginia Capes (VACAPES) Range Complex	UNLTD	SURFACE	USN	972
W72(3A)	FAA, WASHINGTON, DC ARTCC	Virginia Capes (VACAPES) Range Complex	UNLTD	SURFACE	USN	569
W72(3B)	FAA, WASHINGTON, DC ARTCC	Virginia Capes (VACAPES) Range Complex	UNLTD	SURFACE	USN	895
W72(3C)	FAA, WASHINGTON, DC ARTCC	Virginia Capes (VACAPES) Range Complex	UNLTD	SURFACE	USN	1118
W72(3D)	FAA, WASHINGTON, DC ARTCC	Virginia Capes (VACAPES) Range Complex	UNLTD	SURFACE	USN	1274
W72(3E)	FAA, WASHINGTON, DC ARTCC	Virginia Capes (VACAPES) Range Complex	UNLTD	SURFACE	USN	1107
W92	FAA, HOUSTON ARTCC	GOMEX Range Complex	FL400	SURFACE	USN	2607
(RO)W173	USAF, CFAO KADENA AB	Okinawa Range Complex	UNLTD	SURFACE	USAF	6077
(RO)W182	USAF, CFAO KADENA AB	Okinawa Range Complex	004000AMSL	SURFACE	USAF	78
A220	USAF, MCGUIRE AFB RAPCON	McGuire AFB	004500AMSL	SURFACE	USAF	457
A231	FAA, ALBUQUERQUE ARTCC	Luke AFB	006500AMSL	00500AGL	USAF	516
A260	USAF ACADEMY	USAF Academy	017500AMSL	SURFACE	USAF	31
A440	USAF, 14 FTW COLUMBUS AFB	Columbus AFB	006500AMSL	SURFACE	USAF	217

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Appendix C: Maps and Inventory of Ranges, Range Complexes, Military Training Routes, and Special Use Areas

2011 SUA Name	Controlling Agency	Range Complex/Installation Name	Upper Altitude	Lower Altitude	Military Service	Area (nm2)*
A481	USAF, NELLIS AFB	Nellis AFB	017000AMSL	07000AMSL	USAF	252
A561	USAF, SHEPPARD AFB	Sheppard AFB	004000AMSL	SURFACE	USAF	145
A562A	USAF, VANCE AFB	Vance AFB	010000AMSL	SURFACE	USAF	119
A562B	USAF, VANCE AFB	Vance AFB	010000AMSL	SURFACE	USAF	156
A633A	USAF, LAUGHLIN AFB	Laughlin AFB	007000AMSL	SURFACE	USAF	548
A633B	USAF, LAUGHLIN AFB	Laughlin AFB	004000AMSL	SURFACE	USAF	153
A635	USAF, RANDOLPH AFB	Randolph AFB	004000AMSL	01500AMSL	USAF	139
A636	USAF, SHEPPARD AFB	Sheppard AFB	004000AMSL	SURFACE	USAF	529
A638	USAF, RANDOLPH AFB	Randolph AFB	003000AMSL	SURFACE	USAF	129
A639A	USAF, USAF ACADEMY	USAF Academy	012000AMSL	03000AGL	USAF	730
A639B	USAF, USAF ACADEMY	USAF Academy	012000AMSL	03000AGL	USAF	136
A640	USAF, RANDOLPH AFB	Randolph AFB	007500AMSL	00200AGL	USAF	2493
A682(A)	USAF, TRAVIS AFB	Travis AFB	006000AMSL	SURFACE	USAF	206
A682(B)	USAF, TRAVIS AFB	Travis AFB	003000AMSL	SURFACE	USAF	116
ADA EAST MOA, KS	FAA, KANSAS CITY ARTCC	Vance AFB	018000AMSL	07000AMSL	USAF	1124
ADA WEST MOA, KS	FAA, KANSAS CITY ARTCC	Vance AFB	018000AMSL	07000AMSL	USAF	1065
ANNE HIGH MOA, AR	FAA, FORT WORTH ARTCC	Barksdale AFB	018000AMSL	07000AMSL	USAF	683
ANNE LOW MOA, AR	FAA, FORT WORTH ARTCC	Barksdale AFB	006999AMSL	00100AGL	USAF	683
AVON EAST HIGH MOA, FL	FAA, MIAMI ARTCC	MacDill AFB	013999AMSL	00500AGL	USAF	38
BAGDAD 1 MOA, AZ	FAA, ALBUQUERQUE ARTCC	Luke AFB	018000AMSL	07000AMSL	USAF	1067
BAKERSFIELD MOA, CA	FAA, LOS ANGELES ARTCC	Edwards AFB	018000AMSL	02000AGL	USAF	301
BARSTOW MOA, CA	FAA, HI-DESERT TRACON, EDWARDS, CA	Edwards AFB	018000AMSL	00200AGL	USAF	162
BASINGER MOA, FL	FAA, MIAMI ARTCC	MacDill AFB	005000AMSL	00500AGL	USAF	42
BEAK A MOA, NM	FAA, ALBUQUERQUE ARTCC	Holloman AFB	018000AMSL	12500AMSL	USAF	690
BEAK B MOA, NM	FAA, ALBUQUERQUE ARTCC	Holloman AFB	018000AMSL	12500AMSL	USAF	606
BEAK C MOA, NM	FAA, ALBUQUERQUE ARTCC	Holloman AFB	018000AMSL	12500AMSL	USAF	636
BIRCH MOA, AK	FAA, ANCHORAGE ARTCC	Eielson AFB	005000AMSL	00500AGL	USAF	424
BISHOP MOA, CA	FAA, LOS ANGELES ARTCC	Edwards AFB	018000AMSL	00200AGL	USAF	128
BRONCO 1 MOA, TX	FAA, FORT WORTH ARTCC	Cannon AFB	018000AMSL	08000AMSL	USAF	1041
BRONCO 2 MOA, TX	FAA, FORT WORTH ARTCC	Cannon AFB	018000AMSL	10000AMSL	USAF	609
BRONCO 3 MOA, TX	FAA, FORT WORTH ARTCC	Cannon AFB	018000AMSL	10000AMSL	USAF	1739
BRONCO 4 MOA, TX	FAA, FORT WORTH ARTCC	Cannon AFB	018000AMSL	10000AMSL	USAF	1764
BUCKHORN MOA, CA	FAA, LOS ANGELES ARTCC	Edwards AFB	018000AMSL	00200AGL	USAF	58
BUFFALO MOA, AK	FAA, ANCHORAGE ARTCC	Eielson AFB	006999AMSL	00300AGL	USAF	1648

* Area calculations were performed using the appropriate Universal Transverse Mercator zones.

2011 SUA Name	Controlling Agency	Range Complex/Installation Name	Upper Altitude	Lower Altitude	Military Service	Area (nm2)*
BULLDOG A MOA, GA	FAA, ATLANTA ARTCC	Shaw AFB	009999AMS	00500AGL	USAF	1052
BULLDOG B MOA, GA	FAA, ATLANTA ARTCC	Shaw AFB	018000AMS	10000AMS	USAF	1677
BULLDOG D MOA, GA	FAA, ATLANTA ARTCC	Shaw AFB	017000AMS	00500AGL	USAF	79
CATO MOA, NM	FAA, ALBUQUERQUE ARTCC	Kirtland AFB	018000AMS	13500AMS	USAF	2655
CHINA MOA, CA	FAA, OAKLAND ARTCC	Beale AFB	018000AMS	03000AGL	USAF	625
CLAIBORNE A MOA, LA	USA, POLK APP CON	Claiborne	009999AMS	00100AGL	USAF	80
CLAIBORNE B MOA, LA	USA, POLK APP CON	Claiborne	018000AMS	10000AMS	USAF	80
COLUMBUS 1 MOA, MS	FAA, MEMPHIS ARTCC	Columbus AFB	018000AMS	08000AMS	USAF	2707
COLUMBUS 2 MOA, MS	FAA, MEMPHIS ARTCC	Columbus AFB	018000AMS	08000AMS	USAF	643
COLUMBUS 3 MOA, MS	FAA, MEMPHIS ARTCC	Columbus AFB	018000AMS	08000AMS	USAF	2664
COLUMBUS 4 MOA, MS	FAA, MEMPHIS ARTCC	Columbus AFB	018000AMS	10000AMS	USAF	1376
CRYSTAL MOA, TX	FAA, HOUSTON ARTCC	Laughlin AFB	018000AMS	06000AMS	USAF	1377
CRYSTAL NORTH MOA, TX	FAA, HOUSTON ARTCC	Laughlin AFB	018000AMS	06000AMS	USAF	410
DESERT MOA, NV	FAA, LOS ANGELES ARTCC	Nellis AFB	018000AMS	00100AGL	USAF	5543
DEVILS LAKE EAST MOA, ND	FAA, MINNEAPOLIS ARTCC	McChord AFB	018000AMS	03500AMS	USAF	1773
DEVILS LAKE WEST MOA, ND	FAA, MINNEAPOLIS ARTCC	McChord AFB	018000AMS	04000AMS	USAF	1739
EGLIN A EAST MOA, FL	FAA, JACKSONVILLE ARTCC	Eglin AFB	018000AMS	01000AGL	USAF	98
EGLIN A WEST MOA, FL	FAA, JACKSONVILLE ARTCC	Eglin AFB	018000AMS	01000AGL	USAF	90
EGLIN B MOA, FL	FAA, JACKSONVILLE ARTCC	Eglin AFB	018000AMS	01000AGL	USAF	222
EGLIN C MOA, FL	FAA, JACKSONVILLE ARTCC	Eglin AFB	018000AMS	01000AGL	USAF	144
EGLIN D MOA, FL	FAA, JACKSONVILLE ARTCC	Eglin AFB	003000AMS	01000AGL	USAF	133
EGLIN E MOA, FL	FAA, JACKSONVILLE ARTCC	Eglin AFB	018000AMS	SURFACE	USAF	1143
EGLIN F MOA, FL	FAA, JACKSONVILLE ARTCC	Eglin AFB	018000AMS	SURFACE	USAF	5
EIELSON MOA, AK	FAA, ANCHORAGE ARTCC	Eielson AFB	018000AMS	00100AGL	USAF	720
EVERS MOA, WV	FAA, WASHINGTON, DC ARTCC	Langley AFB	018000AMS	01000AGL	USAF	479
FARMVILLE MOA, VA	FAA, WASHINGTON, DC ARTCC	Langley AFB	005000AMS	00300AGL	USAF	1188
FOX 1 MOA, AK	FAA, ANCHORAGE ARTCC	Eielson AFB	018000AMS	05000AGL	USAF	1132
FOX 2 MOA, AK	FAA, ANCHORAGE ARTCC	Eielson AFB	018000AMS	07000AMS	USAF	94
FOX 3 MOA, AK	FAA, ANCHORAGE ARTCC	Eielson AFB	018000AMS	05000AMS	USAF	3705
FUZZY MOA, AZ	FAA, ALBUQUERQUE ARTCC	Barry M. Goldwater Range (BMGR)	009999AMS	00100AGL	USAF	444
GALENA MOA, AK	FAA, ANCHORAGE ARTCC	Elmendorf AFB	018000AMS	01000AMS	USAF	3910
GAMECOCK A MOA, NC	FAA, WASHINGTON, DC ARTCC	Shaw AFB (20 OSS/OSOS)	018000AMS	07000AMS	USAF	555
GAMECOCK B MOA, SC	FAA, JACKSONVILLE ARTCC	Shaw AFB	018000AMS	10000AMS	USAF	248
GAMECOCK C MOA, SC	FAA, JACKSONVILLE ARTCC	Shaw AFB	010000AMS	00100AGL	USAF	623

* Area calculations were performed using the appropriate Universal Transverse Mercator zones.

Appendix C: Maps and Inventory of Ranges, Range Complexes, Military Training Routes, and Special Use Areas

2011 SUA Name	Controlling Agency	Range Complex/Installation Name	Upper Altitude	Lower Altitude	Military Service	Area (nm2)*
GAMECOCK D MOA, SC	FAA, JACKSONVILLE ARTCC	Shaw AFB	018000AMSL	10000AMSL	USAF	839
GAMECOCK I MOA, SC	FAA, JACKSONVILLE ARTCC	Shaw AFB	006000AMSL	00100AGL	USAF	405
GANDY MOA, UT	FAA, SALT LAKE CITY ARTCC	Hill AFB	018000AMSL	00100AGL	USAF	832
GLADDEN 1 MOA, AZ	FAA, ALBUQUERQUE ARTCC	Luke AFB	018000AMSL	05000AGL	USAF	1872
HACKETT MOA, LA	FAA, FORT WORTH ARTCC	Barksdale AFB	018000AMSL	07000AMSL	USAF	1235
HOG HIGH NORTH MOA, AR	FAA, MEMPHIS ARTCC	Fort Smith	018000AMSL	06000AMSL	USAF	685
HOG HIGH SOUTH MOA, AR	FAA, MEMPHIS ARTCC	Fort Smith	018000AMSL	06000AMSL	USAF	1295
HOG LOW NORTH MOA, AR	FAA, MEMPHIS ARTCC	Fort Smith	005999AMSL	00100AGL	USAF	685
HOG LOW SOUTH MOA, AR	FAA, MEMPHIS ARTCC	Fort Smith	005999AMSL	00100AGL	USAF	817
HOLLIS MOA, OK	FAA, FORT WORTH ARTCC	Sheppard AFB	018000AMSL	11000AMSL	USAF	1204
ISABELLA MOA, CA	FAA, HI-DESERT TRACON, EDWARDS AFB	Edwards AFB	018000AMSL	00200AGL	USAF	2684
JARBIDGE MOA, ID	FAA, SALT LAKE CITY ARTCC	Mt. Home AFB	018000AMSL	00100AGL	USAF	1836
JENA 1 MOA, LA	FAA, HOUSTON ARTCC	Barksdale AFB	005000AMSL	00100AGL	USAF	1075
LAKE PLACID MOA EAST, FL	FAA, MIAMI ARTCC	MacDill AFB	FL180	07000AMSL	USAF	517
LAKE PLACID MOA NORTH, FL	FAA, MIAMI ARTCC	MacDill AFB	FL180	07000AMSL	USAF	270
LAKE PLACID MOA WEST, FL	FAA, MIAMI ARTCC	MacDill AFB	FL180	07000AMSL	USAF	236
LANCER MOA, TX	FAA, FORT WORTH ARTCC	Dyess AFB	018000AMSL	06200AMSL	USAF	3225
LAUGHLIN 1 MOA, TX	FAA, HOUSTON ARTCC	Laughlin AFB	018000AMSL	09000AMSL	USAF	4972
LAUGHLIN 2 MOA, TX	FAA, HOUSTON ARTCC	Laughlin AFB	018000AMSL	07000AMSL	USAF	2279
LAUGHLIN 3 HIGH MOA, TX	FAA, HOUSTON ARTCC	Laughlin AFB	FL180	15000AMSL	USAF	420
LAUGHLIN 3 LOW MOA, TX	FAA, HOUSTON ARTCC	Laughlin AFB	014999AMSL	07000AMSL	USAF	420
LIVE OAK MOA, FL	FAA, JACKSONVILLE ARTCC	Moody AFB	018000AMSL	08000AMSL	USAF	1208
LUCIN A MOA, UT	FAA, SALT LAKE CITY ARTCC	Hill AFB	009000AMSL	00100AGL	USAF	1532
LUCIN B MOA, UT	FAA, SALT LAKE CITY ARTCC	Hill AFB	007500AMSL	00100AGL	USAF	992
LUCIN C MOA, UT	FAA, SALT LAKE CITY ARTCC	Hill AFB	006500AMSL	00100AGL	USAF	120
MARIAN MOA, FL	FAA, MIAMI ARTCC	MacDill AFB	005000AMSL	00500AGL	USAF	204
MAXWELL 1 MOA, CA	FAA, OAKLAND ARTCC	Beale AFB	018000AMSL	11000AMSL	USAF	877
MAXWELL 2 MOA, CA	FAA, OAKLAND ARTCC	Beale AFB	018000AMSL	11000AMSL	USAF	926
MAXWELL 3 MOA, CA	FAA, OAKLAND ARTCC	Beale AFB	018000AMSL	11000AMSL	USAF	926
MOODY 1 MOA, GA	FAA, JACKSONVILLE ARTCC	Moody AFB	018000AMSL	08000AMSL	USAF	4714
MOODY 2 NORTH MOA, GA	FAA, JACKSONVILLE ARTCC	Moody AFB	007999AMSL	00500AGL	USAF	318
MOODY 2 SOUTH MOA, GA	FAA, JACKSONVILLE ARTCC	Moody AFB	007999AMSL	00100AGL	USAF	405
MOODY 3 MOA, GA	FAA, JACKSONVILLE ARTCC	Moody AFB	018000AMSL	08000AMSL	USAF	1258
MT DORA EAST HIGH MOA, NM	FAA, ALBUQUERQUE ARTCC	Canon AFB	018000AMSL	11000AMSL	USAF	1163

* Area calculations were performed using the appropriate Universal Transverse Mercator zones.

2011 SUA Name	Controlling Agency	Range Complex/Installation Name	Upper Altitude	Lower Altitude	Military Service	Area (nm2)*
MT DORA EAST LOW MOA, NM	FAA, ALBUQUERQUE ARTCC	Cannon AFB	010999AMSL	01500AGL	USAF	1163
MT DORA NORTH HIGH MOA, NM	FAA, ALBUQUERQUE ARTCC	Cannon AFB	018000AMSL	11000AMSL	USAF	1264
MT DORA NORTH LOW MOA, NM	FAA, ALBUQUERQUE ARTCC	Cannon AFB	010999AMSL	01500AGL	USAF	1264
MT DORA WEST HIGH MOA, NM	FAA, ALBUQUERQUE ARTCC	Cannon AFB	018000AMSL	11000AMSL	USAF	1607
MT DORA WEST LOW MOA, NM	FAA, ALBUQUERQUE ARTCC	Cannon AFB	010999AMSL	01500AGL	USAF	1607
NAKNEK 1 MOA, AK	FAA, ANCHORAGE ARTCC	Elmendorf AFB	018000AMSL	03000AGL	USAF	3894
NAKNEK 2 MOA, AK	FAA, ANCHORAGE ARTCC	Elmendorf AFB	018000AMSL	03000AGL	USAF	2758
ONTONAGON MOA, MI	FAA, MINNEAPOLIS ARTCC	Oftutt AFB	018000AMSL	00500AGL	USAF	863
OWENS MOA, CA	FAA, HI-DESERT TRACON, EDWARDS AFB	Edwards AFB	018000AMSL	00200AGL	USAF	2014
OWYHEE MOA, ID	FAA, SALT LAKE CITY ARTCC	Mt. Home AFB	018000AMSL	00100AGL	USAF	1988
PANAMINT MOA, CA	FAA, HI-DESERT TRACON, EDWARDS AFB	Edwards AFB	018000AMSL	03001AGL	USAF	2051
PARADISE EAST MOA, NV	FAA, SALT LAKE CITY ARTCC	Mt. Home AFB	018000AMSL	14500AMSL	USAF	1608
PARADISE WEST MOA, OR	FAA, SALT LAKE CITY ARTCC	Mt. Home AFB	018000AMSL	14500AMSL	USAF	1840
PECOS NORTH HIGH MOA, NM	FAA, ALBUQUERQUE ARTCC	Cannon AFB	018000AMSL	11000AMSL	USAF	1241
PECOS NORTH LOW MOA, NM	FAA, ALBUQUERQUE ARTCC	Cannon AFB	010999AMSL	00500AGL	USAF	1039
PHELPS A MOA, NC	FAA, WASHINGTON, DC ARTCC	Seymour-Johnson AFB	018000AMSL	06000AMSL	USAF	211
PHELPS B MOA, NC	FAA, WASHINGTON, DC ARTCC	Seymour-Johnson AFB	018000AMSL	10000AMSL	USAF	77
PHELPS C MOA, NC	FAA, WASHINGTON, DC ARTCC	Seymour-Johnson AFB	018000AMSL	15000AMSL	USAF	44
POINSETT MOA, SC	USAF, SHAW APP CON	Shaw AFB	002500AMSL	00300AGL	USAF	145
PORTERVILLE MOA, CA	FAA, LOS ANGELES ARTCC	Edwards AFB	018000AMSL	02000AGL	USAF	465
POWDER RIVER A MOA, MT	FAA, SALT LAKE CITY ARTCC	Edwards AFB	018000AMSL	SURFACE	USAF	3047
POWDER RIVER B MOA, WY	FAA, DENVER ARTCC	Edwards AFB	018000AMSL	01000AGL	USAF	1385
R2206	FAA, ANCHORAGE ARTCC	13th Missile Wing	008800AMSL	SURFACE	USAF	10
R2211	FAA, ANCHORAGE ARTCC	Eielson AFB	FL310	SURFACE	USAF	134
R2301E	FAA, ALBUQUERQUE ARTCC	Luke AFB	FL800	SURFACE	USAF	1552
R2304	FAA, ALBUQUERQUE ARTCC	Luke AFB	FL240	SURFACE	USAF	345
R2305	FAA, ALBUQUERQUE ARTCC	Luke AFB	FL240	SURFACE	USAF	187
R2309	FAA, LOS ANGELES ARTCC	Yuma Proving Ground	015000AMSL	SURFACE	USAF	7
R2312	LIBBY AAF TWR	McChord AFB	014999AMSL	SURFACE	USAF	9
R2508	FAA, HI-DESERT TRACON, EDWARDS AFB	R-2508 Complex	UNLTD	FL200	USAF	12127
R2515	FAA, HI-DESERT TRACON, EDWARDS AFB	Edwards AFB	UNLTD	SURFACE	USAF	1368
R2516	FAA, LOS ANGELES ARTCC	Vandenberg AFB	UNLTD	SURFACE	USAF	134
R2517	FAA, LOS ANGELES ARTCC	Vandenberg AFB	UNLTD	SURFACE	USAF	95
R2534A	FAA, LOS ANGELES ARTCC	Vandenberg AFB	UNLTD	00500AGL	USAF	52

* Area calculations were performed using the appropriate Universal Transverse Mercator zones.

Appendix C: Maps and Inventory of Ranges, Range Complexes, Military Training Routes, and Special Use Areas

2011 SUA Name	Controlling Agency	Range Complex/Installation Name	Upper Altitude	Lower Altitude	Military Service	Area (nm2)*
R2534B	FAA, LOS ANGELES ARTCC	Vandenberg AFB	UNLTD	00500AGL	USAF	54
R2602	FAA, DENVER ARTCC	Colorado Springs Training Site	SURFACE	01000AGL	USAF	1
R2901A	FAA, MIAMI ARTCC	Avon Park	014000AMSL	SURFACE	USAF	166
R2901B	FAA, MIAMI ARTCC	Avon Park	FL180	14000AMSL	USAF	145
R2901C	FAA, MIAMI ARTCC	Avon Park	014000AMSL	SURFACE	USAF	25
R2901D	FAA, MIAMI ARTCC	Avon Park	004000AMSL	00500AMSL	USAF	28
R2901E	FAA, MIAMI ARTCC	Avon Park	004000AMSL	01000AMSL	USAF	90
R2901F	FAA, MIAMI ARTCC	Avon Park	005000AMSL	04000AMSL	USAF	15
R2901G	FAA, MIAMI ARTCC	Avon Park	005000AMSL	SURFACE	USAF	27
R2901H	FAA, MIAMI ARTCC	Avon Park	004000AMSL	01000AMSL	USAF	32
R2901I	FAA, MIAMI ARTCC	Avon Park	004000AMSL	01500AMSL	USAF	31
R2905A	TYNDALL AFB RADAR APP	Tyndall AFB	010000AMSL	SURFACE	USAF	15
R2905B	TYNDALL AFB RADAR APP	Tyndall AFB	010000AMSL	SURFACE	USAF	25
R2914A	FAA, JACKSONVILLE ARTCC	Eglin AFB	UNLTD	SURFACE	USAF	387
R2914B	FAA, JACKSONVILLE ARTCC	Eglin AFB	UNLTD	08500AMSL	USAF	71
R2915A	FAA, JACKSONVILLE ARTCC	Eglin AFB	UNLTD	SURFACE	USAF	208
R2915B	FAA, JACKSONVILLE ARTCC	Eglin AFB	UNLTD	SURFACE	USAF	46
R2915C	FAA, JACKSONVILLE ARTCC	Eglin AFB	UNLTD	08500AMSL	USAF	34
R2916	FAA, MIAMI ARTCC	Tyndall AFB	014000AMSL	SURFACE	USAF	9
R2917	USAF, EGLIN AFB APP	Eglin AFB	022999AMSL	SURFACE	USAF	20
R2918	FAA, JACKSONVILLE ARTCC	Eglin AFB	UNLTD	SURFACE	USAF	16
R2919A	FAA, JACKSONVILLE ARTCC	Eglin AFB	UNLTD	SURFACE	USAF	48
R2919B	FAA, JACKSONVILLE ARTCC	Eglin AFB	UNLTD	08500AMSL	USAF	84
R2932	FAA, MIAMI ARTCC	Cape Canaveral Range Complex	004999AMSL	SURFACE	USAF	115
R2933	FAA, MIAMI ARTCC	Cape Canaveral Range Complex	UNLTD	05000AMSL	USAF	115
R2934	FAA, MIAMI ARTCC	Cape Canaveral Range Complex	UNLTD	SURFACE	USAF	169
R2935	FAA, MIAMI ARTCC	Cape Canaveral Range Complex	UNLTD	11000AMSL	USAF	404
R3008A	USAF, VALDOSTA APP	Moody AFB	010000AMSL	SURFACE	USAF	6
R3008B	USAF, VALDOSTA APP	Moody AFB	010000AMSL	00100AGL	USAF	20
R3008C	USAF, VALDOSTA APP	Moody AFB	010000AMSL	00500AGL	USAF	67
R3008C(A)	USAF, VALDOSTA APP	Moody AFB	001500AGL	SURFACE	USAF	3
R3008D	USAF, VALDOSTA APP	Moody AFB	022999AMSL	10000AMSL	USAF	93
R3202(H)	FAA, SALT LAKE CITY ARTCC	Mountain Home AFB	FL290	FL180	USAF	226
R3202(L)	FAA, SALT LAKE CITY ARTCC	Mountain Home AFB	018000AMSL	SURFACE	USAF	226

* Area calculations were performed using the appropriate Universal Transverse Mercator zones.

2011 SUA Name	Controlling Agency	Range Complex/Installation Name	Upper Altitude	Lower Altitude	Military Service	Area (nm2)*
R3204A	FAA, SALT LAKE CITY ARTCC	Mountain Home AFB	000100AGL	SURFACE	USAF	14
R3204B	FAA, SALT LAKE CITY ARTCC	Mountain Home AFB	018000AMSL	00100AGL	USAF	78
R3204C	FAA, SALT LAKE CITY ARTCC	Mountain Home AFB	FL290	FL180	USAF	78
R3801A	FAA, HOUSTON ARTCC	Barksdale AFB	010000AMSL	SURFACE	USAF	101
R3801B	FAA, HOUSTON ARTCC	Barksdale AFB	FL180	10000AMSL	USAF	101
R3801C	FAA, HOUSTON ARTCC	Barksdale AFB	FL230	FL180	USAF	101
R4105A	FAA, CAPE APP	Barnes ANGB	009999AMSL	SURFACE	USAF	28
R4105B	FAA, CAPE APP	Barnes ANGB	018000AMSL	10000AMSL	USAF	28
R4305	FAA, MINNEAPOLIS ARTCC	Offutt AFB	FL450	SURFACE	USAF	1242
R4806E	FAA, LOS ANGELES ARTCC	Nellis AFB	UNLTD	00100AGL	USAF	291
R4806W	FAA, LOS ANGELES ARTCC	Nellis AFB	UNLTD	SURFACE	USAF	1179
R4807A	FAA, LOS ANGELES ARTCC	Nellis AFB	UNLTD	SURFACE	USAF	1698
R4807B	FAA, LOS ANGELES ARTCC	Nellis AFB	UNLTD	SURFACE	USAF	100
R5104A	FAA, ALBUQUERQUE ARTCC	Cannon AFB	018000AMSL	SURFACE	USAF	209
R5104B	FAA, ALBUQUERQUE ARTCC	Cannon AFB	023000AMSL	18000AMSL	USAF	209
R5105	FAA, ALBUQUERQUE ARTCC	Cannon AFB	010000AMSL	SURFACE	USAF	139
R5115	FAA, ALBUQUERQUE ARTCC	McChord AFB	015000AMSL	SURFACE	USAF	10
R5314A	FAA, WASHINGTON, DC ARTCC	Virginia Capes (VACAPES) Range Complex	FL205	SURFACE	USAF	24
R5314B	FAA, WASHINGTON, DC ARTCC	Virginia Capes (VACAPES) Range Complex	FL205	00500AGL	USAF	65
R5314C	FAA, WASHINGTON, DC ARTCC	Virginia Capes (VACAPES) Range Complex	FL205	00500AGL	USAF	18
R5314D	FAA, WASHINGTON, DC ARTCC	Virginia Capes (VACAPES) Range Complex	FL205	SURFACE	USAF	30
R5314E	FAA, WASHINGTON, DC ARTCC	Virginia Capes (VACAPES) Range Complex	FL205	SURFACE	USAF	60
R5314F	FAA, WASHINGTON, DC ARTCC	Virginia Capes (VACAPES) Range Complex	FL205	00500AGL	USAF	25
R5314H	FAA, WASHINGTON, DC ARTCC	Virginia Capes (VACAPES) Range Complex	010000AMSL	00500AGL	USAF	77
R5314J	FAA, WASHINGTON, DC ARTCC	Virginia Capes (VACAPES) Range Complex	006000AMSL	01000AGL	USAF	211
R6002A	FAA, JACKSONVILLE ARTCC	Shaw AFB	012999AMSL	SURFACE	USAF	54
R6002B	FAA, JACKSONVILLE ARTCC	Shaw AFB	018000AMSL	13000AMSL	USAF	54
R6002C	FAA, JACKSONVILLE ARTCC	Shaw AFB	FL230	FL180	USAF	54
R6316	FAA, HOUSTON ARTCC	McChord AFB	015000AMSL	SURFACE	USAF	21
R6317	FAA, HOUSTON ARTCC	McChord AFB	015000AMSL	SURFACE	USAF	21
R6318	FAA, ALBUQUERQUE ARTCC	McChord AFB	014000AMSL	SURFACE	USAF	9
R6402A	FAA, SALT LAKE CITY ARTCC	Hill AFB	FL580	SURFACE	USAF	987
R6402B	FAA, SALT LAKE CITY ARTCC	Hill AFB	FL580	00100AGL	USAF	35
R6404A	FAA, SALT LAKE CITY ARTCC	Hill AFB	FL580	SURFACE	USAF	1120

* Area calculations were performed using the appropriate Universal Transverse Mercator zones.

Appendix C: Maps and Inventory of Ranges, Range Complexes, Military Training Routes, and Special Use Areas

2011 SUA Name	Controlling Agency	Range Complex/Installation Name	Upper Altitude	Lower Altitude	Military Service	Area (nm2)*
R6404B	FAA, SALT LAKE CITY ARTCC	Hill AFB	013000AMSL	SURFACE	USAF	202
R6404C	FAA, SALT LAKE CITY ARTCC	Hill AFB	FL280	00100AGL	USAF	168
R6404D	FAA, SALT LAKE CITY ARTCC	Hill AFB	FL250	13000AMSL	USAF	202
R6405	FAA, SALT LAKE CITY ARTCC	Hill AFB	FL580	00100AGL	USAF	1946
R6406A	FAA, SALT LAKE CITY ARTCC	Hill AFB	FL580	SURFACE	USAF	851
R6406B	FAA, SALT LAKE CITY ARTCC	Hill AFB	FL580	00100AGL	USAF	47
R6407	FAA, SALT LAKE CITY ARTCC	Hill AFB	FL580	SURFACE	USAF	652
R6413	FAA, DENVER ARTCC	White Sands Missile Range	UNLTD	SURFACE	USAF	204
RANDOLPH 1A MOA, TX	FAA, HOUSTON ARTCC	Randolph AFB	018000AMSL	08000AMSL	USAF	1418
RANDOLPH 1B MOA, TX	FAA, SAN ANTONIO TRACON	Randolph AFB	018000AMSL	07000AMSL	USAF	754
RANDOLPH 2A MOA, TX	FAA, HOUSTON ARTCC	Randolph AFB	018000AMSL	09000AMSL	USAF	1443
RANDOLPH 2B MOA, TX	FAA, HOUSTON ARTCC	Randolph AFB	018000AMSL	14000AMSL	USAF	316
REVELLE NORTH MOA, NV	FAA, SALT LAKE CITY ARTCC	Nellis AFB	018000AMSL	00100AGL	USAF	1245
REVELLE SOUTH MOA, NV	FAA, SALT LAKE CITY ARTCC	Nellis AFB	018000AMSL	00100AGL	USAF	439
ROSE HILL MOA, AL	FAA, JACKSONVILLE ARTCC	Eglin AFB	018000AMSL	08000AMSL	USAF	649
SALINE MOA, CA	FAA, HI-DESERT TRACON, EDWARDS AFB	Edwards AFB	018000AMSL	00200AGL	USAF	1690
SELLS 1 MOA, AZ	FAA, ALBUQUERQUE ARTCC	Luke AFB	018000AMSL	10000AMSL	USAF	3665
SELLS LOW MOA, AZ	FAA, ALBUQUERQUE ARTCC	Luke AFB	009999AMSL	03000AGL	USAF	3133
SEVIER A MOA, UT	FAA, SALT LAKE CITY ARTCC	Hill AFB	014500AMSL	00100AGL	USAF	1011
SEVIER B MOA, UT	FAA, SALT LAKE CITY ARTCC	Hill AFB	009500AMSL	00100AGL	USAF	2200
SEVIER C MOA, NV	FAA, SALT LAKE CITY ARTCC	Hill AFB	018000AMSL	14500AMSL	USAF	1011
SEVIER D MOA, UT	FAA, SALT LAKE CITY ARTCC	Hill AFB	018000AMSL	09500AMSL	USAF	2200
SEYMOUR JOHNSON ECHO MOA, NC	FAA, WASHINGTON, DC ARTCC	Seymour-Johnson AFB	018000AMSL	07000AMSL	USAF	1036
SHEPPARD 1 MOA, TX	FAA, FORT WORTH ARTCC	Sheppard AFB	018000AMSL	08000AMSL	USAF	1033
SHEPPARD 2 MOA, TX	FAA, FORT WORTH ARTCC	Sheppard AFB	018000AMSL	08000AMSL	USAF	1264
SHIRLEY A MOA, AR	FAA, MEMPHIS ARTCC	Fort Smith	018000AMSL	11000AMSL	USAF	1600
SHIRLEY B MOA, AR	FAA, MEMPHIS ARTCC	Fort Smith	018000AMSL	11000AMSL	USAF	1546
SHIRLEY C MOA, AR	FAA, MEMPHIS ARTCC	Fort Smith	018000AMSL	11000AMSL	USAF	658
SHOSHONE MOA, CA	FAA, LOS ANGELES ARTCC	R-2508 Complex	018000AMSL	03001AGL	USAF	1170
STONY A MOA, AK	FAA, ANCHORAGE ARTCC	Elmendorf AFB	018000AMSL	00100AGL	USAF	4068
STONY B MOA, AK	FAA, ANCHORAGE ARTCC	Elmendorf AFB	018000AMSL	02000AGL	USAF	2393
SUNNY MOA, AZ	FAA, DENVER ARTCC	Luke AFB	018000AMSL	12000AMSL	USAF	2330
SUSITNA MOA, AK	FAA, ANCHORAGE ARTCC	Elmendorf AFB	018000AMSL	10000AMSL	USAF	2474
TAIBAN MOA, NM	FAA, ALBUQUERQUE ARTCC	Cannon AFB	010999AMSL	00500AGL	USAF	235

* Area calculations were performed using the appropriate Universal Transverse Mercator zones.

2011 SUA Name	Controlling Agency	Range Complex/Installation Name	Upper Altitude	Lower Altitude	Military Service	Area (nm2)*
TALON EAST HIGH MOA, NM	FAA, ALBUQUERQUE ARTCC	Holloman AFB	018000AMSL	12500AMSL	USAF	661
TALON LOW MOA, NM	FAA, ALBUQUERQUE ARTCC	Holloman AFB	012499AMSL	00300AGL	USAF	1027
TALON WEST HIGH MOA, NM	FAA, ALBUQUERQUE ARTCC	Holloman AFB	018000AMSL	12500AMSL	USAF	972
TEXON MOA, TX	FAA, HOUSTON ARTCC	Randolph AFB	018000AMSL	06000AMSL	USAF	1156
TIGER NORTH MOA, ND	FAA, MINNEAPOLIS ARTCC	McChord AFB	018000AMSL	00300AGL	USAF	2225
TIGER SOUTH MOA, ND	FAA, MINNEAPOLIS ARTCC	McChord AFB	018000AMSL	06000AMSL	USAF	1715
TOMBSTONE A MOA, AZ	FAA, ALBUQUERQUE ARTCC	David-Monthan AFB	014499AMSL	00500AGL	USAF	520
TOMBSTONE B MOA, AZ	FAA, ALBUQUERQUE ARTCC	David-Monthan AFB	014499AMSL	00500AGL	USAF	1299
TOMBSTONE C MOA, AZ	FAA, ALBUQUERQUE ARTCC	David-Monthan AFB	018000AMSL	14500AMSL	USAF	3002
TRUMAN A MOA, MO	FAA, KANSAS CITY ARTCC	Whiteman AFB	018000AMSL	08000AMSL	USAF	1107
TRUMAN B MOA, MO	FAA, KANSAS CITY ARTCC	Whiteman AFB	018000AMSL	08000AMSL	USAF	731
TRUMAN C MOA, MO	FAA, KANSAS CITY ARTCC	Whiteman AFB	018000AMSL	00500AGL	USAF	608
TYNDALL B MOA, FL	USAF, TYNDALL RADAR APP CON	Tyndall AFB	018000AMSL	09000AMSL	USAF	347
TYNDALL C MOA, FL	USAF, TYNDALL RADAR APP CON	Tyndall AFB	006000AMSL	00300AGL	USAF	559
TYNDALL D MOA, FL	USAF, TYNDALL RADAR APP CON	Tyndall AFB	006000AMSL	00300AGL	USAF	311
TYNDALL E MOA, FL	USAF, TYNDALL RADAR APP CON	Tyndall AFB	018000AMSL	00300AGL	USAF	893
TYNDALL F MOA, FL	USAF, TYNDALL RADAR APP CON	Tyndall AFB	018000AMSL	00300AGL	USAF	297
TYNDALL G MOA, FL	USAF, TYNDALL RADAR APP CON	Tyndall AFB	018000AMSL	01000AGL	USAF	224
TYNDALL H MOA, FL	USAF, TYNDALL RADAR APP CON	Tyndall AFB	018000AMSL	09000AMSL	USAF	559
VALENTINE MOA, TX	FAA, ALBUQUERQUE ARTCC	Holloman AFB	018000AMSL	15000AMSL	USAF	2462
VANCE 1A MOA, OK	FAA, KANSAS CITY ARTCC	Vance AFB	018000AMSL	10000AMSL	USAF	2038
VANCE 1B MOA, OK	FAA, KANSAS CITY ARTCC	Vance AFB	018000AMSL	07000AMSL	USAF	2236
VIPER A MOA, AK	FAA, FAIRBANKS TWR	Eielson AFB	010000AMSL	00500AGL	USAF	105
VIPER B MOA, AK	FAA, ANCHORAGE ARTCC	Eielson AFB	018000AMSL	10000AMSL	USAF	105
W102H	FAA, BOSTON ARTCC	Boston Range Complex	FL600	17001AMSL	USAF	3443
W102L	FAA, BOSTON ARTCC	Boston Range Complex	017000AMSL	SURFACE	USAF	3443
W103	FAA, BOSTON ARTCC	Boston Range Complex	002000AMSL	SURFACE	USAF	1479
W104A	FAA, BOSTON ARTCC	Boston Range Complex	010000AMSL	SURFACE	USAF	315
W104B	FAA, BOSTON ARTCC	Boston Range Complex	018000AMSL	SURFACE	USAF	1508
W104C	FAA, BOSTON ARTCC	Boston Range Complex	UNLTD	FL180	USAF	1508
W147A	FAA, HOUSTON ARTCC	Ellington Field	022999AMSL	05000AMSL	USAF	4484
W147B	FAA, HOUSTON ARTCC	Ellington Field	FL500	FL230	USAF	4484
W147D	FAA, HOUSTON ARTCC	Ellington Field	FL500	SURFACE	USAF	5469
W147E	FAA, HOUSTON ARTCC	Ellington Field	FL500	FL260	USAF	1923

* Area calculations were performed using the appropriate Universal Transverse Mercator zones.

Appendix C: Maps and Inventory of Ranges, Range Complexes, Military Training Routes, and Special Use Areas

2011 SUA Name	Controlling Agency	Range Complex/Installation Name	Upper Altitude	Lower Altitude	Military Service	Area (nm2)*
W151A	FAA, JACKSONVILLE ARTCC	Eglin AFB	UNLTD	SURFACE	USAF	2555
W151B	FAA, JACKSONVILLE ARTCC	Eglin AFB	UNLTD	SURFACE	USAF	2521
W151C	FAA, JACKSONVILLE ARTCC	Eglin AFB	UNLTD	SURFACE	USAF	1728
W151D	FAA, JACKSONVILLE ARTCC	Eglin AFB	UNLTD	SURFACE	USAF	2113
W151E	FAA, JACKSONVILLE ARTCC	Eglin AFB	UNLTD	SURFACE	USAF	531
W151F	FAA, JACKSONVILLE ARTCC	Eglin AFB	UNLTD	SURFACE	USAF	810
W161A	FAA, JACKSONVILLE ARTCC	Shaw AFB	FL620	SURFACE	USAF	1265
W161B	FAA, JACKSONVILLE ARTCC	Shaw AFB	FL240	SURFACE	USAF	562
W168	FAA, MIAMI ARTCC	MacDill AFB	UNLTD	SURFACE	USAF	7264
W177A(A)	FAA, JACKSONVILLE ARTCC	Shaw AFB	FL500	SURFACE	USAF	1666
W177A(B)	FAA, JACKSONVILLE ARTCC	Shaw AFB	FL500	06001AMSL	USAF	210
W177B	FAA, JACKSONVILLE ARTCC	Shaw AFB	FL240	SURFACE	USAF	758
W470A	FAA, JACKSONVILLE ARTCC	Eglin AFB	UNLTD	SURFACE	USAF	2022
W470B	FAA, JACKSONVILLE ARTCC	Eglin AFB	UNLTD	SURFACE	USAF	2128
W470C	FAA, JACKSONVILLE ARTCC	Eglin AFB	UNLTD	SURFACE	USAF	1147
W470D	FAA, JACKSONVILLE ARTCC	Eglin AFB	UNLTD	SURFACE	USAF	422
W470E	FAA, MIAMI ARTCC	Eglin AFB	UNLTD	SURFACE	USAF	1011
W470F	FAA, JACKSONVILLE ARTCC	Eglin AFB	UNLTD	SURFACE	USAF	263
W497A	FAA, MIAMI ARTCC	Patrick AFB	UNLTD	SURFACE	USAF	2422
W497B	FAA, MIAMI ARTCC	Patrick AFB	UNLTD	SURFACE	USAF	21756
W506	FAA, NEW YORK ARTCC	NE ADS/D00S, NY ANG	FL500	SURFACE	USAF	1796
W612	FAA, ANCHORAGE ARTCC	Elmendorf AFB	FL290	SURFACE	USAF	2556
W93(A)	FAA, SEATTLE ARTCC	McChord AFB	FL500	SURFACE	USAF	4987
W93(B)	FAA, SEATTLE ARTCC	McChord AFB	FL500	SURFACE	USAF	978
WASHITA MOA, OK	FAA, FORT WORTH ARTCC	Sheppard AFB	018000AMSL	08000AMSL	USAF	966
WESTOVER 1 MOA, TX	FAA, FORT WORTH ARTCC	Sheppard AFB	018000AMSL	09000AMSL	USAF	1986
WESTOVER 2 MOA, TX	FAA, FORT WORTH ARTCC	Sheppard AFB	018000AMSL	10000AMSL	USAF	2180
WHITMORE 1 MOA, CA	FAA, OAKLAND ARTCC	Beale AFB	018000AMSL	11000AMSL	USAF	594
WHITMORE 2 MOA, CA	FAA, OAKLAND ARTCC	Beale AFB	018000AMSL	11000AMSL	USAF	618
WHITMORE 3 MOA, CA	FAA, OAKLAND ARTCC	Beale AFB	018000AMSL	11000AMSL	USAF	618
YUKON 1 MOA, AK	FAA, ANCHORAGE ARTCC	Eielson AFB	018000AMSL	00100AGL	USAF	3747
YUKON 2 MOA, AK	FAA, ANCHORAGE ARTCC	Eielson AFB	018000AMSL	00100AGL	USAF	4929
YUKON 3 HIGH MOA, AK	FAA, ANCHORAGE ARTCC	Eielson AFB	018000AMSL	10000AMSL	USAF	2267
YUKON 3A LOW MOA, AK	FAA, ANCHORAGE ARTCC	Eielson AFB	009999AMSL	00100AGL	USAF	2267

* Area calculations were performed using the appropriate Universal Transverse Mercator zones.

2011 SUA Name	Controlling Agency	Range Complex/Installation Name	Upper Altitude	Lower Altitude	Military Service	Area (nm2)*
YUKON 3B MOA, AK	FAA, ANCHORAGE ARTCC	Eielson AFB	018000AMSL	02000AGL	USAF	1523
YUKON 4 MOA, AK	FAA, ANCHORAGE ARTCC	Eielson AFB	018000AMSL	00100AGL	USAF	3355
YUKON 5 MOA, AK	FAA, ANCHORAGE ARTCC	Eielson AFB	018000AMSL	05000AGL	USAF	2707
A683	WICHITA TRACON	McConnell AFB (184 ARW, KS ANG)	004500AMSL	SURFACE	USAF(ANG)	114
AIRBURST A MOA, CO	FAA, DENVER ARTCC	Buckley ANGB	018000AMSL	01500AGL	USAF(ANG)	167
AIRBURST B MOA, CO	FAA, DENVER ARTCC	Buckley ANGB	018000AMSL	00500AGL	USAF(ANG)	14
AIRBURST C MOA, CO	FAA, DENVER ARTCC	Buckley ANGB	008499AMSL	00500AGL	USAF(ANG)	11
BEAVER MOA, MN	FAA, MINNEAPOLIS ARTCC	148 FIG, MN ANG	018000AMSL	00300AGL	USAF(ANG)	2494
BIG BEAR MOA, MI	FAA, MINNEAPOLIS ARTCC	148 FIG, MN ANG	018000AMSL	00500AMSL	USAF(ANG)	1751
BIRMINGHAM 2 MOA, AL	FAA, ATLANTA ARTCC	187 FW, AL ANG	009999AMSL	00500AGL	USAF(ANG)	1135
BIRMINGHAM MOA, AL	FAA, ATLANTA ARTCC	187 FW, AL ANG	018000AMSL	10000AMSL	USAF(ANG)	1165
BRUSH CREEK MOA, OH	FAA, INDIANAPOLIS ARTCC	123 ACS, OH ANG	004999AMSL	00100AGL	USAF(ANG)	721
BUCKEYE MOA, OH	FAA, INDIANAPOLIS ARTCC	123 ACS, OH ANG	018000AMSL	05000AMSL	USAF(ANG)	1653
CAMDEN RIDGE MOA, AL	FAA, ATLANTA ARTCC	187 FW, AL ANG	009999AMSL	00500AGL	USAF(ANG)	2154
CANNON A MOA, MO	FAA, KANSAS CITY ARTCC	131 TFW, Det 1, MO ANG	018000AMSL	00300AGL	USAF(ANG)	232
CANNON B MOA, MO	FAA, KANSAS CITY ARTCC	131 TFW, Det 1, MO ANG	018000AMSL	00100AGL	USAF(ANG)	16
CHEYENNE HIGH MOA, CO	FAA, DENVER ARTCC	Buckley ANGB	018000AMSL	09000AMSL	USAF(ANG)	1863
CHEYENNE LOW MOA, CO	FAA, DENVER ARTCC	Buckley ANGB	008999AMSL	00300AGL	USAF(ANG)	1701
CONDOR 1 MOA, ME	FAA, BOSTON ARTCC	NE ADS/D00S, NY ANG	018000AMSL	07000AMSL	USAF(ANG)	2424
CONDOR 2 MOA, ME	FAA, BOSTON ARTCC	NE ADS/D00S, NY ANG	018000AMSL	07000AMSL	USAF(ANG)	614
CRYPT CENTRAL MOA, IA	FAA, MINNEAPOLIS ARTCC	132 FW, IA ANG	018000AMSL	08000AMSL	USAF(ANG)	1479
CRYPT NORTH MOA, IA	FAA, MINNEAPOLIS ARTCC	132 FW, IA ANG	018000AMSL	08000AMSL	USAF(ANG)	1777
CRYPT SOUTH MOA, IA	FAA, MINNEAPOLIS ARTCC	132 FW, IA ANG	018000AMSL	08000AMSL	USAF(ANG)	1325
DEEPWOODS MOA, ME	FAA, BANGOR APP CON	CO, Army Avn Support Fac/ME ANG	003000AMSL	SURFACE	USAF(ANG)	205
DUKE MOA, PA	FAA, CLEVELAND ARTCC	112 ACS/DOT, PA ANG	018000AMSL	08000AMSL	USAF(ANG)	1643
EUREKA HIGH MOA, KS	FAA, KANSAS CITY ARTCC	McConnell AFB (184 ARW, KS ANG)	018000AMSL	06000AMSL	USAF(ANG)	1648
EUREKA LOW MOA, KS	FAA, KANSAS CITY ARTCC	McConnell AFB (184 ARW, KS ANG)	005999AMSL	02500AMSL	USAF(ANG)	1648
FALLS 1 MOA, WI	FAA, MINNEAPOLIS ARTCC	Volk Field ANGB	018000AMSL	00500AGL	USAF(ANG)	832
FALLS 2 MOA, WI	FAA, MINNEAPOLIS ARTCC	Volk Field ANGB	018000AMSL	00500AGL	USAF(ANG)	526
GOOSE NORTH MOA, OR	FAA, SEATTLE ARTCC	Kingsley Fld	018000AMSL	03000AGL	USAF(ANG)	1387
GOOSE SOUTH MOA, OR	FAA, SEATTLE ARTCC	Kingsley Fld	018000AMSL	10000AMSL	USAF(ANG)	738
HART NORTH MOA, OR	FAA, SEATTLE ARTCC	173 FW, OR ANG	018000AMSL	11000AMSL	USAF(ANG)	660
HART SOUTH MOA, OR	FAA, SEATTLE ARTCC	173 FW, OR ANG	018000AMSL	11000AMSL	USAF(ANG)	1825
HAYS MOA, MT	FAA, SALT LAKE CITY ARTCC	120 FW, MT ANG	018000AMSL	00300AGL	USAF(ANG)	5368

* Area calculations were performed using the appropriate Universal Transverse Mercator zones.

Appendix C: Maps and Inventory of Ranges, Range Complexes, Military Training Routes, and Special Use Areas

2011 SUA Name	Controlling Agency	Range Complex/Installation Name	Upper Altitude	Lower Altitude	Military Service	Area (nm2)*
HERSEY MOA, MI	FAA, MINNEAPOLIS ARTCC	110 TASC, MI ANG	018000AMSL	05000AMSL	USAF(ANG)	576
JACKAL LOW MOA, AZ	FAA, ALBUQUERQUE ARTCC	162 FW, AZ ANG	010999AMSL	00100AGL	USAF(ANG)	677
JACKAL MOA, AZ	FAA, ALBUQUERQUE ARTCC	162 FW, AZ ANG	018000AMSL	11000AMSL	USAF(ANG)	3562
LA VETA HIGH MOA, CO	FAA, DENVER ARTCC	Buckley ANGB	018000AMSL	13000AMSL	USAF(ANG)	1266
LA VETA LOW MOA, CO	FAA, DENVER ARTCC	Buckley ANGB	013000AMSL	01500AGL	USAF(ANG)	203
LINCOLN MOA, NE	FAA, MINNEAPOLIS ARTCC	155 TRG, NE ANG	018000AMSL	08000AMSL	USAF(ANG)	1306
LINDBERGH A MOA, MO	FAA, KANSAS CITY ARTCC	131 FW, MO ANG	018000AMSL	07000AMSL	USAF(ANG)	2302
LINDBERGH B MOA, MO	FAA, KANSAS CITY ARTCC	131 FW, MO ANG	018000AMSL	08000AMSL	USAF(ANG)	811
LINDBERGH C MOA, MO	FAA, KANSAS CITY ARTCC	131 FW, MO ANG	018000AMSL	08000AMSL	USAF(ANG)	611
MINNOW MOA, WI	FAA, CHICAGO ARTCC	Volk Field ANGB	018000AMSL	10000AMSL	USAF(ANG)	1741
MISTY 1 MOA, NY	FAA, CLEVELAND ARTCC	174 FW, NY ANG	018000AMSL	04000AMSL	USAF(ANG)	599
MISTY 2 MOA, NY	FAA, CLEVELAND ARTCC	174 FW, NY ANG	018000AMSL	00300AGL	USAF(ANG)	717
MISTY 3 MOA, NY	FAA, CLEVELAND ARTCC	174 FW, NY ANG	018000AMSL	11000AMSL	USAF(ANG)	522
MORENCI MOA, AZ	FAA, ALBUQUERQUE ARTCC	162 FW, AZ ANG	018000AMSL	01500AGL	USAF(ANG)	1757
O NEILL MOA, SD	FAA, MINNEAPOLIS ARTCC	185 FW, IA ANG	018000AMSL	00500AGL	USAF(ANG)	2204
OUTLAW MOA, AZ	FAA, ALBUQUERQUE ARTCC	162 FW, AZ ANG	018000AMSL	08000AMSL	USAF(ANG)	1984
R3007A	FAA, JACKSONVILLE ARTCC	Townsend	005000AMSL	01500AGL	USAF(ANG)	7
R3007B	FAA, JACKSONVILLE ARTCC	Townsend	005000AMSL	00500AGL	USAF(ANG)	32
R3007C	FAA, JACKSONVILLE ARTCC	Townsend	013000AMSL	00100AGL	USAF(ANG)	134
R3007D	FAA, JACKSONVILLE ARTCC	Townsend	013000AMSL	01200AGL	USAF(ANG)	167
R4207	FAA, MINNEAPOLIS ARTCC	PHELPS-COLLINS ANGB	FL450	SURFACE	USAF(ANG)	1009
R6903	FAA, CHICAGO ARTCC	Volk Field ANGB	FL450	SURFACE	USAF(ANG)	943
R6904A	FAA, MINNEAPOLIS ARTCC	Volk Field ANGB	FL230	00150AGL	USAF(ANG)	69
R6904B	FAA, MINNEAPOLIS ARTCC	Volk Field ANGB	FL230	SURFACE	USAF(ANG)	12
RED HILLS MOA, IN	FAA, INDIANAPOLIS ARTCC	181 TFG, IN ANG, Terre Haute	018000AMSL	06000AMSL	USAF(ANG)	1371
RESERVE MOA, AZ	FAA, ALBUQUERQUE ARTCC	162 FW, AZ ANG	018000AMSL	05000AGL	USAF(ANG)	2531
RUBY 1 MOA, AZ	FAA, ALBUQUERQUE ARTCC	162 FW, AZ ANG	018000AMSL	10000AMSL	USAF(ANG)	581
SALEM MOA, MO	FAA, KANSAS CITY ARTCC	131 TFW, Det 1, MO ANG	006999AMSL	SURFACE	USAF(ANG)	1459
SNOOPY EAST MOA, MN	FAA, MINNEAPOLIS ARTCC	148 FIG, MN ANG	018000AMSL	00300AGL	USAF(ANG)	1074
SNOOPY WEST MOA, MN	FAA, MINNEAPOLIS ARTCC	148 FIG, MN ANG	018000AMSL	06000AMSL	USAF(ANG)	2773
TWO BUTTES HIGH MOA, CO	FAA, DENVER ARTCC	Buckley ANGB	018000AMSL	10000AMSL	USAF(ANG)	1435
TWO BUTTES LOW MOA, CO	FAA, DENVER ARTCC	Buckley ANGB	009999AMSL	00300AGL	USAF(ANG)	1435
VOLK EAST MOA, WI	FAA, CHICAGO ARTCC	Volk Field ANGB	018000AMSL	08000AMSL	USAF(ANG)	1866
VOLK SOUTH MOA, WI	FAA, CHICAGO ARTCC	Hardwood (Volk Field)	018000AMSL	00500AGL	USAF(ANG)	514

* Area calculations were performed using the appropriate Universal Transverse Mercator zones.

2011 SUA Name	Controlling Agency	Range Complex/Installation Name	Upper Altitude	Lower Altitude	Military Service	Area (nm2)*
VOLK WEST MOA, WI	FAA, MINNEAPOLIS ARTCC	Volk Field ANGB	018000AMSL	00100AGL	USAF(ANG)	514
W453(A)	FAA, HOUSTON ARTCC	ANG CRTC GULFPORT, Gulfport, MS	006000AMSL	SURFACE	USAF(ANG)	1260
W453(B)	FAA, HOUSTON ARTCC	ANG CRTC GULFPORT, Gulfport, MS	FL600	06000AMSL	USAF(ANG)	1260
YANKEE 1 MOA, NH	FAA, BOSTON ARTCC	103 TFG/DOC, CT ANG	018000AMSL	09000AMSL	USAF(ANG)	1921
YANKEE 2 MOA, NH	FAA, BOSTON ARTCC	103 TFG/DOC, CT ANG	008999AMSL	00100AGL	USAF(ANG)	775

* Area calculations were performed using the appropriate Universal Transverse Mercator zones.

D

Acronym List

A

A-A	Air-to-Air	AFFTC	Air Force Flight Test Center
AAC	Airspace Advisory Committee	AFI	Air Force Instruction
AAR	After Action Review	AFMC	Air Force Materiel Command
AAV	Amphibious Assault Vehicle	AFP	Artillery Firing Positions
AAW	Anti-Air Warfare	AFRIC	Air Force Range Investment Council
ABW	Air Base Wing	AFRL	Air Force Research Laboratory
ACC	Air Combat Command	AFSOC	Air Force Special Operations Command
ACE	Aviation Combat Element	A-G	Air-to-Ground
ACHP	Advisory Council on Historic Preservation	AGL	Above Ground Level
ACM	Air Combat Maneuvers	AGM	Air-to-Ground Tactical Missile
ACMI	Air Combat Maneuvering Installation	AGR	Aerial Gunnery Range
ACP	Army Campaign Plan	AICUZ	Air Installations Compatible Use Zones
ACSC	AEGIS Combat Systems Center	AIMS	Army Innovative Mitigation Strategy
ACUB	Army Compatible Use Buffer	AKO	Army Knowledge Online
AD	Armored Division	ALCUP	Airport Land Use Compatibility Plan
ADA BDE	Air Defense Artillery Brigade	AMCOM	Aviation and Missile Command
ADIZ	Air Defense Identification Zone	AMP	Assault Maneuver Positions
AFAF	Auxiliary Air Field	AMW	Amphibious Warfare
AFB	Air Force Base	ANG	Air National Guard
AFC	Area Frequency Coordinator	AO	Area of Operations
AFCS	Air Force Corporate Structure	AOC	Air and Space Operations Center
		AOTC	Army Operational Test Command

APAFR	Avon Park Air Force Range
AR	Army Regulation
ARC	Airspace Range Council
ARC	Armored Reconnaissance Course
ARFORGEN	Army Force Generation
ARNG	Army National Guard
ARRM	Army Range Requirements Model
ARTCC	Air Route Traffic Control Center
ASO	Area Security Operations
ASOS	Air Support Operations Squadron
ASR	Airport Surveillance Radar
ASUW	Anti-Surface Warfare
ASW	Anti-Submarine Warfare
ATC	Air Traffic Control
ATCAA	Air Traffic Control Assigned Airspace
ATR	Atlantic Test Range
ATV	All-Terrain Vehicle
AUTEC	Atlantic Undersea Test and Evaluation Center
AVN BDE	Aviation Brigade
AWSS	Aviation Weapon Scoring System

B

B&G	Bombing and Gunnery
BAX	Battle Area Complex
BCT	Brigade Combat Team
BDE	Brigade
BDU	Bomb Dummy Unit
BES	Battle Effects Simulators
BFSB	Battlefield Surveillance Brigade
BI	Business Intelligence
BLM	Bureau of Land Management
BMGR	Barry M. Goldwater Range
BN	Battalion
BO	Biological Opinion
BOEM	Bureau of Ocean Energy Management

BOG	Boots on the Ground
BRAC	Base Realignment and Closure
BS	Bomb Squadron
BSA	Basic Surface Attack
BSRC	Bob Stump Range Complex
BTS	Brown Tree Snake
BUD/S	Basic Underwater Demolition/SEAL
BW	Bomb Wing

C

C2	Command and Control
C2ISR	Command and Control, Intelligence, Surveillance, and Reconnaissance
C4	Command, Control, Communications and Computers
C4I	Command, Control, Communications, Computers and Intelligence
C4ISR	Command, Control, Communications and Computers/Intelligence, Surveillance, and Reconnaissance
CAA	Clean Air Act
CAC	Common Access Card
CAF	Combat Air Force
CAS	Close Air Support
CAS	Commercial Air Service
CAS	Contractor Air Service
CASHPO	State Historic Preservation Officer
CATC	Combined Arms Training Center
CCAFS	Cape Canaveral Air Force Station
CCD	Combat Capability Document
CCRF	CONUS Crisis Reaction Force
CEF	Contingency Expeditionary Force
CEQ	Council on Environmental Quality
CES	Civil Engineer Squadron
CFA	Controlled Firing Area
CFGJ	Contingency Forge Generation Installation

CFR	Code of Federal Regulations
CLE	Combat Logistics Element
CLUS	Camp Lejeune Land Use Study
CMAGR	Chocolate Mountains Aerial Gunnery Range
CNATRA	Chief of Naval Air Training
CNIC	Commander, Naval Installations Command
CNMI	Commonwealth of the Northern Mariana Islands
CNO	Chief of Naval Operations
CNRSW	Commander Navy Region Southwest
COA	Course of Action
COCOM	Combatant Command
COE	Corps of Engineers
COEFOR	Contemporary Operating Environment Force
COIN	Counterinsurgency
CONOP	Concept of Operations
CONUS	Continental United States
COSCOM	Corps Support Command
COSMC	Corporate Operating Space Management Construct
CPLO	Community Plans and Liaison Office
CPF	Commander Pacific Fleet
CQC	Close Quarter Combat
CQD	Close Quarter Defense
CRTC	Combat Readiness Training Center
CSAR	Combat Search and Rescue
CSE	Center Scheduling Enterprise
CSH	Combat Support Hospital
CSSE	Combat Service Support Element
CTA	Central Training Area
CTC	Combat Training Center
CTR	Combat Training Range
CWC	Composite Warfare Commander
CY	Calendar Year

D

DA	Department of the Army
DAC	Department of the Army Civilian
DAGIR	Digital Air-Ground Integration Range
DAMO-TRS	Army Training Support Systems Division
DCA	Defensive Counterair
DCAST	Data Collection and Scheduling Tool
DCBR	Dare County Bombing Range
DDS	Display and Debriefing Subsystem
DEAD	Destruction of Enemy Air Defenses
DEF	Deployable Expeditionary Force
DENIX	Defense Environmental Network Information Exchange
DENTAC	Dental Activity
DESI	Diesel Electric Submarine Initiative
DFAC	Dining Facilities
DHS	Department of Homeland Security
DIADS	Digital Integrated Air Defense System
DIO	DRRS Implementation Office
DISA	Defense Information Systems Agency
DMO	Distributed Mission Operations
DMPI	Desired Mean Point of Impact
DMPRC	Digital Multi-Purpose Range Complex
DMPTR	Digital Multi-Purpose Training Range
DPRI	Defense Policy Review Initiative
DoD	Department of Defense
DoDD	Department of Defense Directive
DOE	Department of Energy
DOFAW	Division of Forestry and Wildlife
DOI	Department of the Interior
DOT	Department of Transportation
DOT&E	Director, Operational Test and Evaluation
DPG	Dugway Proving Ground
DPRI	Defense Policy Review Initiative
DPW	Directorate of Public Works

DRRS	Defense Readiness Reporting System
DRSS-S	Defense Readiness Reporting System-Strategic
DTA	Donnelly Training Area
DT&E	Developmental Test and Evaluation
DTRA	Defense Threat Reduction Area
DZ	Drop Zone

E

EA	Environmental Assessment
EAP	Encroachment Action Plan
EC	Electronic Combat
EC&C	Electronic Control and Countermeasures
ECCM	Electronic Counter-Countermeasures
ECD	Estimated Completion Date
ECP	Encroachment Control Plan
ECR	Electronic Combat Range
EER	Extended Echo Range
EFH	Essential Fish Habitat
EFTR	Edwards Flight Test Range
EFV	Expeditionary Fighting Vehicle
EIMS	Environmental Information Management System
EIS	Environmental Impact Statement
ELMR	Enterprise Land Mobile Radio
EMATT	Expendable Mobile Antisubmarine Training Target
EMP	Enhanced Marksmanship Program
EMS	Electromagnetic Spectrum
EMW	Expeditionary Maneuver Warfare
EOD	Explosives Ordnance Disposal
EODMU11	Explosives Ordnance Disposal Mobile Unit 11
EP	Encroachment Partnering
EPA	Environmental Protection Agency
EPMC	Encroachment Prevention and Management Committee

ESA	Endangered Species Act
ESORTS	Enhanced Status of Resources and Training Systems
ETTC	Eglin Test and Training Range
EW	Electronic Warfare

F

FAA	FAA Federal Aviation Administration
FA BDE	Field Artillery Brigade
FACSFACS	Fleet Area Control and Surveillance Facility, San Diego
FCC	Federal Communications Commission
FCLP	Field Carrier Landing Practice
FDM	Farallon de Medinilla
FDNF	Forward Deployed Naval Forces
FDRL0	Fort Drum Regional Liaison Organization
FEMA	Federal Emergency Management Agency
FONPA	Finding of No Practicable Alternative
FORSCOM	U.S. Army Force Command
FL	Flight Level
FM	Frequency Modulation
FMC	Fully Mission Capable
FRTTP	Fleet Response Training Plan
FRP	Fleet Response Plan
FRS	Fleet Replacement Squadron
FS	Fighter Squadron
FSO	Full Spectrum Operations
FTHL	Flat-Tailed Horned Lizard
FTRC	Fallon Training Range Complex
FTS	Fighter Training Squadron
FTU	Formal Training Unit
FTX	Forward Training Exercise
FW	Fighter Wing
FWS	Fish and Wildlife Service
FY	Fiscal Year
FYDP	Future Years Defense Program

G

GAF	German Air Force
GAO	Government Accountability Office
GBTE	Gull-Billed Tern
GCE	Ground Combat Element
GCTS	Ground Combat Training Squadron
GDPR	Global Defense Posture and Realignment
GDSCC	Goldstone Deep Space Communications Complex
GIS	Geographic Information System
GLCP	Georgia Land Conservation Program
GoJ	Government of Japan
GOMEX	Gulf of Mexico
GPS	Global Positioning System
GRASI	Gulf Regional Airspace Strategic Initiative
GSU	General Service Unit
GTIMS	Graduate Training Integration Management System

H

HAHO	High Altitude High Opening (parachute training)
HALO	High Altitude Low Opening (parachute training)
HARM	High-Speed Anti-Radiation Missile
HARP	High Frequency Acoustic Recording Package
HASC	House Armed Services Committee
HBCT	Heavy Brigade Combat Team
HEI	High-Explosive Incendiary
HF	High Frequency
HIANG	Hawaii National Guard
HRC/PMRF	Hawaiian Range Complex/Pacific Missile Range Facility
HQ	Headquarters
HQDA	Headquarters Department of Army
HQDA	Headquarters Department of Army

HQ USAF	Headquarters United States Air Force
H.R.	House Report
HRAIZ	High Risk of Adverse Impact Zones
HWAD	Hawthorne Ammunition Depot

I

IA	Information Assurance
IA	Integrating Architecture
IA-ASLVCE	Integrating Architecture for Air and Space Live, Virtual, and Constructive Environment
IAW	In Accordance With
IBCT	Infantry Brigade Combat Team
ICEMAP	Installation Complex Encroachment Management Action Plan
ICRMP	Integrated Cultural Resource Management Plan
ID	Infantry Division
IED	Improvised Explosive Device
IFDS	Integrated Frequency Deconfliction System
IFF	Identification Friend or Foe
IFF	Introduction to Fighter Fundamentals
IGI&S	Installation Geospatial Information and Services
IGPBS	Integrated Global Presence and Basing Strategy
ILS	Instrument Landing System
IMCOM	Installation Management Command
INRMP	Integrated Natural Resource Management Plan
IO	Information Operation
IOC	Initial Operational Capacity
IPR	In-Process Review
IPT	Integrated Product Team
IR	Infrared
IRSS	Integrated Range Status System
ISR	Intelligence, Surveillance, and Reconnaissance

ITAM	Integrated Training Area Management
ITESS	Instrumented Tactical Engagement Simulation System
ITS	Individual Training Standard
ITWSS	Track While Scan Simulator
IWG	Integrated Working Group

J

JAEC	Joint Assessment and Enabling Capability
JAWSS	Joint Advanced Weapons Scoring System
JAX	Jacksonville
JBLM	Joint Base Lewis-McChord
JDAM	Joint Direct Attack Munition
JFO	Joint Fires Observer
JFRL	Joint Restricted Frequency List
JIOR	Joint Information Operations Range
JLUS	Joint Land Use Study
JMETL	Joint Mission Essential Task List
JNTC	Joint National Training Capability
JPARC	Joint Pacific Alaska Range Complex
JPG	Jefferson Proving Ground
JPPB	Joint Policy and Planning Board
JRFL	Joint Restricted Frequency List
JROC	Joint Requirements Oversight Council
JRTC	Joint Readiness Training Center
JSF	Joint Strike Fighter
JSOW	Joint Standoff Weapon
JTAC	Joint Terminal Attack Controller
JTFEX	Joint Task Force Exercise
JTIDS	Joint Tactical Information Distribution System
JTE	Joint Threat Emitter

K

KSC	Kennedy Space Center
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L

LACM	Land Attack Cruise Missile
LCAC	Landing Craft Air Cushion
LEIS	Legislative Environmental Impact Statement
LETE	California Least Tern
LFA	Low Frequency Active
LFAM	Live-Fire and Maneuver
LFE	Large Force Employments
LFS	Lead-Free Slug
LFTIS	Live Fire Training Investment Strategy
LGB	Laser-Guided Bomb
LMR	Land Mobile Radio
LOA	Letter of Agreement
LOMAH	Location of Misses and Hits Range
LSNOA	Long Shoal Naval Ordnance Area
LTA	Land Trust Alliance
LVC	Live, Virtual, and Constructive
LVC-IA	Live, Virtual, and Constructive-Integrating Architecture
LZ	Landing Zone

M

MADE	Military Airspace Data Entry
MAEWR	Mid-Atlantic Electronic Warfare Range
MAFR	Melrose Air Force Range
MAG-31	USMC Beaufort
MAGTF	Marine Air-Ground Task Force
MAGTFTC	Marine Air-Ground Task Force Training Center
MAJCOM	Major Command
MANPAD	Man Portable Air Defense System
MAW	Marine Air Wing
MCA	Mission Critical Area, Navy
MCA	Military Construction, Army

MCAGCC	Marine Corps Air-Ground Combat Center	MOS	Military Occupational Specialty
MCAS	Marine Corps Air Station	MOUT	Military Operations in Urban Terrain
MCAT	Mission Compatibility Analysis Tool	MPA	Marine Protected Area
MCB	Marine Corps Base	MPMG	Multi-Purpose Machine Gun
MCI	Marine Corps Installation	MPPEH	Material Potentially Possessing an Explosive Hazard
MCB CL	Marine Corps Base Camp Lejeune	MP	Military Police
MCB CP	Marine Corps Base Camp Cherry Point	MPRC	Multi-Purpose Range Craft
MCLB	Marine Corps Logistics Base	MPTR	Multi-Purpose Training Range
MCM	Mine Counter Measures	MR	Management Review
MCMWTC	Marine Corps Mountain Warfare Training Center	MRTFB	Major Range and Test Facility Base
MCOE	Maneuver Center of Excellence	M&S	Modeling and Simulation
MCOLF	Marine Corps Outlying Landing Field	MSL	Mean Sea Level
MCRD	Marine Corps Recruit Depot	MSR	Main Supply Route
MCRP	Marine Corps Reference Publication	MTARNG	Montana Army National Guard
MDS	Mission Design Series	MTR	Military Training Route
MEB	Marine Expeditionary Brigade	MUTC	Muscatatuck Urban Training Complex
MED BDE	Medical Brigade	MW	Mine Warfare
MEDDAC	Medical Support Activity	MWR	Morale, Welfare, and Recreation
MEF	Marine Expeditionary Force	MWTC	Marine Corps Mountain Warfare Training Center
MET	Mission Essential Task		
METL	Mission Essential Task List	N	
METTL	Mission Essential Training Task List		
MEU	Marine Expeditionary Unit	NACD	National Association of Conservation Districts
MFA	Mid-Frequency Active	NACo	National Association of Counties
MHRC	Mountain Home Range Complex	NAF	Naval Air Facility
MILCON	Military Construction	NALF	Naval Auxiliary Landing Field
MILES	Multiple Integrated Laser Engagement System	NARC	National Association of Regional Councils
MIRC	Mariana Islands Range Complex	NAS	National Airspace System
MIW	Mine Warfare	NAS	Naval Air Station
MLWA	Military Lands Withdrawal Act	NASA	National Aeronautical and Space Administration
MMPA	Marine Mammal Protection Act	NAVCOMPT	Navy Comptroller
MMRP	Military Munitions Response Program	NAWC	Naval Air Warfare Center
MOA	Memorandum Of Agreement		
MOA	Military Operating Area		

NAWCWPNS	Naval Air Warfare Center Weapons Division
NB	Naval Base
NBC	Naval Base Coronado
NCO	Non-Commissioned Officer
NCSL	National Conference of State Legislatures
NDAA	National Defense Authorization Act
NEPA	National Environmental Policy Act
NEPTUNE	Northeast Pacific Time-Series Undersea Networked Experiments
NEW	Net Explosive Weight
NEXRAD	Next Generation Weather Radar
NFC	Numbered Fleet Commander
NFEC	Naval Facilities Engineering Command
NG	National Guard
NGA	National Geospatial-Intelligence Agency
NGB	National Guard Base
NGO	Non-Governmental Organization
NHPA	National Historic Preservation Act
NM	Nautical Miles
NMAC	Naval Mine and Anti-Submarine Warfare Command
NMC	Not Mission Capable
NMFS	Navy and National Marine Fisheries Service
NOA	Notice of Availability
NOAA	National Oceanographic and Atmospheric Administration
NOCAL	Northern California
NOTAM	Notice to Airmen
NOV	Notice of Violation
NRDC	Natural Resources Defense Council
NSFS	Naval Surface Fire Support
NSAv	Non-Standard Aviation
NSAWC	Naval Strike Air Warfare Center
NSW	Naval Special Warfare

NTIA	National Telecom and Information Administration
NTC	National Training Center
NTIA	National Telecom and Information Administration
NTRC	Northwest Training Range
NTTR	Nevada Test and Training Range
NUWC	Naval Undersea Weapons Center
NVD	Night Vision Device
NVG	Night Vision Goggle
NWSTF	Naval Weapons System Training Facility

O

OASN(I&E)	Office of the Assistant Secretary of the Navy (Installations and Environment)
OBS	Ocean Bottom Seismometers
OCA	Offensive Counterair
OCO	Overseas Contingency Operations
OCONUS	Outside the Contiguous United States
OCS	Outer Continental Shelf
ODASD(R)	Office of the Deputy Assistant Secretary of Defense (Readiness)
ODB	Okinawa Defense Bureau
ODUSD(I&E)	Office of the Deputy Under Secretary of Defense (Installations & Environment)
ODUSD(R)	Office of the Deputy Under Secretary of Defense (Readiness)
OEA	Office of Economic Adjustment
OEF	Operation Enduring Freedom
OEIS	Overseas Environmental Impact Statement
OIF	Operation Iraqi Freedom
OIPT	Overarching Integrated Product Team
OLF	Outlying Landing Field
O&M	Operations and Maintenance
OMA	Operation and Maintenance - Army
OMB	Office of Management and Budget

OMCM	Organic Mine Counter Measures
OMFTS	Operational Maneuver from the Sea
OODA	Observe-Orient-Decide-Act
OPAREA	Operating Area
OPFOR	Opposing Force
OPNAV	Office of the Chief of Naval Operations
op-tempo	Operation Tempo
OSD	Office of the Secretary of Defense
OTB	Over the Beach
OT&E	Operation Test and Evaluation
OTICC	OSD Test Investment Coordinating Committee
OUSD(P&R)	Office of the Under Secretary of Defense (Personnel and Readiness)

P

PACFLT	Pacific Fleet
PAO	Public Affairs Office
PACNORWEST	Pacific Northwest
PCA	Positive Control Area/Positive Control Airspace
PCMS	Pinon Canyon Maneuver Site
PD	Probability of Detection
PEX	Patriot Excalibur
PGM	Precision Guided Munition
PMC	Partially Mission Capable
PNs	Project Numbers
POM	Program Objective Memorandum
PPBE	Planning, Programming, Budgeting, and Execution
PTA	Poinsett Transition Area
PTA	Pohakuloa Training Area
PTAE	Pre-mobilization Training and Assistance Element
PTP	Pre-deployment Training Plan
PTR	Primary Training Range
PUTR	Portable Undersea Tracking Range

Q

QA	Quality Assurance
QAP	Quality Assurance Plan
QC	Quality Control

R

RA	Restricted Airspace
RAICUZ	Range Air Installations Compatible Use Zones
RAM	Range Assessment Module
RAND	Research and Development
RANS	Range Squadron
RAPCON	Radar Approach Control
RCC	Range Control Center
RCD	Required Capabilities Document
RCMP	Range Complex Master Plan
RCO	Range Control Officer
RCTC	Regional Collective Training Capability
RCW	Red-Cockaded Woodpecker
RDT&E	Research, Development, and Testing and Evaluation
RE	Renewable Energy
REPI	Readiness and Environmental Protection Initiative
RFA	Radio Frequency Authorizations
RFMSS	Range Facility Management System
RFP	Request for Proposal
RIE	Range Information Enterprise
RIMPAC	Rim of the Pacific
RLA	Recovery Land Acquisition
ROA	Range Operating Agency
ROC	Range Operations Center
ROCC	Range Operation Control Center
ROD	Record of Decision
ROMO	Range of Military Operations
ROTC	Reserve Officer Training Corps

RPA	Remotely Piloted Aircraft
RPMP	Real Property Master Plan
RPV	Remotely Piloted Vehicle
RRPB	Requirements Review Prioritization Board
RSB	Reserve Craft Beach
RSC	Regional Support Center
RSO	Range Safety Officer
RTAM	Range and Training Area Management
RTB	Ranger Training Brigade
RTAMS	Range and Training Area Management System
RTKN	Real Time Kill Notification
RTLS	Range and Training Land Strategy
RTO	Range Training Officer
RTPP	Readiness and Training Policy and Programs
RWR	Radar Warning Receiver

S

S3U	Soldier Skills Set Utilization
S-A	Surface-to-Air
SAB	Scientific Advisory Board
SADL	Situation Awareness Data Link
SAF/IE	Secretary of the Air Force/Installations and Environment
SAM	Surface to Air Missile
SAR	Search and Rescue
SBCT	Stryker Brigade Combat Team
SCI	San Clemente Island
SCINI	Senior Commanders Installation Needs and Issues
SCIRC	San Clemente Island Range Complex
SCORE	Southern California Offshore Range
SCUBA	Self Contained Underwater Breathing Apparatus
SDB	Small Diameter Bomb

SDZ	Surface Danger Zone
SEAD	Suppression of Energy Air Defenses
SEIS	Supplemental Environmental Impact Statement
SERE	Survival, Evasion, Resistance and Escape
SERPPAS	Southeast Regional Partnership for Planning and Sustainability
SHANGR	Smoky Hill Air National Guard Range
SHOBA	Shore Bombardment Area
SHPO	State Historic Preservation Office
SIG BDE	Signal Brigade
SIMCAS	Simulated Close Air Support
SIPRNET	Secret Internet Protocol Router Network
SNI	San Nicolas Island
SNPL	Western Snowy Plover
SOA	Service Oriented Architecture
SOCAL	Southern California Range Complex
SOCE	School of Civil Engineering
SOCOM	Special Operations Command
SOF	Special Operations Forces
SOP	Standard Operating Procedure
SOS	Special Operations Squadron
SOUC	Special Operations Urban Complex
SPAWAR	Space and Naval Warfare Systems Command
SPECOPS	Special Operations
SPOE	Seaport of Embarkation
SRI	Sustainable Ranges Initiative
SRM	Sustainment, Restoration and Modernization
SROC	Senior Readiness Oversight Council
SRP	Sustainable Range Program
SRR	Sustainable Ranges Report
SSTC	Silver Strand Training Complex
STARS	Standard Terminal Automation Replacement System
STB	Special Troops Battalion

STOM	Ship to Objective Maneuver
STTR	System Test Readiness Review
STW	Strike Warfare
STX	Situational Training Exercise
SUA	Special Use Airspace
SUBPAC	Submarine Force U.S. Pacific Fleet
SWAG	Shockwave Action Generator
SWCC	Special Warfare Combatant Crewman

T

TACP	Tactical Air Control Party
TACTS	Tactical Aircrew Combat Training System
TAP	Theater Assessment Planning
TAPR	Theater Assessment Planning Repository
TC	Training Circular
TC	Training Center
TCTS	Tactical Combat Training System
T&E	Test & Evaluation
T&E	Threatened and Endangered (Species)
TECOM	Training and Education Command
TECOM/RTAM	Training and Readiness Command/Range and Training Area Management Division
TENA	Training Enabling Architecture
TERF	Terrain Flight
TES	Test and Evaluation
TESS	Tactical Engagement Simulation System
TFI	Total Force Integration
TPL	Trust for Public Land
T&R	Training and Readiness
TRADOC	US Army Training and Doctrine Command
TRAM	Testing Ranges Repository and Management System
TSPI	Time and Space Position Information
TSS	Training Support Systems
TSV	Theater Support Vessel
TTP	Tactics Techniques and Procedures

TWSS	Track While Scan Simulator
TYCOM	Type Commander

U

UAC	Urban Assault Course
UAV	Unmanned Aerial Vehicle
UDP	Unit Deployment Program
USAF	United States Air Force
USAFE	U.S. Air Forces in Europe
USAG-HI	U.S. Army Garrison Hawaii
USARPAC	U.S. Army Pacific
USASOC	U.S. Army Special Operations Command
UFR	Un-Funded Requirement
UHF	Ultra High Frequency
UJTL	Universal Joint Task List
ULT	Unit Level Training
UOC	Urban Operations Complex
U.S.	United States
USAMAA	U.S. Army Manpower Analysis Agency
USAR	United States Army Reserve
USARPAC	U.S. Army Pacific
USCYBERCOM	United States Cyber Command
USDA	U.S. Department of Agriculture
USFF	U.S. Fleet Forces
USFJ	U.S. Forces Japan
USFS	U.S. Forestry Service
USFWS	U.S. Fish and Wildlife Service
USMC	United States Marine Corps
U.S.C.	United States Code
USSOCOM	United States Special Operations Command
USWTR	Undersea Warfare Center Training Range
UTME	Unmanned Threat Emitter
UTTR	Utah Test and Training Range
UXO	Unexploded Ordnance

V

VACAPES	Virginia Capes
VDGIF	Virginia Department of Game and Inland Fisheries
VFR	Visual Flight Rules
VHF	Very High Frequency
VQ	Fleet Air Reconnaissance Squadron

W

WDZ	Weapons Danger Zone
WGA	Western Governors' Association
WGEF	Wind Generated Energy Farm
WHINSEC	Western Hemisphere Institute for Security Cooperation
WICRTC	Wisconsin Combat Readiness Training Center
WIPT	Working Integrated Product Team
WISS	Weapons Impact Scoring System
WMA	Wildlife Management Area
WRETS	Wideband Remote Emitter Threat System
WRP	Western Regional Partnership
WSMR	White Sands Missile Range
WTI	Weapons and Tactics Instructor

Y

YTC	Yakima Training Center
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E

DoD and Service Sustainable Ranges Policy and Guidance

The following tables identify and describe overarching Departmental and Service range sustainment policy and guidance.

Table E-1 Overarching DoD Range Sustainment Policy and Guidance

DoD Range Sustainment Policy and Guidance	Description
DoD Directive 3200.11, Major Range and Test Facility Base (MRTFB)	Establishes policy and assigns responsibilities for the sizing, operation, and maintenance of the MRTFB.
DoD Directive 3200.15, Sustainment of Ranges and Operating Areas	Establishes policy and assigns responsibilities for the sustainment of training and test ranges and OPAREAs in DoD. It includes information and requirements focused on operational and mission requirements, encroachment concerns, data needs, planning and budgeting, range management, and stakeholder involvement.
DoD Instruction 3200.16, Operational Range Clearance	Assigns responsibilities and prescribes procedures for conducting range clearance. It includes information on the use and management of operational ranges in ways that ensure their safety and long-term sustainability, and a requirement to periodically review operational range management policies and procedures to determine the degree and frequency of range clearance required to support DoD's Sustainable Range Management Program.
DoD Directive 4715.11, Environmental and Explosives Safety Management on Operational Ranges Within the United States	Establishes policy and assigns responsibilities for the sustainable use and management of operational ranges located within the United States (U.S.), and for the protection of DoD personnel and the public from explosive hazards on operational ranges located within the U.S. It includes information and requirements focused on managing operational ranges in a manner that maintains readiness, ensures the long-term viability of operational ranges, limits the potential for explosives mishaps and damages, and addresses environmental issues surrounding munitions constituents.
DoD Directive 4715.12, Environmental and Explosives Safety Management on Operational Ranges Outside the United States	Assigns responsibilities for the sustainable use and management of operational ranges located outside the U.S., and for the protection of DoD personnel and the public from explosive hazards on operational ranges located outside the U.S. It includes information and requirements focused on managing operational ranges in a manner that maintains readiness, ensures the long-term viability of operational ranges, limits the potential for explosives mishaps and damages, and addresses environmental issues surrounding munitions constituents.
DoD Directive 4715.13, Department of Defense Noise Program	Establishes policy and assigns responsibilities for a coordinated DoD Noise Program. It also provides for establishment of a DoD Noise Working Group. For the purposes of this instruction, noise is defined as unwanted sound generated from the operation of military weapons or weapons systems (e.g., aircraft, small arms, tank guns, artillery, missiles, bombs, rockets, mortars, and explosives) that affects either people, animals (domestic or wild), or structures on or in areas in proximity of a military installation; occupational noise exposure and underwater sound associated with ship testing and training activities are specifically excluded from this definition. The program focuses on identifying, researching, and effectively reducing adverse effects from the noise associated with military test and training operations consistent with maintaining military readiness, without degrading mission capabilities.

Table E-1 Overarching DoD Range Sustainment Policy and Guidance (continued)

DoD Range Sustainment Policy and Guidance	Description
DoD Instruction 4715.14, Operational Range Assessments	Establishes and implements procedures to assess the potential environmental impacts of military munitions use on operational ranges. The purpose of these procedures is to assist Components in determining whether there has been a release or substantial threat of a release of munitions constituents from operational ranges to off-range areas, and whether that release or substantial threat of a release creates an unacceptable risk to human health or the environment.
DoD Instruction 3030.3, Joint Land Use Study (JLUS) Program	Implements policies, assigns responsibilities, and prescribes procedures for executing the JLUS Program as administered by the Department of Defense, Office of Economic Adjustment (OEA). The purpose of the JLUS Program is to help local communities fund comprehensive plan development to resolve perceived community/ installation land use incompatibilities. The JLUS program also can provide technical and financial assistance to the planning agencies for developing master plans that are consistent (when economically feasible) with the noise, accident potential, and safety concerns of the local installation.

Table E-2 Army Range Sustainment Policy and Guidance

Army Range Sustainment Policy and Guidance	Description
Army Regulation 350-19, The Army Sustainable Range Program	Published in August 2005 by the Office of the Deputy Chief of Staff G3. The regulation defines responsibilities and prescribes policies for implementing the Sustainable Range Program (SRP) on Army controlled training and test ranges and lands. The regulation assigns responsibilities and provides policy for programming, funding, and execution of the Army’s SRP, which is made up of its two core programs: the Range and Training Land Program, which includes range modernization and range operations, and the Integrated Training Area Management Program for land maintenance and repair. The regulation also provides policy and guidance on integrated planning to support sustainable ranges at the installation level, a focused Outreach Communications Campaign, and tools for identifying and assessing current and future encroachment challenges.

Table E-3 Marine Corps Range Sustainment Policy and Guidance

Marine Corps Range Sustainment Policy and Guidance	Description
Marine Corps Range Operations Order (OpOrd)	Will be a comprehensive, Service-level plan to sustain and modernize Marine Corps ranges and training areas. The objective of the OpOrd is to integrate and synchronize range and training area initiatives at Headquarters, Marine Corps and Training and Education Command (TECOM)/RTAM with Marine Corps operational training requirements and range current and planned required capabilities. The OpOrd is a coordinated family of documents that addresses the status of Marine Corps training ranges, their future development, and the administration and resourcing of range management. The OpOrd will include a review of Marine Corps training requirements, Marine Corps range policies and planning initiatives, Marine Corps range capabilities and shortfalls, JNTC and Joint Universal Task List requirements, and other Marine Corps-specific range issues.
Marine Corps Order (MCO) 3550.10, Range Management and Control	Establishes the responsibilities, policies, and procedures pertaining to the safety and management of operational ranges, training areas, and associated training facilities within the Marine Corps. It further defines and describes the functions associated with ranges and training areas, and the responsibilities attendant to those functions.
MCO 3550.9, Range Certification and Recertification	An integral part of the Marine Corps’ overarching ground range safety program. Range certification is the function by which safety and environmental compliance are enhanced without compromising training requirements and standards. The order defines the certification and re-certification process that meets an approved set of requirements applicable to an assigned role and mission. Applied appropriately, the range certifications/re-certification will allow for the effective and efficient use of existing training ranges while not compromising safety and the environment.
MCO 3570.1B, Range Safety	Establishes the range safety policies and responsibilities for all Marine Corps ranges and training areas. It establishes the minimum safety standards through Surface Danger Zones (SDZ), and institutes the requirements for individual range safety programs for all live fire and non-live fire ranges and training areas. The order establishes a risk-management process to identify and control range hazards by defining the principles and deviation authorities that control range operations.
MCO 3550.12 Operational Range Clearance Program	Establishes policies and procedures for management of the range clearance program at headquarters, regional, and installation levels.
Range Environmental Vulnerability Assessment (REVA) Reference Manual	Dated May 2009. A key component of the Marine Corps Sustainable Range Program is the REVA program. REVA was developed to help Marine Corps understand the potential environmental impacts of range operations and identify actions that will keep ranges operational while protecting human health and the environment. It is a proactive program that supports Marine Corps and DoD goals and policies.
MCO 11011.22B Policies and Procedures for Encroachment Control Management	Establishes responsibilities for planning, preventing, and controlling encroachment

Table E-4 Navy Range Sustainment Policy and Guidance

Navy Range Sustainment Policy and Guidance	Description
Navy's Mid-Frequency Active Sonar Effects Analysis Interim	Established 6 March 2006. Provides consistent interim policy and internal guidance to Fleet Commanders and other Echelon II commands to assess potential effects of mid-frequency (1 kHz–10 kHz) active sonar use incident to Navy military readiness and scientific research activities. The policy establishes deadlines by which affected commands must develop and submit plans and programming requests to implement this Interim Policy.
OPNAV Instruction 11010.40, Encroachment Management Program	Forms the foundation of the Navy's Encroachment Management Program. The instruction defines the roles and responsibilities of certain Navy Commands, defines encroachment challenges and impacts, establishes a database to capture issues, establishes the Encroachment Action Plan process, and establishes the Encroachment Partnering Program.
OPNAV Instruction 3550.1A, RAICUZ Program	A joint instruction with the Marine Corps, was updated on 28 January 2008. The revision is to provides more technical details on establishing range compatibility zones and revises the roles and responsibilities within the Department of Navy.
Draft Range Sustainment Policy	Defines roles and responsibilities of Navy Commands with respect to range sustainment and the Navy's TAP programs. The range sustainment policy also establishes deadlines for completion of range sustainment programs to include RSEPA, RCMPs, and environmental planning documents.
Draft Range Sustainability Environmental Program Assessment (RSEPA) Policy Implementation Manual	RSEPA is the Navy's program for assessing the environmental condition of land-based training and test ranges within the U.S. and its territories. The manual outlines roles and responsibilities for the RSEPA program, and establishes standards for how the program should be implemented.

Table E-5 Air Force Range Sustainment Policy and Guidance

Air Force Range Sustainment Policy and Guidance	Description
Transforming the Air Force—The Relevant Range...Enabling Air Force Operations	The Air Force's strategic vision for its ranges and airspace. This document provides guidance for building and sustaining relevant ranges to meet the needs of the warfighter. This document emphasizes the development of comprehensive range planning, which includes MAJCOM roadmaps and individual comprehensive range plans, based upon key investment areas. The investment areas provide the foundation for supporting a relevant range and a mechanism to articulate range and airspace requirements. This document also implements a continuous review process, linked to the programming cycle, to ensure that the vision, policy and guidance, roadmaps, and range management plans remain current and resourced for the future.
Air Force Policy Directive 13-2, Air Traffic Control, Airspace, Airfield, and Range Management	Encourages the sustainment of a flying environment that promotes safety and permits realistic training by providing policies to govern the use of airspace, training weapons ranges, and support facilities and equipment controlled by the Air Force, the Air National Guard (ANG), and the U.S. Air Force Reserve.
Air Force Instruction (AFI) 13-201, Air Force Airspace Management	Provides guidance and procedures for developing and processing Special Use Airspace (SUA). It covers aeronautical matters governing the efficient planning, acquisition, use, and management of airspace required to support Air Force flight operations. It applies to activities that have operational or administrative responsibility for using airspace. It establishes practices to decrease disturbances from flight operations that might cause adverse public reaction, and provides flying unit Commanders with general guidance for dealing with local problems.
AFI 13-212, Range Planning and Operations	Sets forth an integrated operational and engineering approach to range management. It is the primary document governing Air Force planning as it relates to training and test ranges. AFI 13-212 consists of three volumes, each addressing a different aspect of range management: Volume 1, Range Planning and Operations; Volume 2, Range Construction and Maintenance; and Volume 3, SAFE-RANGE Program Methodology.
Operational Range Assessment Plan (ORAP)	Developed to provide Air Force facilities with guidance for consistently completing a defensible assessment of potential environmental impacts to off-range receptors from military munitions used on training and test ranges and range complexes. Headquarters U.S. Air Force, Office of the Civil Engineer, Asset Management and Operations Division (HQ USAF/A7CA) developed the ORAP as part of the Air Force Operational Range Environmental Program. The program's goal is to ensure that the operational range natural infrastructure is capable and available to support the Air Force's test and training mission. In order to ensure the long-term viability of training and test ranges, a standardized and scientifically defensible methodology is required for assessing off-range munitions constituent migration and for responding to any associated threats to human health. This plan complies with requirements set forth in DoDD 4715.11, DoDI 4715.11, and DoDI 4715.12.

Table E-5 Air Force Range Sustainment Policy and Guidance (continued)

Air Force Range Sustainment Policy and Guidance	Description
<p>Operational Range Integrated Program Plan</p>	<p>The Air Force is committed to sustaining its operational training and test ranges. As a demonstration of this commitment, HQ USAF/A7CA developed an Integrated Program Plan to assist Air Force installations with a systematic approach for aligning environmental asset planning and management with mission requirements for training and test ranges. This approach is necessary to satisfy natural infrastructure management responsibilities, a fundamental element of the Air Force’s overall Range Sustainment Initiative framework. The time period for the Integrated Program Plan is FY2006 through FY2010. It details the Air Force Operational Range Environmental programmatic vision, mission, overall and specific interim goals, and the near, and mid-term strategic actions required for success. Each strategic objective is documented to include background details, performance measures, and specific steps necessary to accomplish the objective. The plan will be updated annually based on a combination of performance measurement and evaluation and application of the knowledge gained through execution of range sustainment activities.</p>
<p>Air Force Natural Infrastructure Assessment (NIA) Guide</p>	<p>HQ USAF/A7CA developed a Natural Infrastructure Assessment Guide which was finalized and distributed in FY2007. It provides HQ USAF, MAJCOM, and installations with a methodology for conducting and maintaining the NIA. The NIA provides a series of indicators that illustrates the relative degree of encroachment for each NI asset. These indicators shall be considered by senior leaders, at all levels, in making subsequent management decisions regarding the sustainment, restoration, and modernization of NI assets to support mission requirements within the existing planning, programming, and budgeting system.</p>

