DEPARTMENT OF THE NAVY
OFFICE OF THE CHIEF OF NAVAL OPERATIONS
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MEMORANDUM FOR THE DEPUTY UNDER SECRETARY OF DEFENSE FOR LOGISTICS AND MATERIEL READINESS (L&MR)

Subject: Depot Maintenance Strategic Planning

The purpose of this memorandum is to respond to the DUSD (L&MR) memorandum of 9 March 2007, which requested each Military Service submit their published depot maintenance strategic plan.

The Navy developed the attached family of strategic planning documents in alignment with the Department of Defense (DoD) Depot Maintenance Strategic Plan, which articulates DoD's strategy and plans for ensuring that DoD's organic depot maintenance infrastructure is postured and resourced to meet the national security and materiel readiness challenges of the 21st century

The Navy Depot Maintenance Strategic Plan includes an overarching Executive Summary and individual plans that focus on Naval Aviation Industrial Strategy, Naval Shipyards, Ship Repair Industrial Base, Naval Warfare Centers, and Space and Naval Warfare Systems Centers. Please note that the first annual update to the Naval Shipyard Business Plan is undergoing final internal staff review, and will be submitted under separate cover early next year.

Point of contact on this memorandum is Mr. S. Michaluk, CNO(N43C1), on 703-601-1655.

M. G. Moffitt
Rear Admiral, U.S. Navy
Director, Fleet Readiness Division

Attachment:
As stated

Subject: Depot Maintenance Strategic Planning

Copy to:
ASN (RDA)
CNO (N4B)
COMNAVSEASYSCOM
COMNAVAIRSYSCOM
COMSPAWARSYSCOM
NUWC (Keyport)
NSWC (Crane)

United States Navy

Depot Maintenance Strategic Plan

December 2007

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Executive Summary

Introduction

The Navy is transforming to meet new demands created by shifts in global threats to our nation and its allies. In so doing, it recognizes the need to modernize its weapon systems and reengineer its resources and requirements. The Chief of Naval Operations (CNO) established "Sea Power 21" and a Navy Enterprise structure to emphasize the synergy between the various commands as the Navy reacts to threat conditions and to set the priorities for naval preparedness and planning. Sea Power 21 and the strategic goals established by the system commands and their industrial operations management are transforming the industrial enterprise into a flexible and dynamic partnership between organic Navy facilities, commercial suppliers, and other Department of Defense depots. In this new partnership, Navy, Marine Corps, and joint force mission requirements drive the depth, breadth, and "mix" of depot maintenance capabilities.

To realize the opportunities and navigate the challenges ahead, the Navy must have a clear vision for how it will organize, integrate, and transform its depot maintenance to support future readiness needs. Our vision is to provide agile, responsive, and integrated maintenance capabilities aligned with and in support of Navy Enterprises and joint strategic requirements.

The Navy Depot Maintenance Strategic Plan provides an outline for implementing the strategic elements of the vision for the Navy's depots. Within the framework and guidelines of the overall Navy Depot Maintenance Strategic Plan, there are component strategies for shipyards, aviation Fleet Readiness Centers, warfare centers, and systems commands. The plans are organized around the following four strategic elements:

- Transform the depots to align operations and metrics with warfighter outcomes
- Identify and sustain requisite core maintenance capabilities
- Develop and sustain a highly capable, mission-ready workforce
- Ensure an adequate infrastructure to execute assigned maintenance workload.

Depot Maintenance System: Mission and Vision

Navy Depot Activities

The Navy Depot Maintenance system includes the following activities:

- *Naval Shipyards*. Portsmouth Naval Shipyard, ME; Norfolk Naval Shipyard, VA; Puget Sound Naval Shipyard and Intermediate Maintenance Facility, WA; and Pearl Harbor Naval Shipyard and Intermediate Maintenance Facility, HI, maintain, modernize, repair, and dispose of Navy ships and related components.
- *Naval Aviation Fleet Readiness Centers*. Fleet Readiness Center East, Cherry

Point, NC; Fleet Readiness Center Southeast, Jacksonville, FL; Fleet Readiness Center Mid-Atlantic, Oceana, VA; Fleet Readiness Center Southwest, North Island, CA; Fleet Readiness Center West, Lemoore, CA; and Fleet Readiness Center Northwest, Whidbey Island, WA, repair, overhaul, and modify sea-based and maritime aircraft and related aeronautical systems and equipment.

- *Naval Warfare Centers*. Naval Undersea Warfare Center, Keyport, WA, maintains and repairs fleet undersea weapons, ordnance, and associated equipment. Naval Surface Warfare Center, Crane Division, IN, maintains and repairs fleet surface weapons, ordnance, and associated equipment.
- *Space and Naval Warfare Systems Centers*. Space and Naval Warfare Systems Centers San Diego, CA, and Charleston, SC, maintain and repair Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) systems and equipment.

Mission and Vision

The mission of the Navy depots is to sustain the operating forces with responsive maintenance, repair, and technical support. The vision for the Navy depots is to support the fleet in a full spectrum of operating environments, providing maintenance capabilities that are fully integrated into a warfighter-focused sustainment enterprise, and delivering quality materials and services in an efficient and timely manner. The depots will use qualified workforces, quality materials, and sound and cost-effective work processes in safe and environmentally sound facilities.

Transformation Strategy

The transformation goal is to create and sustain a responsive and cost-effective organic or commercial partnership that fully integrates intermediate- and depot-level maintenance. The following are key elements of the transformation strategies:

- Pursue continuous process improvement and best business practices to ensure that services are delivered to the warfighter as rapidly and effectively as possible
- Accomplish the seamless integration of capabilities—public and private, intermediate- and depot-level—so as to best leverage capabilities and reduce redundancies.
- Optimize the balance between intermediate- and depot-level maintenance so as to improve efficiency and reduce repair cycle times

Inherent in the Navy's transformation strategy and goals is the need to balance cost and risk between the production capacity of industry and the ready, controlled, and responsive core depot maintenance capability of the Navy and other DoD activities. Public-private partnerships will be vigorously pursued on the basis of disciplined assessments of future technologies, requirements, and capabilities. Performance-based contracts will be developed based on rigorous business case analyses and clearly defined metrics. Roles and responsibilities will be defined throughout the partnership to maximize responsiveness and minimize the duplication of capabilities and infrastructure.

A primary element of the transformation plan is the consolidation of maintenance resources. The Navy is in the process of implementing regional maintenance plans that will streamline the maintenance process and reduce infrastructure. The end state will include the integration of many intermediate- and depot-level activities. The reorganization reduces maintenance staffing requirements and should decrease the time that weapons systems are out of service. Transformation plans have been customized to the unique needs of the shipyard and aviation Fleet Readiness Centers.

Naval Sea Enterprise Shipyard Transformation

In 2002, the Navy's Sea Enterprise started bold action to transform the planning process for ship maintenance and modernization. The SHIPMAIN program was established to improve maintenance procedures and deliver readiness at lower cost. A key objective was to build a collaborative process that better linked formerly disparate stakeholders. In particular, the voice of the fleet customer was strengthened. Other objectives were to install common planning processes at all locations, deliver cost savings without compromising effectiveness, and institutionalize continuous process improvement. In the shipyards, transformation efforts in support of the Sea Enterprise cost-wise readiness objectives have evolved under the One Shipyard concept, with Lean Transformation and Regional Maintenance as the primary initiatives.

One Shipyard

The focus of the NAVSEA ship depot maintenance strategy is to implement a "One Shipyard" enterprise that supports a consistently ready-to-deploy fleet. The One Shipyard concept was developed to support the fleet as it transitioned from a rotational force to a surge force under the Fleet Response Plan (FRP). One Shipyard was initially focused on balancing workload and capacity across shipyards through resource sharing and partnerships. The concept has now evolved to focus on standardizing and improving shipyard processes in support of Sea Enterprise objectives.

Shipyard Lean Transformation

At the core of the One Shipyard enterprise is the goal of systematic elimination of waste and non-value-added activities from everyday work processes. Continuous improvement of processes and management systems is the goal. Towards that end, the shipyards apply "Lean and Six Sigma" practices, along with other established continuous process improvement (CPI) tools. Significant improvements are also expected to flow from the development of centrally-prepared, reusable engineering products through the Ship Availability Planning and Engineering Center (SHAPEC) and efforts to document and standardize best practices for submarine and carrier depot availabilities.

Intermediate- and Depot- Level Integration–Regional Maintenance Centers

Regional Maintenance has been the mechanism for undertaking a fundamental restructuring and of ashore ship maintenance capabilities and capacities. The essence of this restructuring is the consolidation of separate ship maintenance facilities and shared use of maintenance resources in order to allow flexibility in maximizing use of the maintenance and supply resources that are available within a geographic region. The process is creating workforce flexibility, reducing maintenance costs, eliminating

redundancy, and allowing more efficient sizing of the organic facilities. The final transition occurred in 2006 with the integration of intermediate- and depot-level ship maintenance facilities into Regional Maintenance Centers under mission funding.

Naval Aviation Industrial Enterprise Transformation

The Naval Aviation Industrial Enterprise is undergoing a fundamental transformation in its operations and support to the fleet. Through the design and implementation of cost-wise readiness, the transformation focuses on an improved structural alignment with the fleet and more efficient business operations. Realignment of the flag leadership with the fleet improves organizational agility and responsiveness. The primary transformation elements within the Naval Aviation Industrial Enterprise's plan for achieving cost-wise readiness are Naval Aviation Readiness Integrated Improvement Program (NAVRIIP), Depot AIRSpeed, and intermediate- and depot-level maintenance integration.

Naval Aviation Readiness Integrated Improvement Program (NAVRIIP)

The Naval Aviation Readiness Integrated Improvement Program (NAVRIIP) is a comprehensive program that changes how the Navy provides manpower, equipment, and training to the aviation commands. The NAVRIIP mission is to instill responsibility and accountability across the Naval Aviation Enterprise (NAE) for cost-wise readiness. It fundamentally changes the focus of aviation maintenance from attention to narrow production goals to an overarching concern with achieving a desired state of aviation readiness. NAVRIIP's enabler in achieving cost-wise readiness is the application of AIRSpeed.

Depot AIRSpeed

Depot AIRSpeed is now deployed across the three NAE depots. The mission is to reduce cycle time, improve productivity, and establish a culture of continuous process improvement that is driven by readiness requirements. Specific Depot AIRSpeed goals are: reduce the inventory of work in progress, reduce operating expenses, increase throughput, improve scheduling accuracy and on-time delivery, and reduce the number of assets in the depot pipeline. The AIRSpeed tool set comprises an assortment of commercial best-business process tools, including Theory of Constraints (TOC), Lean, Six Sigma, and various simulation techniques.

Intermediate- and Depot- Level Integration–Fleet Readiness Centers (FRC)

The integration of intermediate- and depot-level capabilities into one organization under the Fleet Readiness Center (FRC) concept provides cost-wise readiness by optimizing resources. The migration of depot artisans to the intermediate-level will allow critical components to be kept closer to the flight line, yielding reductions in repair cycle time, transportation costs, overall maintenance staffing, and asset inventory requirements.

Outcome Metrics for Evaluating the Transformation Strategy

As part of transformation, the Navy is moving toward corporate metrics that measure outcomes across fleet and aviation depot maintenance activities. Following the guidance of the Deputy Under Secretary of Defense (Logistics and Material Readiness) (DUSD(L&MR)), the Navy will provide outcomes metrics in the following four

categories: Material Availability, Material Reliability, Mean Down Time, and Ownership Cost. The metrics chosen for the depots are:

- *Material Availability*: Actual production versus planned production
- *Material Reliability*: Number of quality deficiency reports per unit produced
- *Mean Down Time*: Time from induction to completion, actual versus planned
- *Ownership Costs*:
    - Direct costs: Actual direct costs versus budgeted direct costs
    - Business operations: G&A costs and overhead, actual versus budgeted.

The metrics will be used for strategic assessment and watched for trends and anomalies. The overarching goal is to help improve the processes that drive the outcomes. Each depot is responsible for analyzing significant variance from goals or expectations. The metrics process will have also oversight through the warfare enterprises and governance boards.

Identifying and Sustaining Core Maintenance Capability

Goals and Strategy

The primary concern that drives the preservation of core capability is the need for a ready and controlled source of depot-level maintenance and repair capability to ensure timely response in the event of mobilization or emergency. Fundamental to the determination of the core requirement is a biennial process that assesses candidate workloads. The core analysis is conducted as a collaborative process within each enterprise. It relies on identifying combat critical (core) platforms prior to their entering the acquisition phase; forecasting workload; and identifying infrastructure, competency, and funding requirements. The sustainment of a responsive and relevant core capability is the result of this review process. Both sustainment and modernization follow from the disciplined process of looking to the long-range planning horizon for warfighter-based capability requirements.

The Navy is responsive to regulations and directives addressing the Core Determination and Depot Source of Repair Determination processes. The depots will maintain a core capability, with a clear focus on products and services that have the greatest effect on combat readiness. The Navy will also ensure that no more than 50 percent of depot maintenance funds are contracted to the private sector, in accordance with 10 USC 2466. At a minimum, the Navy will fund a sufficient workload at their organic facilities to sustain the identified core capabilities. The Navy will use a “best value” approach to allocate the workload for remaining maintenance and repair requirements. The depot source of repair decision begins with the core assignment, considers the 50/50 requirement, and ends with cost-benefit and operational impact analyses. Non-core depot services will be reduced to what is necessary to maintain cost-effective operations, provide last source of repair, and ensure 50/50 compliance.

The Navy core capability will be augmented by other DoD industrial sources, to the extent possible, on the basis of value and risk. Interservice collaboration is a valuable practice that reduces redundant capabilities and improves cost-effectiveness while satisfying statutory core requirements. In addition, as Centers of Industrial and Technical Excellence, the depots will continue to pursue public-private partnerships in order to access new technologies and attract workload that will enhance core capabilities. Navy depot maintenance capability may be collocated with industrial partners, in order to expand on its agility and enhance readiness, logistics support, and cost-effectiveness.

Core Sustainment Metrics

The Navy already reports to the Office of the Secretary of Defense and Congress on their core depot maintenance capabilities and sustaining workload in fulfillment of the 50-percent cap on private-sector contracting. The same measures are to be considered under this strategic plan. The depots will track whether assigned workload is sufficient to meet their core capability and skill requirements. They will also track funding for work conducted in the Navy depots, other DoD depots, and the private sector.

Revitalizing the Depot Maintenance Workforce

Goals and Strategy

The need to continue hiring new employees and the importance of maintaining viable trade-skill apprentice programs are lessons learned from the late 1990s. The depots today have a workforce that is dominated by workers over 45 years of age. This situation evolved as facility closures and declining workloads led to reductions in force that most severely affected younger workers with less time in grade. With older workers now approaching retirement age, there is concern that critical skills and knowledge might soon be lost. The challenge is to revitalize the workforce while faced with projections of an overall downward trend in maintenance workload.

Driven by anticipated workload, the objective of workforce shaping is to identify the right workforce needed to meet demands, with flexibility to accommodate workload fluctuations. Actions are being taken to identify future skill requirements and to "reengineer" existing employees' skills to satisfy anticipated workload and capability requirements. It is anticipated that the future depot workforce will need to have higher skill sets, be better educated, and be more mobile—ready to deploy with tools and technical data to support the combat forces. Employees will operate in an environment of advanced information management tools and production techniques.

The Navy is undertaking an aggressive human capital strategy to reshape the depot workforce to match workload requirements. The Navy will develop tools to plan and analyze workforce skills and capabilities, and then match them to the products and services required to support the warfighter. Overlaps between the projected workload and workforce will be addressed through planned attrition, managed overtime, voluntary separation incentives programs, and reassignment or retraining. Gaps in the workforce will be filled through aggressive retraining initiatives, with targeted hiring to maintain critical skills. Key elements to the revitalization strategy are apprentice programs for

long-term skill revitalization, hiring of entry-level engineers and production personnel to rebalance grade distribution, workforce sharing and the employment of seasonal or temporary personnel to achieve a more flexible workforce, and focused training and education of workers.

Workforce Metrics

The depots will report on the average age of their work force, number of retirements, and the current status of apprenticeship and other new hiring programs.

Ensuring Adequate Depot Infrastructure

Goals and Strategy

Depot facilities and infrastructure must be sustained in order to provide mission capability and the capacity to meet current and future workload. In addition, facilities improvement and modernization of infrastructure can be vital to achieving planned performance improvement and total cost-reduction goals.

Capital Resources

The Navy uses an established, repeatable process to prioritize, program, and budget all capital investments (Military Construction; Capital Asset Investments; and Sustain, Restoration and Modernization (SRM) special projects). Depot leadership committees evaluate each proposal and rank the proposals against each other. This process focuses on investment projects with strong business cases and alignment with Navy operational requirements. Each shipyard and aviation depot has developed a long-term vision to guide their investment requirements.

The Navy will reinvest in critical infrastructure to support depot-level operations and, ultimately, the warfighter and ongoing combat operations. The Navy will comply with the FY 2008 President's Budget submission. The Navy will sustain a 4-percent minimum capital investment in FY 2007 for its covered depots and is projected to meet the 5-percent investment threshold in FY 2008. The longer-term strategy is to shape the facility to best support workload and productivity improvements. The shipyards, for example, are focusing on replacement of aged facilities with modern infrastructure that will allow a more streamlined work process.

Technology and Information Resources

A key to success of the depot strategy is the improvement in information technology. The Navy's Enterprise Resource Planning (ERP) systems now under development will provide a standard, integrated set of tools to facilitate process reengineering and provide interoperable data sets to support financial, acquisition, and supply chain management.

The intent is to provide a centralized information technology system that allows real-time planning, asset tracking, and more standardized and efficient operations. Depots will employ advanced in-service engineering and logistics skills, coupled with advanced systems-driven knowledge management tools, to capture, integrate, analyze, and employ system-wide maintenance data to assess system condition, anticipate future problems, and

institute innovative programs to increase material readiness.

As part of a larger effort, the Navy Logistics Functional Area has initiated a Community of Practice (COP) that is working to assess the legacy IT systems that support depot maintenance processes. The COP is considering strategies intended to produce efficient IT investments and is evaluating plans for a transition to common information systems. The depots also review their current and future technology and information resource requirements annually to assess opportunities and overlaps.

Infrastructure Metrics

The Navy depots will report on their annual investment in facilities and equipment.

Oversight of the Strategic Plan

The outcomes of the strategic plan and metrics process will be monitored at various levels within the Navy:

- *Navy Enterprise* (Governance Board): Senior Navy strategic decision forum focused on improving productivity for current and future readiness though integration of supported Warfighter Enterprises
- *Warfighter Enterprises*: Collaborative teams, led by Super TYCOMs, responsible for delivering combat-ready forces to the Navy components and combatant commanders and increasing productivity across their domain at reduced cost
- *Provider Enterprises*: The enabling entities that manage resource streams (manpower, assets, parts, research and development, infrastructure, and funding), supporting the Warfighter Enterprises in generating readiness at best cost.

Summary

The success of the Navy depot industrial enterprise plan depends upon the following:

- Successful completion of transformation plans, focusing on improved alignment with the fleet and efficiencies improvements based on cost-wise readiness
- Effective implementation of a human capital strategy that provides the right people with the necessary skills, at the right time, and in the right place
- Application of best commercial practices (i.e., Lean, Six Sigma)
- Execution of cost-reduction initiatives and consolidation
- Refreshment of equipment, facilities, and infrastructure
- Teaming with other services and private industry to reduce duplication and over-capacity
- Sustained focus, investment, and leadership support.

Fulfillment of this plan will ensure the next generation of depot-level support delivers unparalleled 21st-century maintenance capabilities and support to our naval combat forces around the world.

NAVAIR

Naval Aviation Industrial Strategy

COMMANDER, FLEET READINESS CENTERS
&
NAVAIR 6.0

Version 1.0
30 November 2007

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1. Introduction

The Navy recognizes that Defense planning has shifted from a "threat-based" model to a "capabilities-based" model focusing more on how an adversary might fight rather than specifically who the adversary is or where a war may occur. Just as our National Defense strategy places new emphasis on the unique operational demands associated with a changing environment, the Navy is transforming to meet new demands created by these same fundamental shifts. In so doing, the Navy is aggressively responding to the need to modernize its weapon systems and reengineer its resources and requirements to optimize relevance and effectiveness in a changing world.

The Chief of Naval Operations (CNO) established "Sea Power 21" to emphasize the synergy between the various commands as the Navy reacts to threat conditions and sets the primus for naval preparedness and planning. Sea Power 21 and the strategic goals established by the system commands and their industrial operations management are transforming the industrial enterprise into a flexible and dynamic partnership between organic Navy facilities, commercial suppliers and other Department of Defense depots. In this new partnership, Navy, Marine Corps, and joint force support requirements drive the depth, breadth, and "mix" of depot maintenance capabilities. To that end, the naval industrial enterprise is restructuring its services and products to enhance alignment with the warfighter's needs.

Three fundamental concepts at the heart of the Navy's continued operational effectiveness remain unchanged:

- Sea Strike (ability to protect precise and persistent offensive power from the sea)
- Sea Shield (extend defensive assurance throughout the world)
- Sea Basing (enhance operational independence and support for the joint force).

Naval Aviation Maintenance remains responsive and accountable in support of these operational concepts. Our Industrial capabilities serve as a key enabler to the nation's warfighting strategy, are complementary to key strategic initiatives – Sea Power 21 and Naval Strategic Plan (NSP), and are pursuing logistics transformation in synchronization with overall transformation initiatives in progress across the Department of Defense.

Sea Power 21 - Forward from the Sea

Forward-deployed naval forces—manned, equipped and trained for combat—play a significant role in demonstrating both the intention and the capability to join NATO and other allies, as well as other friendly powers, in defending shared interests…if deterrence fails during a crisis and conflict erupts, naval forces provide the means for immediate sea-based reaction.

Naval Strategic Plan

The Naval Strategic Plan (NSP) provides a foundation for the Navy's family of strategic plans. Given the desired effects, focus areas, directed analyses, and risk guidance contained within this document, development and execution of these subsidiary strategic plans will put us on a path to meet the three challenges outlined in *CNO Guidance for 2006*; specifically, that we:

- Sustain our current readiness with exactly the right capability for the right cost,
- Build a capabilities-based Fleet for the future that is of the proper size and mix to meet the uncertain security environment that awaits us, and

- Transform our accessions, assignment, distribution and compensation system into one that is more reflective of and responsive to the men and women serving our Navy.

The Navy's Aviation Industrial Strategy provides the innovative transformations and mission focus to support these operational initiatives now and into the future.

1.1. Vision and Mission

The Naval Aviation Industrial Enterprise is an integrated public/private support system that takes maximum advantage of its infrastructure and capabilities to deliver assured and affordable aviation industrial products and services to the Navy, Marine Corps and joint operation forces. To meet the requirements of the Navy, the Naval Air System Command and Fleet Readiness Centers will work together to meet the industrial requirements that flow from the NSP.

1.1.1 Vision

The Naval Aviation Industrial vision is to "Optimize the entire industrial base (Organic, Commercial, and Inter-Service) to meet the operational and training readiness requirements of the Naval Aviation Enterprise at cost."

1.1.2 Mission

Produce relevant quality Aircraft, Engines, Components and Support Equipment to meet fleet demand and ensure fleet safety at improved efficiency and reduced cost.

1.2. Objectives

The Industrial Strategy for Naval Aviation addresses five key operational imperatives:

1. **Core-Sustaining Capability.** Provide the most up to date industrial capability to sustain Naval Aviation's current readiness requirements with the right capability for the right cost that conforms to USC Title 10.
2. **Optimize the Industrial Base.** Develop the industrial capabilities to support future Naval Aviation requirements that are of the proper size and mix between Organic, Commercial, and Inter-service.
3. **Logistics Transformation.** Organizational realignments, process improvements, and integration across the value chain to produce aircraft ready for tasking at the right time, the right place and at the right cost.
4. **Workforce Revitalization.** Transformations that facilitate changes in skills, knowledge, ability, experience and organizational construct in concert with changes in weapons, technologies, and supporting processes.
5. **Capital Investment.** Prioritization and provisioning of investment dollars in support of the above strategic objectives.

1.3. Desired Effects

- **Naval Aviation provides unique capabilities to the Joint Force and provides interdependent capabilities as required by the Joint Force.** Our Industrial investments will recognize Navy's inimitable capability and capacity to support readiness and will avoid the development of redundant capabilities amongst the

Services and commercial industry, except where such interdependence is valuable to the Navy.

- **Naval Aviation conducts persistent forward presence for proactive shaping, disrupting and attacking terror networks, and posturing to be ready to conduct conventional campaigns.** The Naval Air Systems Command and Fleet Readiness Command shall provide industrial capability to meet operational and training requirements of Naval Aviation.
- **Navy sizes, shapes, educates, and trains personnel to develop a "Best Value" Total Force and relieves stress on the Joint Force**. Our industrial workforce strategy must ensure its workforce is capabilities-based and competency-focused. Additionally, the Total Force must be properly aligned to provide quality products and services for the right cost while preserving safety within the Fleet. Through the delivery of Navy training, education and career management will effectively provide for the growth and development of Navy people.

1.3.1 Assumptions

The above desired effects are based on the following assumptions:

- The Quadrennial Defense Review's (QDR) Force Planning Construct (FPC) will not appreciably change from where it is today in terms of mission focus or capacity.
- Navy will provide the Joint Force "irregular warfare" capabilities with a maritime focus and will also provide support ashore to relieve Joint Force stress in Iraq and Afghanistan.
- The necessary resources will be in place to meet the requirements, the objectives and desired effects of this strategic plan.

2. Logistics Transformation

2.1. FRC Implementation

Naval Aviation Maintenance has embarked upon an aggressive transformation. In compliance with the 2005 Base Realignment and Closure (BRAC) law, the Navy disestablished Naval Air Depots (NADEPs) and realigned CONUS, shore-based intermediate maintenance activities (AIMDs) to establish Fleet Readiness Centers in October 2006. This transformation embodies not only the compression and forward-basing of critical services, but also predicates innovation in organizational and cultural behaviors. Envisioned to deliver cost savings, these changes have been carefully crafted to streamline the value chain, and leverage best value from within the Navy. As the Navy implements the transition to Fleet Readiness Centers, it remains incumbent on our maintenance activities to stay abreast of dynamic requirements, technologies and maintenance methodologies to assure "world class" readiness and combat capability today, tomorrow and in the future for the warfighter.

COMFRC is aligned to the Fleet through its support relationships with the Commander, Naval Air Forces, and Naval Air Systems Command. Operationally, COMFRC responds to the requirements of the Fleet through transactional engagements with Commodores, Program Managers, and Naval Air Systems Command. We will look continually to our customers to ensure we deliver the right products and services at the right time and at the right cost. When our customers look at us, they will see a team designed and managed specifically to

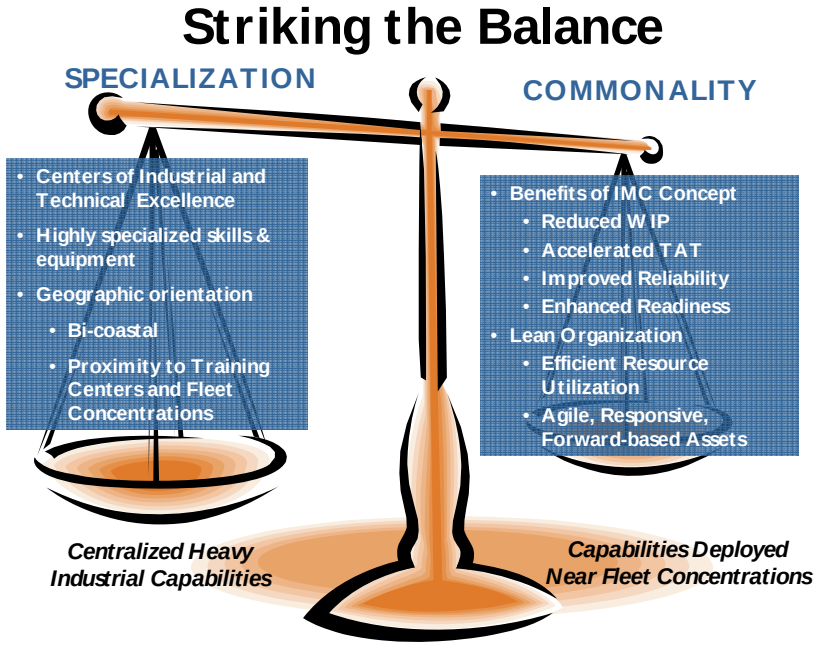
serve their dynamic needs. As we do this, we're managing today's execution and continually assessing actual performance.

2.2. Maintenance Concept Transformation

The emerging maintenance concept within Naval Aviation is based on the integration of Intermediate and Depot levels of repair through the forward basing of maintenance capabilities at the flightline. In short, selected depot level capabilities will be moved to appropriate Intermediate level sites, while other capability will be single-sited at a Center of Excellence where efficiencies dictate. The current flight line Aviation Supply Divisions (ASDs) and Fleet and Industrial Supply Centers (FISCs), in cooperation with NAVICP and DLA activities will serve as the integrated supply chain management system and provide total repair cost visibility. This concept reengineers the three-level maintenance engine into two "on-flightline/off-flightline" levels of repair to optimize resources and promote collaborative maintenance synergy. The positioning of critical capabilities and supplies closer to the flightline will not only reduce time and costs in transportation, but will fortify alignment between the warfighter and maintainer. Additional benefits of the I/D-level maintenance integration include:

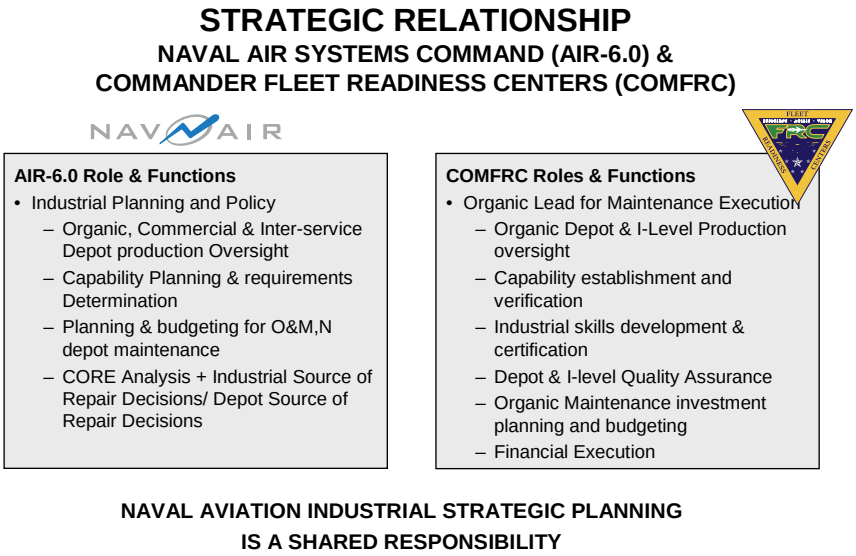
- Reduction of asset inventory requirements and divestiture of surplus or redundant inventory
- Reduction in cost, work in progress and redundant maintenance activities
- Common understanding of the naval aviation repair business and a more seamless operational-, intermediate-, and depot-level maintenance management paradigm, with more efficient use of maintenance assets and personnel

Implementation requires striking the balance between distributed capabilities at the flightline, and capabilities that are centralized for greater efficiency.



2.3. Strategic Alignment

The Naval Aviation Industrial Strategic Planning process is a shared responsibility between the Naval Air Systems Command and the Fleet Readiness Centers. Industrial Planning and Policy is led by the Director of Industrial and Logistic Maintenance Planning/Sustainment for the Assistant Commander for Logistics and Industrial Operations. Organic Industrial Maintenance Execution is led by the Commander of Fleet Readiness Centers.



2.4. Weapons System Modernization

One of the key drivers to logistics transformation from a maintenance perspective is the requirement to adapt to the evolution of weapons within our arsenal. This is done through integration of acquisition and logistics from the systems command with the requirements from the Aviation and Ship operational commands to shape the future of our maintenance capabilities

2.4.1 Aviation/Maintenance Integration

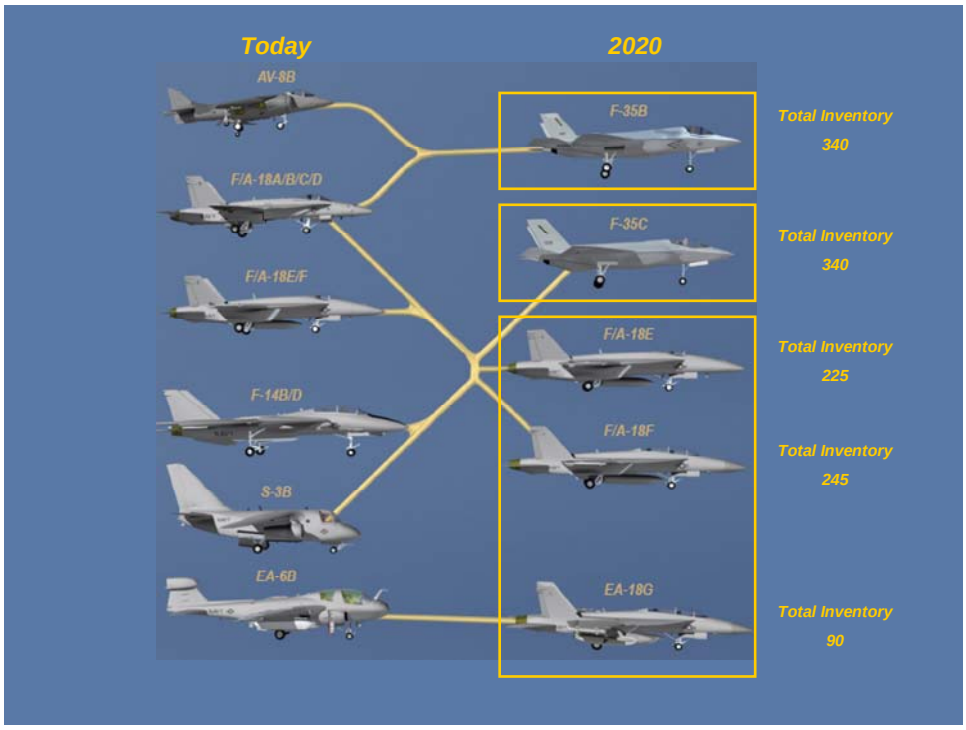
The strong presence of Industrial / Maintenance Program Coordinators from the Industrial Competencies within our Weapons Acquisition Program Offices is the key to effective integration between acquisition and evolving maintenance requirements. Through this organizational liaison effort, acquisition and maintenance professionals are working side by side planning the following near-term weapon system modernization initiatives:

2.4.1.1. V-22. The V-22 will be primarily used in Special Operations Command's eight enduring tasks. The Fleet will be operational by 2007 and will bring in new organic Title 10 core capabilities planned for 2011.

2.4.1.2. F/A-18E/F. The F/A-18A/B/C/D, S-3 and F-14 B/D is being replaced by the F/A-18E/F which achieved an initial operating

capability of 2001 and brought in organic Title 10 core capabilities in 2005

2.4.1.3. **EA-18E/F/G.** EA-6B will be replaced by the EA-18E/F/G configurations. The EA-18G will be Fleet operational in 2009 bringing in Title 10 core capabilities by 2013.

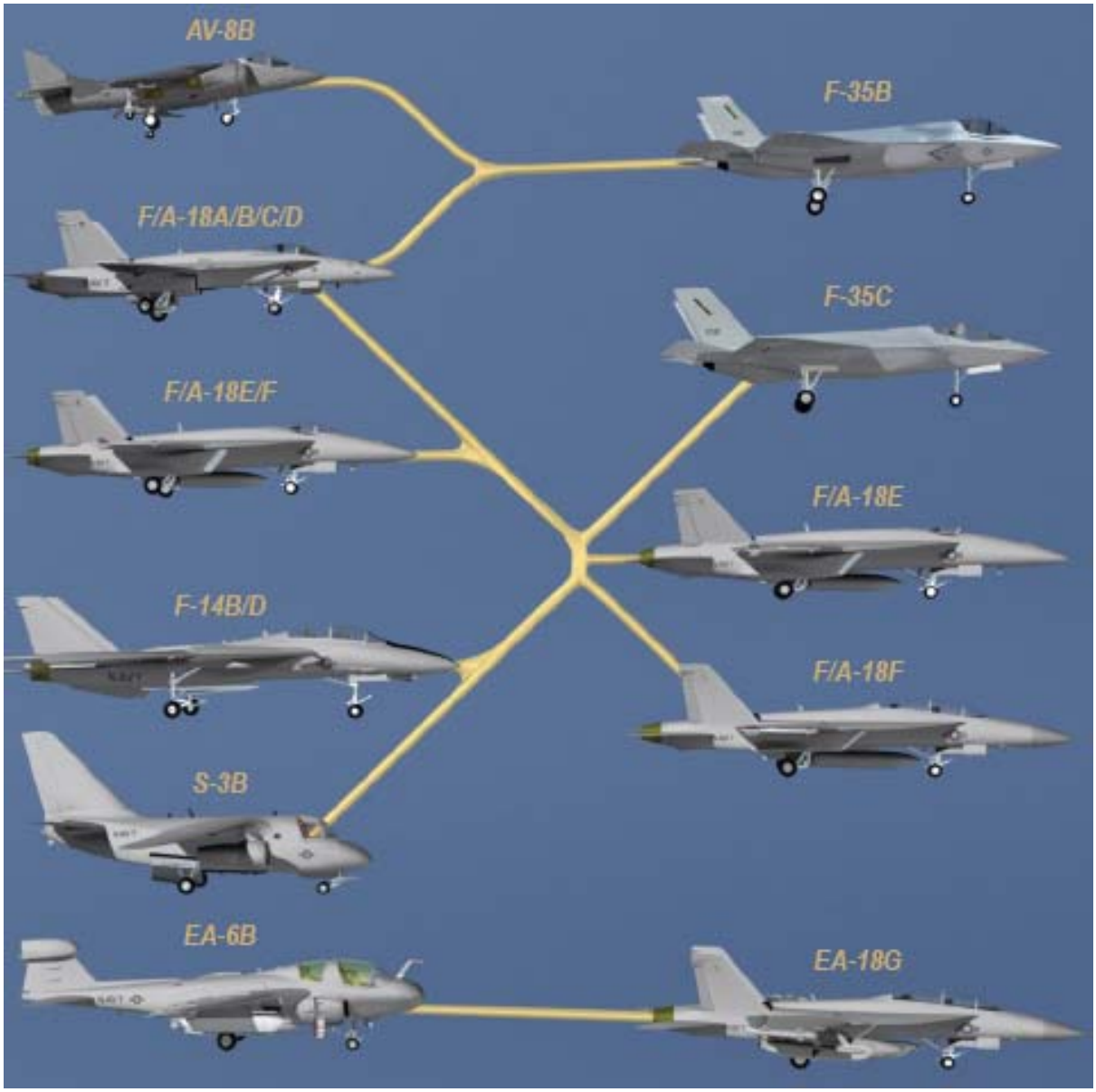


2.4.1.4. **CH-53.** The CH-53K is a new-build production helicopter which evolves the current CH-53E design. Its mission is to conduct expeditionary heavy-lift assault transport of armored vehicles, personnel, and equipment to support distributed operations deep inland from a sea-based center of operations. The fleet will be operational by 2015 and will bring in new organic Title 10 core capabilities planned for 2019.

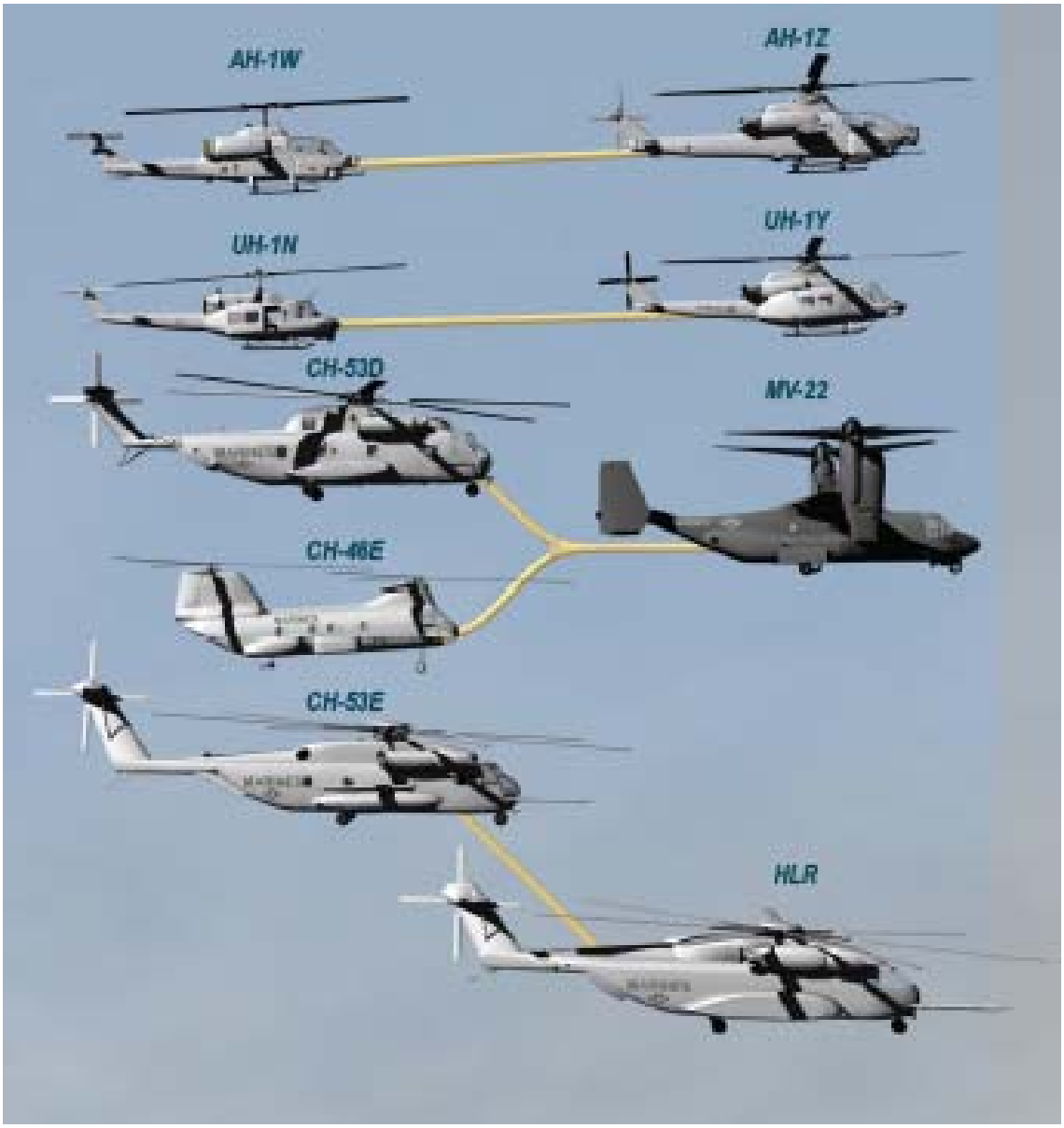
2.4.1.5. **F-35.** The USN Joint Strike Fighter (F-35C) will be a multi-role, stealthy strike fighter to complement the F/A-18E/F. The fleet will be operational by 2012 and will bring in new organic Title 10 core capabilities planned for 2016. The USMC Joint Strike Fighter (F-35B) will be a multi-role, short takeoff, vertical landing strike fighter to replace the AV-8B and the F/A-18C/D. The fleet will be operational by 2015 and will bring in new organic Title 10 core capabilities planned for 2019.

2.4.1.6. **MH-60R.** The SH-60B and SH-60F is be replaced by the MH-60R helicopter. The primary mission of the MH-60 is surface and under sea warfare. The fleet was operational in 2005. The organic core capabilities are planned for 2009.

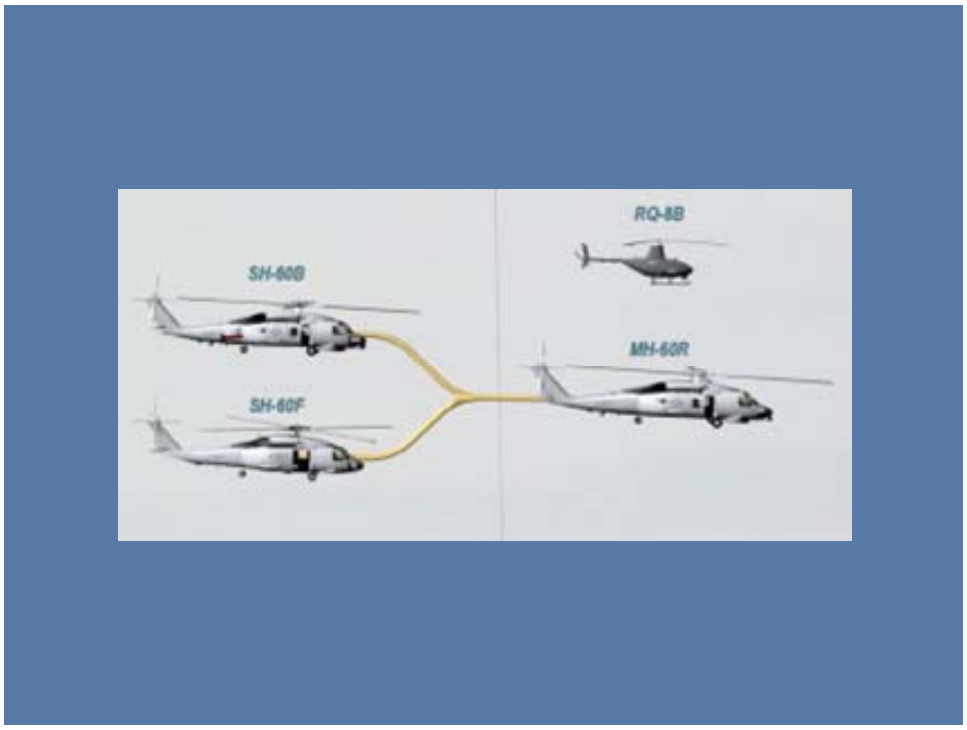
2.4.1.7. **AH-1Z.** The AH-1W will be replaced by the AH-1Z. The mission of the AH-1Z is to provide rotary wing close air support, anti-armor, armed



escort, armed/visual reconnaissance, and terminal guidance for supporting arms to include close air support, artillery, and naval gunfire under day/night and adverse weather conditions. The initial operational capability date is 2011. The organic core capability is planned for 2015.



2.4.1.8. **UH-1Y.** The UH-1N will be replaced by the UH-1Y. The mission of the UH-1Y is to provide control of command elements, armed escort for assault support operations, and security of forward and rear area forces. Also, the mission provides coordination and terminal guidance for supporting arms to include close air support, artillery, and naval gunfire under day/night and adverse-weather conditions. The initial operational capability date is 2008. The organic core capability is planned for 2012.



2.4.1.9. **BAMS.** The Broad Area Maritime Surveillance (BAMS) Unmanned Aircraft System will be operational by 2014. Preliminary core analysis indicates that organic Title 10 core capability may be required by 2018.

2.4.2 Aviation/Ship Integration

Our Aviation/Ship Integration (A/SI) team is actively involved in collecting the composite aviation operational, support, and maintenance requirements for both legacy and new aircraft support aboard new ship classes and designs along with current legacy ship classes. While the individual PMAs are responsible to establish the most effective and efficient support systems, the A/SI team provides, translates, and supports those requirements through the ship design processes for new construction and ship modernization. Ship designs are being impacted by the increasing use of organizational to organic/commercial depot level maintenance concepts and by Performance Based Logistics arrangements, both of which move workload ashore. Also, since new ship classes normally have manpower reductions as design goals, the A/SI team continues to work with the different PMAs and the Fleet Readiness Centers to identify repair capability workload to be moved from the ships to shore repair facilities.

2.5. Infusion of New Technologies

Another key driver for transformation comes from technological innovations introduced into the industrial maintenance environment. We engage decisively with the private sector and with professional organizations to keep ourselves aware and our facilities current with advances in technology. New industrial technologies identified for introduction are:

- Advanced Flight Control Systems
- Advanced Power Transmission Systems
- Advanced Non-Destructive Inspection (NDI) Technologies

- Advanced Materials in Airfoils
- Heavy Vertical Lift Technologies
- Innovations in Unmanned Aerial Vehicles (UAV)
- Contour Measuring technologies
- Universal Static Balance Fixture
- Orbital welding capability for welding titanium tubing
- High pressure (7500 psi) Hydraulic Automated Testing Capabilities
- Low Observable Surfaces and Structures
- Nano-Diamond Coating Technologies
- Autonomic Logistics
- Artificial Intelligence

Our strategic planning process includes a continual environmental scan across Industry to identify emerging technologies. We maintain liaison with the Research Development Acquisition Test and Evaluation community within the Government in the private sector and through relationships with academia to keep abreast of change. The result of this planning process is a roadmap of evolving capabilities prioritized and priced as inputs to our investment portfolio.

2.6. Continuous Process Improvement

AIR*Speed* is the enabler for institutionalizing continuous process improvement across the Naval Aviation Enterprise. AIR*Speed*'s tool sets comprise an assortment of commercial best business process tools, namely Theory of Constraints (TOC), Lean Manufacturing, Six Sigma statistical process control, and various simulation and modeling techniques that are being applied at the organizational, intermediate, and depot-level maintenance activities in support naval aviation. The overarching goal of AIR*Speed* is to improve organizational effectiveness and efficiency as measured by the NAE's single Fleet-driven metric: fleet aircraft Ready-For-Tasking (RFT) at reduced cost. The NAE seeks to optimize maintenance and supply activities, aligning these activities to end-user requirements while enhancing their ability to:

- Consistently meet mission requirements
- Manage Inventory/Investment
- Reduce overall Operating Expenses
- Revolutionize the business of Naval Aviation

The basic tenants of AIR*Speed* are as follows:

- Integrate and align TOC, Lean and Six Sigma methodologies to improve enterprise performance consistent with achieving and sustaining Cost-Wise Readiness.
- Create a Culture of Continuous Improvement by developing, supporting and mentoring personnel to ensure these methodologies become a core competency within naval aviation.

AIR*Speed*'s Industrial goal is to reduce overall repair cycle time by 20% while improving reliability, enabling reduced work-in-process (WIP), reduced cost, increased throughput, improved on-time delivery, and reduced maintenance pipeline assets. Our maintenance activities are encouraged to employ the AIR*Speed* toolset along with creative leadership to establish innovation cells to explore new concepts, and prototype new tactics, techniques and procedures for performing maintenance modification and overhaul processes.

3. Core Capability Assurance

Core capability is the industrial capability (including personnel, equipment, and facilities) maintained by the Department of Defense at Government-owned, Government-operated facilities as the ready and controlled source of technical competence and resources necessary to ensure effective and timely response to a mobilization, national defense contingency situations, and other emergency requirements. The Navy will maintain an efficient core industrial capability—core plus cost-effective business base—to sustain both peacetime readiness and wartime surge capability at an affordable cost to the warfighter. The Navy Industrial Fleet Readiness Centers will be sized (in terms of infrastructure) and shaped (in terms of capability) to support naval readiness when organizational agility, flexibility, and proximity to the operating forces are crucial to accomplish the mission.

Capability deficiencies are serious risks to national security. They have the potential to hamper the Navy's ability to prosecute missions successfully. Our strategy for ensuring that core sustaining workload is preserved within organic facilities is made up of the following components:

- Strong liaison between our maintenance activities and the acquisition community to ensure that maintenance requirements, planning and capability establishment milestones are addressed at the right time with the right emphasis during the acquisition lifecycle.
- Leveraging a minimal capital investment fund in accordance with DoD policy will alleviate funding shortfalls and support continued core logistics capability development.
- Proactive management of the establishment of industrial capability is essential to maintaining the Navy's core logistics capability.
- Prioritizing a list of core capabilities to make sound business decisions on capability will assist the Navy in establishing capability in the face of smaller defense budgets.
- Begin to link core requirements with the programs' industrial transition plans to ensure industrial investments are effective and efficient.

Navy core capability will be augmented as appropriate by other DoD industrial sources on the basis of quantifiable risk and value. The future of industrial interservicing lies with innovative joint service capability ventures and private-sector support that preserves individual service core capabilities and capitalizes on the unique capabilities of each "partner."

3.1. Capability and Capacity Monitoring and Measurement

Organic Industrial Fleet Readiness Centers provide both the capabilities and the management mechanisms needed for agile product support to the warfighter under a wide variety of operating conditions. As such, they are responsible for maintenance execution and accountable to the NAE's single Fleet-driven metric of aviation units ready for tasking at reduced cost. This metric is enabled by the Naval Aviation Readiness Integrated Improvement Program (NAVRIIP) which determines what inventory target levels are required to maintain a certain ready-to-train or operational status and matches the right amount of readiness and cost to achieve and sustain those levels. NAVRIIP provides visibility into our key performance areas including cost-wise readiness; improved time on wing; greater speed/reduced cycle time; reliability; reducing total cost, and implementing process efficiencies. Indicators of readiness under these metrics include periodic capacity reporting through the Joint Depot Maintenance Activities group (JDMAG), and enterprise capability management using a suite of tools including the Maintenance Capabilities Requirements for Components (MCRC) System, Naval Aviation Depot Maintenance System (NDMS), and Individual Component Repair List (ICRL). The culmination of these indicators is the enhanced ability to manage readiness and make informed decisions. Over and above management of our internal capabilities and capacities, we have a goal to cultivate and maintain closer working relationships with cognisant Defense Contract Management Agencies (DCMAs) and Inter-service Agencies. Cultivating these relationships will yield improved reporting and feedback on performance to NAE metrics. These agencies work directly with Defense suppliers to help ensure that DoD items are delivered on time, at projected cost, and meet all performance requirements.

3.2. Performance Based Logistics (PBL) and Public-Private Partnerships (PPP)

The Naval Aviation Enterprise is committed to the tenets outlined by DoD Directive 5000.1, "The Defense Acquisition System," 12 May 2003 which states that:

- PMs shall develop and implement PBL strategies that optimize total system availability while minimizing cost and logistics footprint
- Sustainment strategies shall include the best use of public and private sector capabilities through government/industry partnering initiatives, in accordance with statutory requirements

Our maintenance and acquisition professionals work together to identify the right mix of organic and commercial services and staff based on careful analysis of existing organic capabilities, capacities and operating costs compared to value propositions from the private sector.

3.2.1 PBL

PBL is the DoD and the DoN preferred product support strategy wherein the logistics support provider is responsible for meeting result-oriented performance requirements to improve product support effectiveness while containing or reducing Total Ownership Cost (TOC). Aviation Systems Program Managers strive to optimize performance and cost objectives through the strategic implementation of varying degrees of Government-Industry partnerships. We have found that buying performance outcomes as opposed to the individual parts or repair actions provides the commercial service providers with relevant incentives to deliver to our true needs as measured by readiness above all else. The aligment between service provider

incentives and the Navy's mission is resulting in win-win relationships across the public / private divide, and delivering value directly to the warfighter as measured by increases in systems ready for tasking. Although PBL is not a "one size fits all" approach to product support, the NAE will continue to embrace PBL strategies through the following actions:

- Refine the processes for expeditious establishment of PBL relationships earlier in the acquisition process
- Design total lifecycle requirements into PBLs to mitigate risks associated with diminishing sources of logistics support later in the product's lifecycle
- Pursue enterprise-level partnering to simplify the relationships between a commercial partner and our maintenance execution enterprise - COMFRC

3.2.2 PPP

A public-private partnership (PPP) for depot-level maintenance under section 2474 of Title 10, United States Code (10 USC 2474) is a cooperative arrangement between an organic depot-level maintenance activity and one or more private sector entities to perform DoD or Defense-related work and/or to utilize DoD depot facilities and equipment. The Navy has made great strides in providing support to the warfighter by enabling and empowering its organic Industrial Fleet Readiness Centers to develop appropriate partnerships with the commercial sector. Our support arrangements consider capabilities of both organic and commercial service providers, and leverage the best that each has to offer through integrated public-private agreements designed to deliver performance-driven outcomes. This strategy provides the Navy with the opportunity to deliver weapon system availability at best value while assuring core logistics capabilities are maintained by the Navy to comply with Title 10 USC Core Logistic Capability requirements. Working with industry partners, the Navy benefits from streamlined supply support procedures, cutting-edge process improvement tools (e.g. incorporation of Theory of Constraints, Lean, and Six Sigma), innovations in configurations, increased access to proprietary technical data, and industry technical support.

4. Workforce Revitalization

The current projections for the workforce indicate decreases of 5% for FY07 and 2.5% for FY08 and FY09. The plan to achieve these levels of reductions will rely on efficiencies from organizational restructuring, AIR*Speed* productivity improvements, and risk-based staffing for supply/demand negotiation.

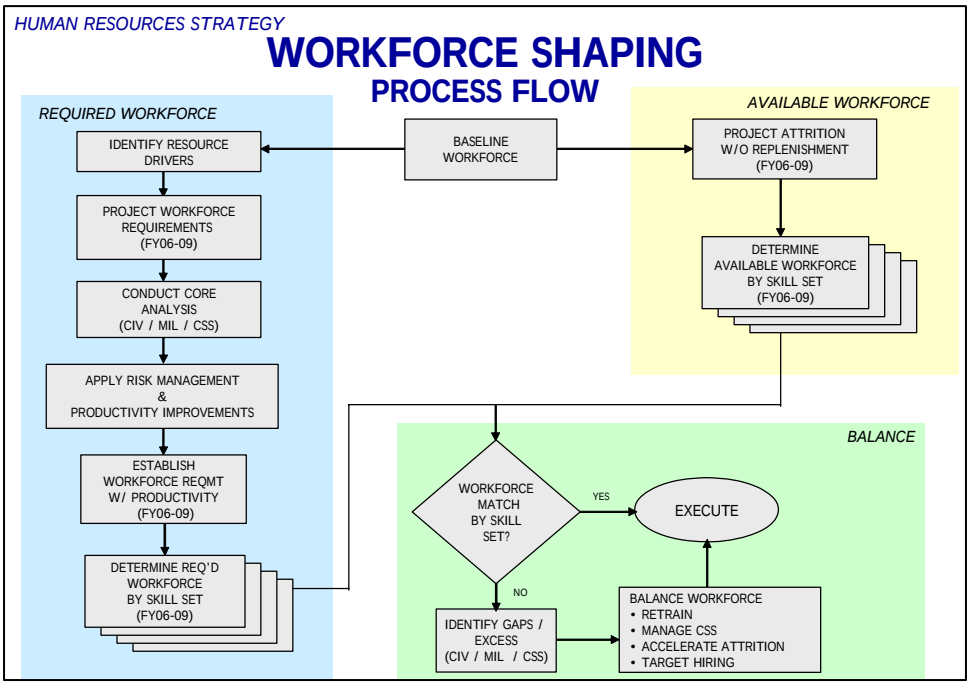
Driven by anticipated workload, the objective of workforce shaping is to identify the right size workforce to meet demand with flexibility to accommodate workload fluctuation. The industrial workforce of the future will have multiple skills and will be mobile—ready to deploy at a moment's notice, with tools and technical data to support the combat forces. Employees will operate in a virtual knowledge environment using the most advanced information management tools and techniques. The workforce will be highly trained, incentivized to employ multi-trade career paths, and capable of supporting the newest and most advanced combat systems used by naval and joint operating forces.

An aggressive human capital strategy will be used to size and shape the work force. The Navy will develop tools to plan and analyze workforce skill and capabilities, and then match them to the products and services required to support the warfighter. Overlaps between the

projected workload and workforce will be addressed through planned attrition, Voluntary Separation Incentive Payments (VSIPs), and reassignment or retraining. Gaps in the workforce will be filled through aggressive retraining initiatives, with targeted hiring as a last resort to maintain critical skills.

- Hiring to replace attrition
- Hiring apprentices for long-term skill revitalization
- Hiring entry-level engineers and production personnel to rebalance the grade distribution
- Employing seasonal or temporary personnel to achieve a more flexible workforce to handle major workload variations and leadership development programs

Through these workforce shaping efforts, projected maintenance workload will be matched to the skills and talent needed for lean support of these programs resulting in a workforce that is the right size and in possession of the right skills. Additionally, our reduced future maintenance workforce will meet a stable product demand through continued deployment of FRC and Enterprise AIRS*peed* initiatives to improve productivity and supply support.



5. Capital Investment

5.1. COMFRC Business Operations

COMFRC Business Operations is responsible for managing and monitoring the industrial capital investment program. The objectives of the investment program are:

- Continue developing an understanding of Fleet needs as they map to our core business. Invest in methods and tools to manage our inventory, reliability and cycle time to reduce total cost to the TOA

- Target workforce training, incentive and recruitment programs to reshape the workforce into one that is more focused on the core business of COMFRC
- Develop processes to shape the enterprise, incorporate AIR*Speed* best commercial practices to gain efficiencies, and reduce the costs of all resources
- Make capital investments only in efforts that directly support the Naval Aviation Enterprise
- Execute MRTFB investments in modernization and recapitalization that support:
    - Automation of processes to reduce maintenance and operational costs
    - Improve reliability
    - Rightsize infrastructure in alignment with the Naval Aviation Enterprise's goals of reducing the cost of doing business and balancing current and future readiness
    - MILCON investments in efforts that directly support the Naval Aviation Enterprise

5.2. Capital Investment Candidate Identification

The identification process starts with a gap analysis that investigates infrastructure shortfalls. Analysis is based on workload requirements compared to existing infrastructure capability and capacity. Investment opportunities are identified based on ability to fill critical shortfalls and the following criteria:

- Ability to improve FRC's on-time delivery
- Ability to improve unit price
- The urgency of requirements based on existing equipment age, condition, or capability/capacity expansion

Investment opportunities are then cataloged along with their ROM cost benefit analyses as candidates for future prioritization and funding.

5.3. Prioritization and Funding

Each year CIP candidate projects are reviewed, prioritized and broken into short range and long range perspectives. The prioritization process is based on a cost benefit analysis that evaluates the following analysis areas:

- Workload volume
- Environmental/safety/security
- Productivity, customer priority
- Infrastructure impact/improvement

Candidates that meet selection criteria are funded to the control limits. This process allows funding for high priority projects each year and sustains the average age of CIP equipment within a cost-effective range. Candidates not selected are retained for future year evaluation.

6. Conclusion

The Naval Aviation Industrial Strategic Plan is written to inform and provide guidance to address our challenges to sustain industrial readiness. It outlines the transformation strategies required to meet Naval Aviation's industrial objectives and desired effects. It forms the basis for a repeatable process in the future that is linked to the NSP. With the assistance of the Naval Aviation Enterprise we can build an industrial capability that is properly sized, balanced and priced for the future.

Naval Shipyard Business Plan

Portsmouth Naval Shipyard
Norfolk Naval Shipyard
Puget Sound Naval Shipyard & IMF
Pearl Harbor Naval Shipyard & IMF

February 2007

Naval Shipyard Business Plan
Summary

Mission: The four public sector Naval Shipyards (Portsmouth, Norfolk, Puget Sound, and Pearl Harbor) are wholly-owned subsidiaries of the Navy enterprise, and are vital for Fleet operational availability and mission success. As part of the Fleet Readiness Enterprise, the public shipyards provide the essential organic capability to perform ship depot maintenance and emergency repair work, primarily for nuclear-powered aircraft carriers and submarines, and complement the private sector's capability for conventional surface ships. Along with the private sector, the Naval Shipyards provide operational and combat ready ships and weapon systems required by Combatant Commanders and the Joint Chiefs of Staff contingency scenarios.

Business Climate: As the Navy enters the second half of the decade, leaving a peak period of submarine major maintenance, there is a significant reduction in the overall Navy projected ship depot maintenance workload during FY07-10 and continuing. Exacerbating the reduced workload are carrier and submarine shipyard maintenance periods (300^{+} K mandays), which create irregular demand signals for shipyard manpower and facility requirements. The future years challenge is to determine the correct workload balance to maintain effective and efficient public shipyards; ensure compliance with statutory requirements for shipyard capability and capacity; and balance public and private shipyards with respect to our total national industrial capacity and capabilities.

Business Plan Development: The following planning assumptions were made:

- Ship operational availability (Ao) is enhanced by minimizing time in maintenance.
- Maintenance is executed in schedule windows provided by operational schedules.
- Four geographically dispersed Naval Shipyards, in the current locations, will be maintained as the Navy's core ship maintenance industrial capability and capacity.
- Major physical constraints of each shipyard, such as number of drydocks and navigational approaches, will remain unchanged.
- The SECNAV-approved guiding principles and business rules for making assignments of CNO ship depot maintenance availabilities will be the basis for assessing trade-offs and decision making:
    - Schedule maintenance in ship's homeport when possible.
    - Optimize critical skill usage (One Shipyard concept).
    - Load public shipyards first to efficiently use organic capacity.
    - Consider cost, schedule, operational and modernization impacts along with shipyard executability.
- All efforts will be made to avoid adverse personnel actions (reductions to be handled through attrition), in order to sustain a revitalized, balanced workforce.
- Efficiency levels of the public shipyards will be analyzed and used in shipyard loading decisions.
- Overtime will be reduced to more efficient and effective levels in both budget and execution.

The following steps were taken to analyze the workload:

- Reviewed legal requirements for maintaining shipyard capability and capacity.
- Identified the minimum efficient workload required to maintain a depot repair capability for the type of platforms assigned now and expected in the future.
- Identified the expertise and projected workload based on current policies.

Workload / Workforce Requirements: The business plan concludes that an efficient four Naval Shipyard workforce should be sized to perform in the range of 3.8 to 4.2 million mandays of direct work per year. The current program of record, henceforth termed "baseline," as defined in the FY08 Program Objective Memorandum (POM 08), reflects 3.9 million mandays for FY07 diminishing to 3.5 million mandays per year on average from FY08 to FY18, with a low of ~3.2 million mandays in both FY10 and FY14. Unless the actions proposed in this plan are undertaken, the 3.5 million manday out-year average is below the minimum level for efficient public shipyard operations, and may jeopardize compliance with 10 USC 2466 (50/50 public/private split).

Workload Execution Plan: The following workload shaping actions will provide additional workload to achieve Naval Shipyard efficiency and statutory compliance:

1. Reallocate Sailor Shore Maintenance Billet Divestment Workload
2. Reduce Subcontracted Work
3. Expand Tiger Team Utilization
4. Shift Alteration Installation Team (AIT) Submarine Work
5. Implement Class Maintenance Plan Notional Workload Changes as Approved
6. Shift Non-Traditional Naval Shipyard Work (only in those years necessary to comply with the 50/50 statute)

The addition or shift of work to the Naval Shipyards encompassed by the above initiatives is estimated to result in a total average annual public shipyard workload of 3.8 to 4.0 million mandays. The scope of the changes, and their technical rationale, will be determined as part of the PR 09 process.

Strategic Investment Plans: The Naval Shipyard fundamental business objectives also include a) sustaining the core skills, process, and infrastructure capability and capacity for future workload, and b) continuously improving processes and systems to provide increased value and operational availability to our customers. The following elements of the business plan are vital at any level or type of workload:

- Drive culture change and improvements in direct work productivity with Lean Six Sigma implementation.
- Revitalize and shape the workforce. Careful management of overtime, hiring, the apprentice program, and attrition aim to ensure worker productivity is optimized.
- Invest in the Naval Shipyards' physical plant infrastructure and information technology systems to ensure mission capability and Fleet readiness.

The business plan will be updated annually after programming decisions are made in the Navy's budget process.

Naval Shipyard Business Plan
Table of Contents

I. Where We Are:
Naval Shipyards - Past and Present

A. Who We Are and What We Do

We are here to support and enhance the Fleet's operational availability and mission effectiveness. As part of the Fleet Readiness Enterprise, the four Naval Shipyards (NSYs) – Portsmouth, Norfolk, Puget Sound, and Pearl Harbor - maintain, repair, modernize, inactivate, dispose, and provide emergency repair of U.S. Navy ships, systems, and components. The Naval Shipyards are designated Centers of Industrial and Technical Excellence (CITEs) for these complex missions. The Naval Shipyards are owned by the Fleet, and operated by the Naval Sea Systems Command (NAVSEA).

Our current workload is performed primarily on Submarine (SSN and SSBN), Aircraft Carrier (CVN), Amphibious Ship (LHA / LHD), and Depot Level Repairable value streams. The four Naval Shipyards have a combined total annual volume of business of approximately $4 billion.

- Naval Shipyard Primary Critical Mission Services: Reactor plant servicing; Nuclear ship propulsion plant work; Reactor compartment disposal and ship recycling; Battle and operational damage repair; Ship maintenance engineering, planning, and project management of complex availabilities; Ship maintenance workforce training (civilian and sailor); and the Naval Foundry and Propeller Center.

- Naval Shipyard Primary Critical Mission Assets [*Workforce*, *Infrastructure*, *Process*]: Workforce (including production (trade skill) artisans, engineers and technicians, and support personnel); Drydocks, piers, and associated waterfront property; Cranes and other weight handling equipment; Ship berthing, hotel, and temporary services; Reactor plant servicing equipment; Mission essential industrial plant equipment and facilities (e.g., Controlled Industrial Facilities; test stands; mockups; shaft lathes; propeller manufacturing and inspection equipment); and, Ship maintenance corporate and production knowledge.

We are where the Fleet is, and we go where the Fleet goes, with an always ready source of repair and a strike-free workforce. Work is performed primarily onsite at the four geographically dispersed Naval Shipyards, but also includes underway voyage repairs and work at far-ranging locations including Guam, Bahrain, Yokosuka, La Maddalena, San Diego, Ingleside, Kings Bay, Groton, and Jacksonville.

In addition to executing the assigned workload efficiently and timely, the Naval Shipyard fundamental business objectives also include a) sustaining the core skills, process, and infrastructure capability and capacity for future workload, and b) continuously improving processes and systems to provide increased value and operational availability to our customers.

The following charts and illustrations provide an overview of the four Naval Shipyards.

Portsmouth Naval Shipyard

- Civilian End Strength as of 9/30/06: 3,991
- Civilian Payroll in CY 2005: $319M
- FY06 Workload Actual (Mandays): 680K
- Plant Replacement Value: $0.5B
- Number of certified drydocks: 3
- Exclusively a nuclear submarine repair yard; capable of refueling SSN 688 Class submarines
- Drydock#2 is a covered drydock with SSN 688 class refueling capability

Puget Sound Naval Shipyard & IMF

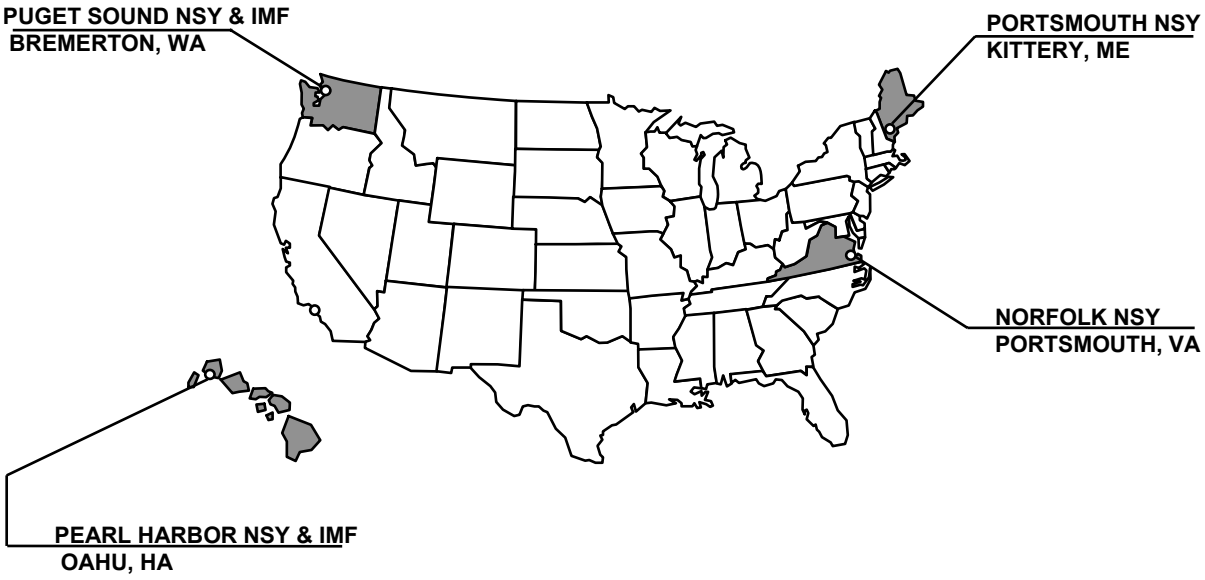
- Civilian End Strength as of 9/30/06: 9,821
- Civilian Payroll in CY 2005: $726M
- FY06 Workload Actual (Mandays): 1,775K
- Plant Replacement Value: $2.0B
- Number of certified drydocks 7
- Largest West Coast shipyard (public or private)
- Full service shipyard capable of working on all classes of Navy vessels
- Primary West Coast shipyard for support of aircraft carriers (Nuclear and Non-nuclear)
- Only nuclear ship reactor compartment disposal / recycling site

Norfolk Naval Shipyard

- Civilian End Strength as of 9/30/06: 7,688
- Civilian Payroll CY 2005: $595M
- FY06 Workload Actual (Mandays): 1,339K
- Plant Replacement Value: $1.1B
- Number of certified drydocks 4
- Only East Coast Naval Shipyard capable of dry docking nuclear aircraft carriers
- Full service shipyard that provides repair and modernization to the entire range of Navy ships including aircraft carriers, submarines, surface combatants, and amphibious ships

Pearl Harbor Naval Shipyard & IMF

- Civilian End Strength as of 9/30/06: 4,276
- Civilian Payroll CY 2005: $550M
- FY06 Workload Actual (Mandays): 677K
- Plant Replacement Value: $1.4B
- Number of certified drydocks: 4
- Largest ship repair facility between the West Coast and Far East and strategically located in major homeport area for submarines and surface ships
- Primary workload is SSN688 Class submarines, surface combatants and Fleet emergent work
- Has a large CV/CVN dock for emergency docking



B. History and Recent Events

The Naval Shipyards have undergone many dynamic and significant changes affecting business and operations over our 200 year history, particularly in the past decade and a half as portrayed in Figure 1 on page 9. This section provides a brief synopsis of some of those major changes, to define the foundation of how we arrived at where we are today.

In 1799 the Congress authorized five Navy Yards located at Portsmouth, Boston, New York, Philadelphia and Norfolk. Later in the 19th century Mare Island and Puget Sound Navy Yards were added and in the 20th century Charleston, Pearl Harbor, San Francisco (Hunters Point) and Long Beach Navy Yards were built, for a total of 11 Naval Shipyards. These shipyards were the Navy's shore establishment for many years. Their primary mission – and associated infrastructure, workforce, and processes - was twofold: new construction and repair of Navy ships.

Navy Yard employment peaked during World War II at almost 400,000 people and then declined during the second half of the 20th century. The public sector shipyards' construction mission phased out, ending in the early 1970s, and New York, Boston and Hunters Point Navy Yards were closed. As part of the Base Closure and Realignment (BRAC) process, Philadelphia (BRAC 1991), Charleston (BRAC 1993), Mare Island (BRAC 1993) and Long Beach (BRAC 1995) Naval Shipyards were closed.

Naval Shipyard civilian employment was near 70,000 people in 1990. Declining ship maintenance workload, resulting from a one-half reduction in the number of Navy ships and the attendant closure of four Naval Shipyards, caused employment to drop dramatically. It is now about 26,000, down about 60% over the 16 year period.

In the early 1990's, the Naval Shipyards completed a major business process re-engineering initiative resulting in the implementation of Project Management and the associated Advanced Industrial Management (AIM) program, which remain the business model and process employed today for complex nuclear-powered submarine and aircraft carrier maintenance projects. The Naval Shipyards were also actively engaged in the Navy's Total Quality Leadership (TQL) initiatives during the '90s.

In the late 1990's, the Navy took actions to improve ship maintenance efficiency and effectiveness, including commencement of regional maintenance and intermediate- and depot-level (I&D) ship maintenance integration. Mission funding of Naval Shipyards was initiated in the Pearl Harbor I&D integration pilot in 1998, and all four of the Naval Shipyards became Fleet-owned and NAVSEA-operated upon the final transition to mission funding in October of 2006.

In 2001 the Naval Sea Systems Command introduced the "One Shipyard" concept (see diagram on next page) of the Industrial Base Workload and Resource Enterprise to achieve the most efficient ship maintenance for the Fleet under a Surge, Sustain and Reconstitute operational construct, as outlined in the CNO Guidance. One Shipyard

focuses on cost, schedule and quality through standardizing processes, sharing resources among public shipyards, and partnering with private shipyards. Other vital elements are

a corporate approach to material support and resolving critical skill shortages. One Shipyard is a descriptor for this distributed complex of facilities, people and processes. The size and demographics of the public and private industrial base workforce and careful balancing of total workforce capacity with programmed workload creates geographic critical skills shortfalls, particularly when the actual workload varies from programmed workload in a surge scenario. To mitigate these skill imbalances, skilled workers are loaned and borrowed rather than have each shipyard hire, train and employ capacity to execute peak workload that would be underutilized and costly to maintain during off-peak times. The industrial base today has adequate worker capacity, but the workers must be carefully managed and moved to where the work is geographically. This facet of ship repair is unique in the depot industry – all other depot repairs are conducted by moving the units to be repaired to where the workers are employed.

When Commander Navy Installations Command (CNIC) was established in 2003, a considerable portion of shipyard workforce (1,557 full time equivalents) and installation management responsibility for infrastructure was transferred directly to CNIC. Ownership of Class 1 and 2 properties shifted to CNIC, while the Naval Shipyards retained the responsibility to oversee infrastructure management design, planning and maintenance of industrial facilities to assure their viability into the future. The BRAC 2005 Commission determined that all four Naval Shipyards are needed to ensure sufficient public depot ship maintenance capacity (people, plant, processes) with the ability to surge, because Naval Shipyard replication would be difficult and Naval Shipyard capabilities are not totally resident in the private sector.

In the present, the Navy is undergoing fundamental shifts in the way we are organized and how we conduct business. Lean Six Sigma is becoming the way of doing business and meeting the challenges of the present and the future. Naval Shipyard integration and alignment with the Warfare Enterprise construct and business rules is a focus. Our customers and stakeholders are:

- Under Sea Enterprise (USE) and Submarine Team One for submarine (SSN and SSBN) work
- Naval Aviation Enterprise (NAE) and Carrier Team One for aircraft carrier (CVN) work
- Surface Warfare Enterprise (SWE) for surface ship work
- Fleet Forces Command (CFFC)
- Fleet Maintenance Board of Directors (FMBOD), and the associated Local Boards of Directors (LBOD).

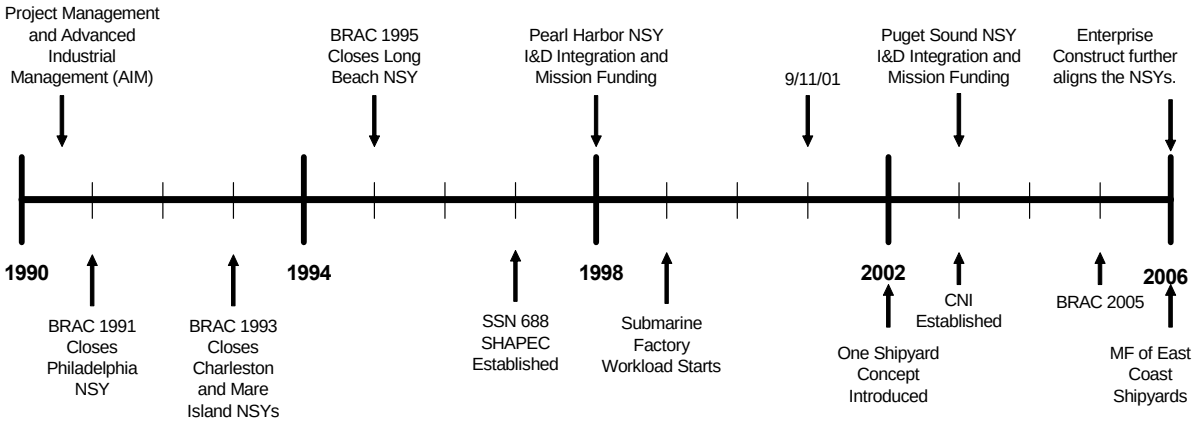


Figure 1 – Significant Changes in NSY Business and Operations

C. Current Naval Shipyard Capability and Capacity Requirements

To maintain an effective, efficient, ready Naval Shipyard workforce, the employee resources must be stabilized and revitalized at a sufficient level to provide a work-skills balance to meet the critical work with adequate margin for surge to meet unplanned requirements. U.S. Code Title 10 contains several requirements for organic (government owned and operated) depot maintenance capabilities and capacity. These statutes are the foundation for building a bottom-up "zero-based" definition of Naval Shipyard capacity and baseline workload requirements.

- 10 USC 2464 requires a core logistics capability (skills, processes, and infrastructure) that is government-owned and government-operated, to ensure a ready and controlled source of technical competence and resources necessary to ensure effective and timely response for all weapons systems.
- 10 USC 2466 limits the amount of depot maintenance funds that can be contracted out to the private sector to less than or equal to 50%.
- 10 USC 2472 requires public depot civilian employment to be managed solely on the basis of workload and the funds available for such depot maintenance. It prohibits management by "end strength."

Specific provisions of these sections of the law are summarized below:

1. Naval Shipyard Depot Core Logistics Requirement: The depot maintenance core calculation supports the requirement for the Department of Defense to report every 2 years to the Congress. It is derived from Title 10, USC Section 2464 and the core methodology provided by Deputy Undersecretary of Defense (Logistics and Material Readiness) letter dated 9 January 2003. The total Naval Shipyard depot core requirement is calculated to confirm that the assigned workload continues to be sufficient to meet the core capability and skill requirement. The most recent report to Congress is summarized in the table below:

Naval Shipyard Required Core Capability

2007 Workload Required to Maintain Core Capability (in Million Mandays)	
Portsmouth	0.504M MD
Norfolk	0.916M MD
Puget Sound	0.963M MD
Pearl Harbor	0.397M MD
Total in Mandays (MD)	2.780M MD

Conclusion: The Naval Shipyards need to perform 2.8 million mandays of workload in 2007 to meet the workforce core capability requirements of 10 USC 2464.

2. 50/50 Public/Private Split Requirement: 10 USC 2466 limits the amount of depot maintenance funds that can be contracted out to less than or equal to 50% by Military Department. Therefore, certain Navy weapon systems can have greater than

50% of depot maintenance in the private sector, while others can have less than 50% in the private sector. As long as the total depot maintenance funds for all Navy weapon systems performed in the private sector is less than or equal to 50% each fiscal year, the 2466 requirement is met. DoD recently reported to the following 50/50 data to Congress:

	FY 2004	**FY 2005**	**FY 2006***	**FY 2007***	
Navy Dept Total	$10,127M	$10,890M	$9,454M	$9,266M	
Federal Work	$ 5,085M	$ 5,936M	$5,022M	$5,448M	
Public Portion	50.2%	54.5%	53.1%	58.8%	*Forecast

In fiscal year 2005 the Fleet and NAVSEA portion of the Navy total depot maintenance work shown in the table above was $5,888 million, of which $3,457 million or 58.7% was performed in the public sector and $2,431 million or 41.3% was performed in the private sector. The Department of the Navy depot maintenance work in the public sector could have been $491 million less in FY05 than it actually was and the DoN would have still met the 50/50 requirement. Translating this into Naval Shipyard workload, the minimum Naval Shipyard workload in 2005 that would have allowed DoN to satisfy the Navy's 50/50 requirement is 3.6 million mandays. The actual Naval Shipyard workload in FY05 was 4.4 million mandays.

Looking to the future, major new weapon systems such as the Joint Strike Fighter and the Littoral Combat Ship will rely heavily on the private sector (original equipment manufacturer) for depot maintenance. At the same time, legacy weapon systems currently receiving depot maintenance from public sector will be retired. There will be a compound effect of reducing the margin for 50/50 compliance. Therefore, Fleet and NAVSEA public sector ship depot maintenance will be even more critical to meeting the DoN 50/50 requirement in the future. While the minimum workload to satisfy 50/50 varies from year to year, projections over the next decade bound the ship maintenance workload requirement between 3.4 and 3.8 million mandays per year, with 3.6 million mandays as the average.

Summary / Conclusion:

The sizing of the Naval Shipyard enterprise workload and workforce is based on the most efficient and effective use of the four shipyards in operation today. The minimum workload required to meet the core and 50/50 requirements is, on average, approximately 3.6 million mandays per year. This minimum will vary slightly from year to year as actual ship depot maintenance workload assignments between public and private shipyards are decided, as well as when other Navy depot maintenance (e.g., NAVAIR and Marine Corps) workload is determined.

D. Naval Shipyard Workload Drivers

The Naval Shipyards' workload is currently performed primarily on Submarine (SSN and SSBN), Aircraft Carrier (CVN), Amphibious Ship (LHA / LHD), and Depot Level Repairable value streams. Naval Shipyard work on the principal SSN, SSBN, and CVN product lines includes both the nuclear (e.g., propulsion plant) and non-nuclear portions of those ships' maintenance plans. Depot maintenance work on the Navy's conventionally-powered surface ships is typically done in the private sector, although Naval Shipyards must retain this capability to satisfy 10 USC 2464 core logistics requirements. Naval Shipyards do not perform maintenance on Military Sealift Command (MSC) ships, and MSC ship workload is not addressed nor included in this business plan.

Naval Shipyard workload over the recent past has been characterized by:

- Support of the Fleet Response Plan and the Global War on Terror
    - Support of Army / Marine Corps vehicle armoring
- In FY06, the Naval Shipyards had a total of 47 availabilities completed or in progress
- An unprecedented level of complex SSN 688 Class CNO maintenance work
- Accomplishing the four SSGN Refuelings and Conversions
- Implementing a revised Aircraft Carrier Maintenance Plan
- Emergent work, such as USS SAN FRANCISCO damage repairs and USS COLE initial on-scene response and stabilization

The Naval Shipyards' overall workload is a function of:

- Force structure and number of ships in the U.S. Navy inventory
- Maintenance plans for each ship class (including the established intervals, durations, maintenance cycles, and repair mandays for depot level maintenance availabilities)
- Fleet Modernization Plan
- Homeport assignments
- Fleet operational tempo
- The Planning, Programming, Budgeting System (PPBS), including the ship depot maintenance Capability Plan (CP), programs the funding and capacity necessary to execute the above workload with only limited surge capacity.

Workload distribution is accomplished using the availability assignment criteria approved by the Secretary of the Navy. The governing principles of these criteria aim to strike a balance between ship's crew quality of life, cost, operational availability, and ability to execute work in accordance with cost and schedule goals.

- Schedule maintenance in ship's homeport when possible (to support PERSTEMPO / crew Quality of Life)
- Optimize critical skill usage (One Shipyard concept)
- Load public shipyards first to efficiently use organic capacity
- When there is more than one option for availability assignment, the following factors, as applicable, will always be taken into account: a) Crew impact, b) Cost impact, c) Operational impact, d) Shipyard executability, e) Class Maintenance Plan impact, f) Schedule impact, and g) Modernization impact.

Figure 2 illustrates the Naval Shipyards' combined workload and workforce for the period FY 2000 – FY 2013 in resources per day (RPD). It shows the fluctuations in the workload and workforce level. A band is shown in the outyears indicating potential variances in future workload and workforce, based on actual historical experience. Large swings in workload at any given Naval Shipyard are difficult to manage, from both resource management and efficiency sustainment standpoints. Over the next 15 years, there are numerous projected "peaks and valleys."

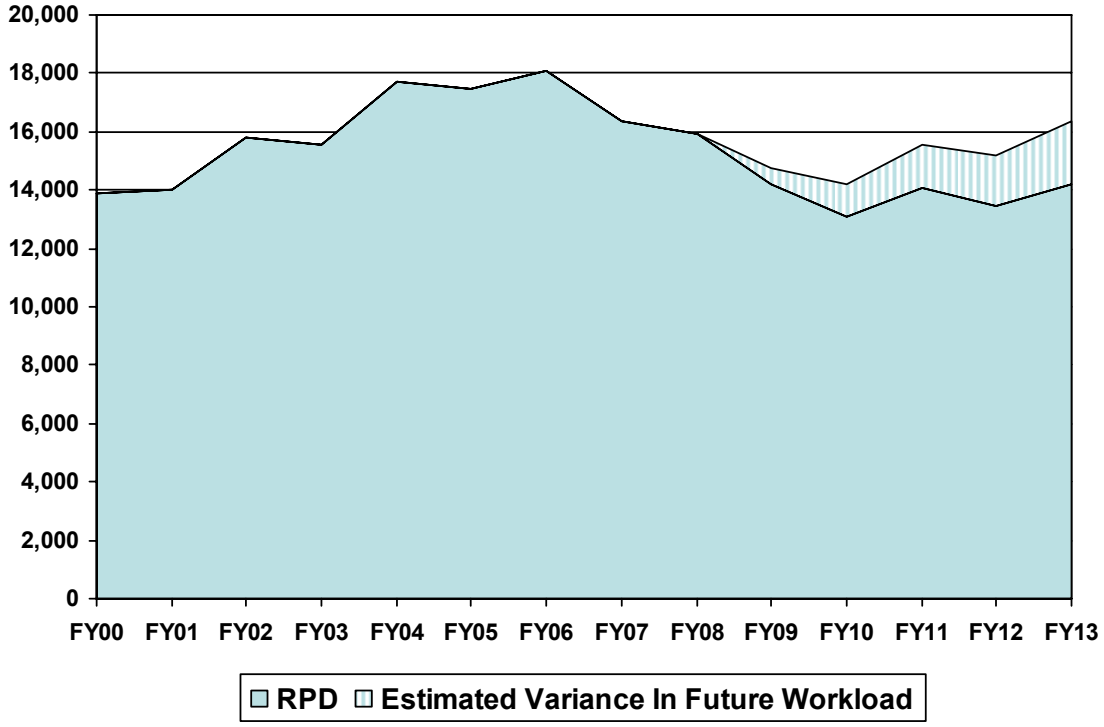


Figure 2 – Naval Shipyard Combined Workload FY 00-FY 13

Figure 3, on the following page, portrays the unprecedented high level and dynamics of submarine depot availabilities from 2000 projected to 2018. Declines in workload are forecast commencing in FY08 as a result of the completion of the USS LOS ANGELES (SSN 688) Class refuelings. The last scheduled LOS ANGELES Class refueling availability, USS OLYMPIA (SSN 717), is now in execution at Pearl Harbor NSY&IMF. This will end attack submarine refuelings, as the remainder of the LOS ANGELES Class have life-of-the-ship reactors. Maintenance work on new attack submarines of the SEAWOLF and the VIRGINIA Classes is being added to the Naval Shipyards' work. Workload mix and locations will continue to change in response to the changing demands of the Fleet Response Plan.

Evolving ship class maintenance plans have reduced the amount of programmed depot maintenance as depicted in Figure 4. The downward trend is a result of numerous initiatives to reduce the inherent maintenance requirements and/or extend their periodicity, such as continuous maintenance, condition-based maintenance, and reliability centered maintenance.

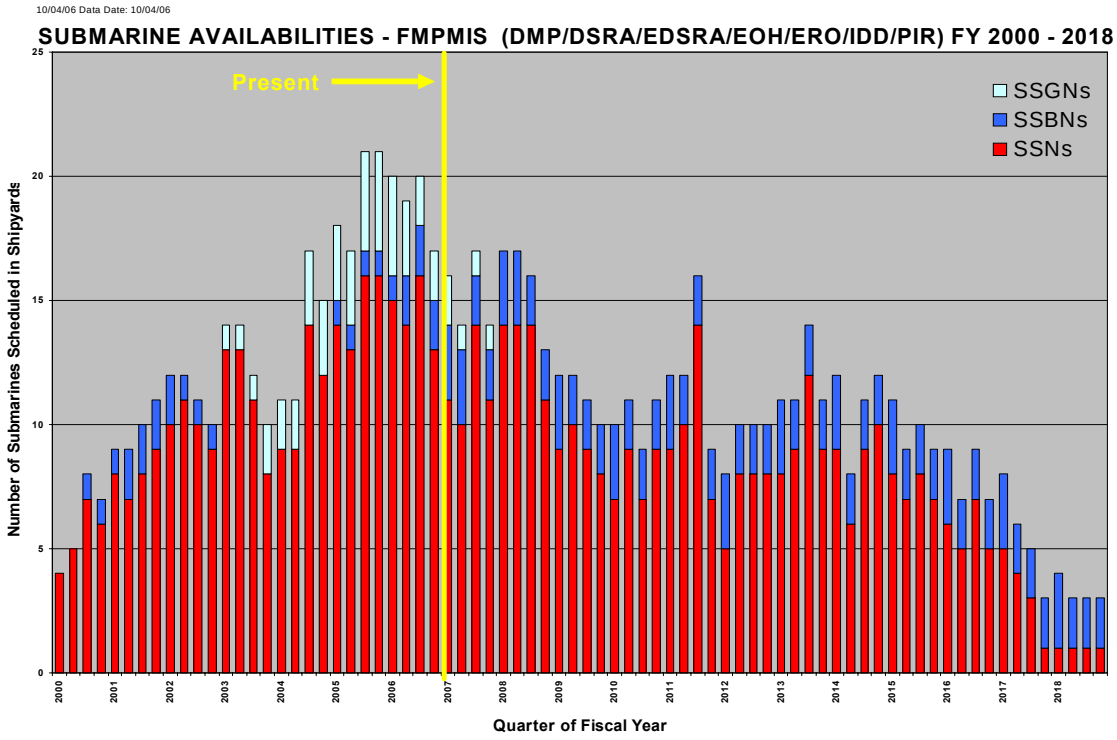


Figure 3 – Submarine Availabilities in Naval Shipyards FY 00-18

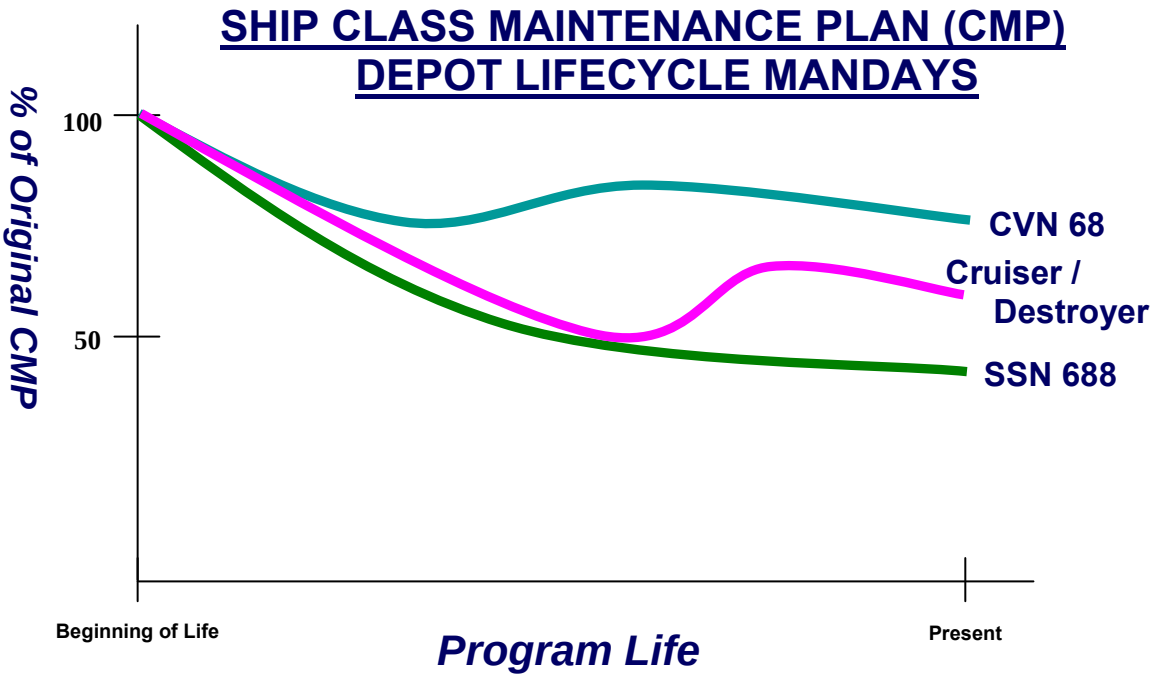


Figure 4 – Reduction in Class Maintenance Plan Requirements

E. Workforce

The Naval Shipyard workforce is comprised of production (trade skill) workers, engineers, technicians and support personnel. The four-year Apprentice Program is the primary source for hiring and training the trade skill workforce. The primary trades are: Shipfitter, Sheet Metal Mechanic, Welder, Machinist (Inside Machinist), Marine Machinery Mechanic (Outside Machinist), Boilermaker, Electrician, Pipefitter, Insulator, Electronics Mechanic, Shipwright, Painter, Rigger (Weight Handler), Sailmaker, Tool Maker, and Temporary Service Mechanics.

Figure 5 below shows public and private sector shipyard employment engaged on ship repair work on all classes and types of U.S. Navy ships from 1990 to 2006. The private sector repair workforce is relatively stable at somewhat less than 20,000, while in comparison, the Naval Shipyards' employment has declined nearly 60% during that period.

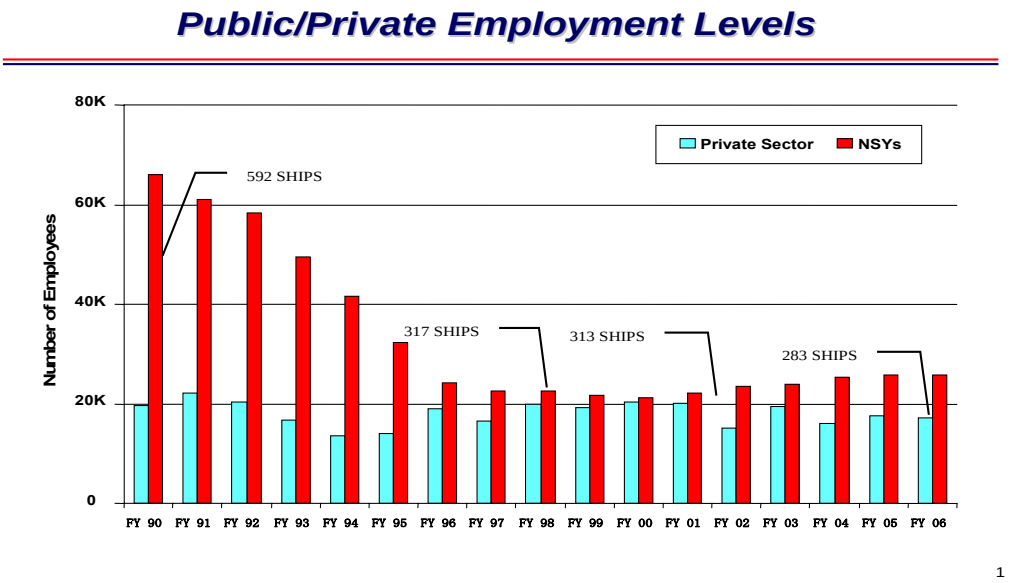


Figure 5 – Public & Private Ship Repair Employment FY 90-06

Naval Shipyard civilian employment is now about 26,000, as shown in Figure 6. The military employment levels at Puget Sound and Pearl Harbor are higher than the other two Naval Shipyards because of the combination / integration of Intermediate Maintenance Facility (IMF) activities with Puget Sound and Pearl Harbor.

	Civilian	Military	Total
Portsmouth	3,991	25	4,016
Norfolk	7,688	44	7,732
Puget Sound	9,821	824	10,645
Pearl Harbor	4,276	664	4,940
Total	25,776	1,557	27,333

Figure 6 - Naval Shipyard Workforce 9/30/06

Workforce Demographics: In 1990 there were eight Naval Shipyards, a relatively stable workload, and apprentice and engineer-in-training programs. As a result, the workforce demographics were also relatively stable, with the number of employees being fairly level from age 30 through age 50. This picture changed in the early 1990s as workload dropped and reductions in force (RIF) were necessary. By 1997, the average age of Naval Shipyard employees had risen to age 44. Revitalizing the apprentice program created the double-peak age distribution shown in Figure 7.

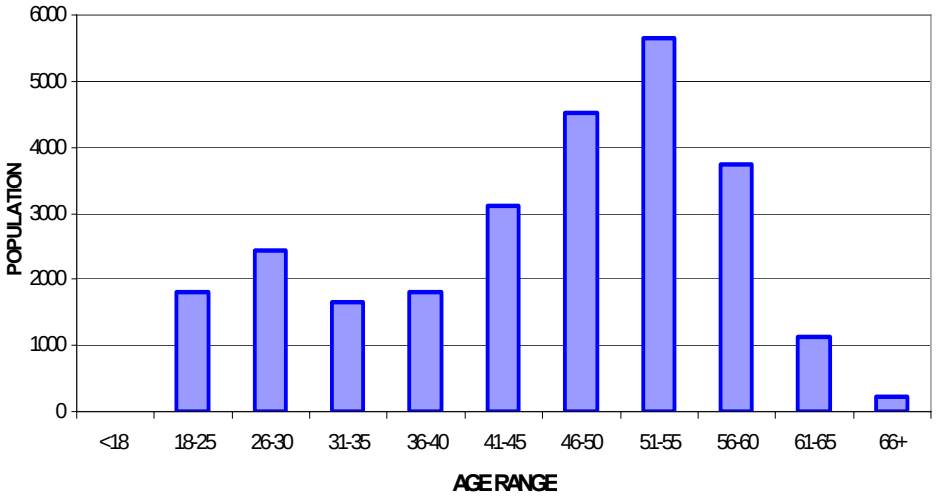


Figure 7 – Naval Shipyard Population as a Function of Age

Figure 8 shows the current status of the Naval Shipyard apprentice program:

	Apprentices Onboard	Apprentice % of Production Workforce	FY06 Apprentice Hiring Plan
Portsmouth	699	31%	226
Norfolk	536	12%	100
Puget Sound	746	16%	209
Pearl Harbor	516	20%	140
Total	2,497	18%	675

Figure 8 – Naval Shipyard Apprentice Program, October 2006

Labor / Management Partnerships: The Naval Shipyards have structured partnerships with the unions that represent Production, Engineering and Administrative personnel. By law, the Naval Shipyards are strike free. This fact has not diminished the focus of both management and employee representatives to continuously improve performance, to create a safe workplace, and to provide good working conditions. The Naval Shipyards have formal labor/management partnerships. These partnerships facilitated open sharing of information, pre-decisional union involvement in new directions, and building trust and respect. These partnerships foster efficient, effective, and safe Shipyard operations with balanced workload/workforces.

F. Infrastructure / Facilities

To accomplish ship maintenance and repair, it is imperative that the Navy retain access to essential waterfront areas which contain unique capabilities and work spaces, including:

- Drydocks, piers, and associated waterfront property
- Cranes and other weight handling equipment
- Ship berthing, hotel, and temporary services
- Reactor plant servicing equipment
- Mission essential industrial plant equipment and facilities (e.g., Controlled Industrial Facilities; test stands; mockups; shaft lathes; propeller manufacturing and inspection equipment).

Facilities must be sustained in quantity and condition to provide mission capability and capacity for both current and future workload. Furthermore, facility improvements and modernization are vital to achieving performance improvement and total cost reduction. These must be integrated and aligned within the Naval Shipyard Depot Infrastructure Plan and the Navy Ashore Vision 2030 (NAV2030).

Most Naval Shipyard facilities were constructed in the 19th and 20th centuries, to support trade-centric new ship construction, as well as conventional ship repair, and are now being used for 21st century lean ship maintenance. Today, the four Naval Shipyards have the following physical plant infrastructure and attributes:

- 18 Certified Drydocks
    - Portsmouth 3, Norfolk 4, Puget Sound 7, Pearl Harbor 4
    - Includes two (2) Aircraft Carrier Drydocks, one each at Norfolk and Puget Sound; one of Pearl Harbor's is also an emergency CVN dock.
    - Puget Sound's total includes the dock at TRF Bangor site
    - Norfolk has an additional certified drydock, but it is not sufficiently sized to dock combatants
    - Some drydocks have an intermediate caisson, allowing separate stacked dockings of more than one ship simultaneously
- 18 Maintenance Piers
- 623 Buildings and Structures
- 13 million square feet of workspace
- 11,169 pieces of Industrial Plant Equipment
- 1,387 cranes
- Plant Replacement Value of $4.8B
- Each shipyard has a secure Controlled Industrial Area (CIA)

Since 1996, the Naval Shipyards have reduced their physical infrastructure "footprint" by 63% as a result of an aggressive facility demolition program and by Navy reorganization (i.e., transfer of non-ship depot facilities to the Commander Navy Installations Command (CNIC)). The Naval Shipyards have now reached the near optimal land area to conduct ship depot maintenance operations, and the future demolition program (strongly tied to the MILCON program) will focus on replacement of current facilities with modern infrastructure capable of Lean/Six Sigma maintenance processes. In some cases,

historical facilities may be renovated and modernized for adaptive reuse in support of operations. The Naval Shipyards are making efforts to upgrade industrial equipment. Current equipment footprint requirements are, in most cases, less than their earlier equivalents. This replacement effort will enable more efficient utilization of existing footprint to create more efficient facilities and enable an increased workload with the reduced overall infrastructure mentioned above.

The Naval Shipyards have received less funding than dictated by the Office of the Secretary of Defense's Facility Sustainment Model (FSM). This underfunding has caused significant growth in infrastructure maintenance backlog, due to the age of the facilities and the nature of the work performed. In particular, the Naval Shipyards are seeing a significant degradation in the condition of maintenance piers and other waterfront operational facilities. This degradation is being addressed by the infrastructure modernization investment strategy outlined in Section III, How We're Getting There.

G. Processes

Continuous improvement of shipyard business processes, industrial processes, and management systems is a fundamental objective to provide increased value and operational availability to our customers. We have been applying Lean Six Sigma and other continuous process improvement (CPI) tools and programs towards that end, consistent with the scope and objectives of Sea Enterprise. This includes:

- DoD Continuous Process Improvement Transformation Guidebook of May 2006
- Navy Performance Excellence Guidebook (NPEG) of August 2006
- NAVSEA Task Force Lean (TFL) Lean Implementation Plan
- Engagement in established CPI programs such as
    - Manufacturing Technology (MANTECH) and Repair Technology
    - Commercial Technologies for Maintenance Activities (CTMA)
    - Engineering for Reduced Maintenance (ERM)
    - Collaboration with the private sector in the National Shipbuilding Research Program (NSRP).

In addition to those process changes discussed above and in Section I.B, other recent significant improvements include:

- Centrally prepared and managed engineering products by the Ship Availability Planning and Engineering Center (SHAPEC) are in use by each Naval Shipyard.
- The Baseline Project Management Plan (BPMP) lays out detailed requirements for management of submarine depot availabilities.
- The Integrated Project Teams for Aircraft Carrier Maintenance Desk Guide documents best management practices, project team strategies, and processes for planning and execution of aircraft carrier depot availabilities.
- Uniform Industrial Process Instructions (UIPIs) are standardizing work processes at all Naval Shipyards.

Naval Shipyard Lean Six Sigma deployment is aligned with the NAVSEA/PEO-wide Lean implementation strategy and plan, and with initiatives of the Naval Undersea, Surface Warfare, and Aviation Enterprises. Deployment is centered on the principles of improving processes and developing an efficient, empowered workforce. To date, the Naval Shipyards have qualified 120 "Blackbelt" and 570 "Greenbelt" organic change agents, trained 9,400 employees in Lean Six Sigma basic principles and involved over 8,000 employees in nearly 700 Rapid Improvement Events and Projects resulting in over $170M in cost reductions. Lean implementation has been accelerated at a constant pace from mid FY05 through the end of FY06 at an average annual change pace ranging from 10-15%. Based on 18 months of standardized Lean training, deployment and execution experience, the Naval Shipyards have set future annual change pace goals of 15-20%.

Occupational Health, Safety, and Environment (OSHE)

One of the FY 2007 Department of the Navy Objectives is to emphasize safety and to manage risk to improve mission effectiveness and to safeguard the people and resources of the Navy-Marine Corps Team. NAVSEA and the Naval Shipyards have been focused on several high visibility safety initiatives, including:

- Pursuing Occupational Safety and Health Administration (OSHA) Voluntary Protection Program (VPP) STAR recognition.
- Achieving DoD and Navy mishap reduction goals (50% by FY05, and then 75% by FY08, both over FY02 lost day rates).
- Reducing our rank on the DoD Top 40 list of activities with the highest Lost Day Rate.

Naval Shipyards were the 2nd, 3rd, and 4th activities in all of DoD to achieve VPP STAR status. Portsmouth NSY achieved VPP STAR in only 18 months, completing in 2005. Puget Sound NSY&IMF and Norfolk NSY both achieved VPP STAR in 2006. Pearl Harbor NSY&IMF applied in 2006, and their application is currently under review at OSHA. Management partnered with labor on safety matters integral to VPP at all Naval Shipyards.

Through "Passport to Safety" and other initiatives, the Naval Shipyards continue to raise the bar for a safer and healthier workplace. In three to five years, the Naval Shipyards will recertify their VPP STAR rating, demonstrating their commitment to continuous safety improvement to OSHA.

Results in this area have been dramatic. Puget Sound NSY&IMF received the FY 2005 CNO Shore Safety Award for Large Industrial, the FY 2005 SECNAV Shore Safety Award for Large Industrial and the 2006 DoN Safety Excellence Award for Safety Ashore. Pearl Harbor dropped off the DoD Top 40 list of activities with highest Lost Day Rate, Puget Sound dropped from #2 to #18, Norfolk dropped from #6 to #27 in three years, and Portsmouth had never even made the list. Naval Shipyards are on track to meet the DoD and Navy mishap reduction goals for FY08.

Since 2003, we have undertaken a program to standardize selected OSHE policies, programs, and processes. The goals of this initiative are to reduce overhead costs, enable uniform training at the four Naval Shipyards, allow sharing of resources among the four shipyards, and implement OSHE policy, programs, and processes consistently across the four Naval Shipyards, all supporting the One Shipyard way of doing business. The OSHE Control Manual (OSHECM) is the mechanism for distribution and implementation of these standardization initiatives, and represents the consensus positions of headquarters and the Naval Shipyards.

Energy Conservation

Naval Shipyard energy consumption has been reduced by 27% since 1990 by a variety of means such as Energy Savings Performance Contracts (ESPCs), Utility Company Utility Energy Service Contracts (UESCs), and direct-funded projects. Naval Shipyards have received numerous SECNAV and DoE Federal Energy Management Program (FEMP) Energy Conservation Awards. All DoD activities, working with CNIC/NAVFAC who own/maintain buildings and utility systems, must comply with the Energy Policy Act (EPACT) of 2005 along with the SECNAV policy, to:

- Reduce energy consumption in all facilities by 2% per year, starting in 2006 based on FY2003 baseline.
- Achieve energy consumption levels at least 30% below the levels established in ASHREA Standard 91.1-2004 (if life cycle cost-effective) in new and replacement Federal buildings.
- Meter electrical use in individual facilities and industrial or process applications to the maximum extent practicable by October 2012, where cost-effective.
- Where EPACT 2005 is silent, EPACT 1992 and Executive Order 13123 are still in effect; for example, reduce greenhouse gas emissions by 30% by 2010 based on 1990 baseline and reduce water consumption.

NAVSEA and the Naval Shipyards plan to continue/form interagency project teams to comply with EPACT 2005 provisions, to identify ways to reduce industrial process (such as building operation and compressed air systems) energy use. Additionally, we will increase Naval Shipyard personnel energy conservation awareness using the web based energy awareness training.

H. Efficiency

This section provides an overview of elements of Naval Shipyard efficiency and performance improvement. It is recognized that there are different ways and means to consider and measure Naval Shipyard improvement, including both:

a) Efficient operation of the Naval Shipyards (e.g., rate management), and
b) Efficient conduct of productive work (e.g., manhours and material to do work).

1. Efficiency as Measured by Unit Cost of Direct Work ("Job Shop"): The unit cost of direct work, usually expressed as dollars per hour or dollars per man-day (man-day rate), is a reasonably good comparison of overall efficiency among like industries. A rate is often used for billing work performed in a "job-shop" type of operation, which works varied vice repetitive jobs. In a repetitive factory operation, such as an assembly line, the prime metric is usually the cost per piece or the price billed per piece. In contrast, ship maintenance and repair is individually tailored "job-shop" work. Other industrial job shops include vehicle repair and aircraft repair. Comparing some current manday rates shows the relative efficiency of the public sector shipyards:

Private Shipyard Port Rate (Non-Nuc)	Naval Shipyard Nuclear Ships	New Car Dealer Auto Repair	Military Aircraft Maintenance
$ 430	$ 690	$ 800	$ 1,000

For a job shop: Total Cost = [Labor Rate x Direct Mandays] + Material

2. Rate (Efficiency) Driven by Overhead: Since the labor rate is comprised of both direct and overhead components, reducing a shipyard's overhead in turn reduces the rate for the direct work performed. Reducing overhead improves the overhead efficiency. As workload increases, a portion of overhead is fixed (or partially fixed) and a portion is variable with workload. Therefore, increasing workload typically improves overhead efficiency and vice versa, as shown by actual Naval Shipyard data in Figure 9.

Overhead Efficiency Ratio = Direct Labor ÷ Total Labor

3. Efficiency Driven by Workforce Productivity: Worker productivity in the Naval Shipyards is constantly being improved by Lean and other process improvement initiatives summarized in this business plan. Significant variations in workload from year to year have a detrimental impact on productivity. As shown in Figure 10, as Naval Shipyard workload increases above 4.2 million mandays per year, direct worker productivity begins to decline as a result of significant overtime needed to execute the work with the existing workforce. As average direct worker overtime approaches 20%, some individuals in critical skills will be working 30-40% overtime. If average overtime goes higher to accommodate the increased workload, some individuals will be working 50% overtime. Productivity suffers at this excessive overtime level. Alternatively, significant hiring of unskilled workers requires years of apprentice and skills proficiency training. In the meantime, the waterfront productivity suffers from the associated "green workforce" inefficiencies.

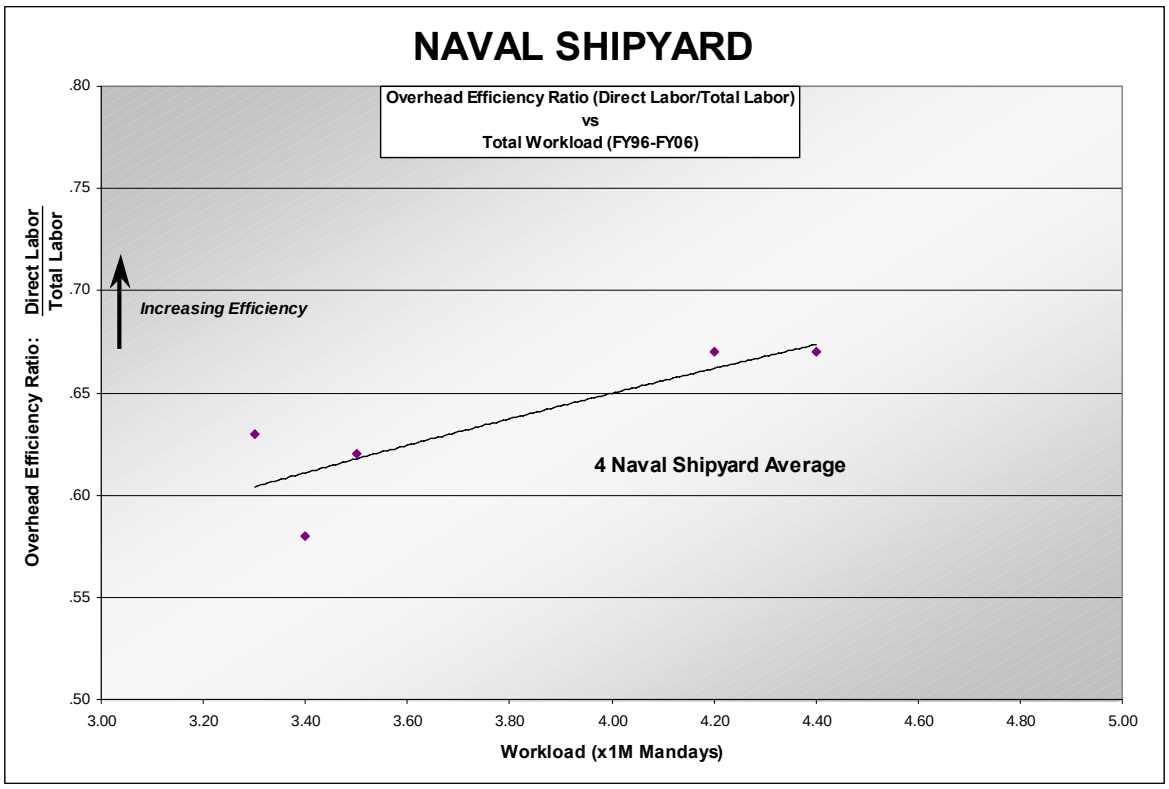


Figure 9 - Naval Shipyard Overhead Efficiency as a Function of Workload

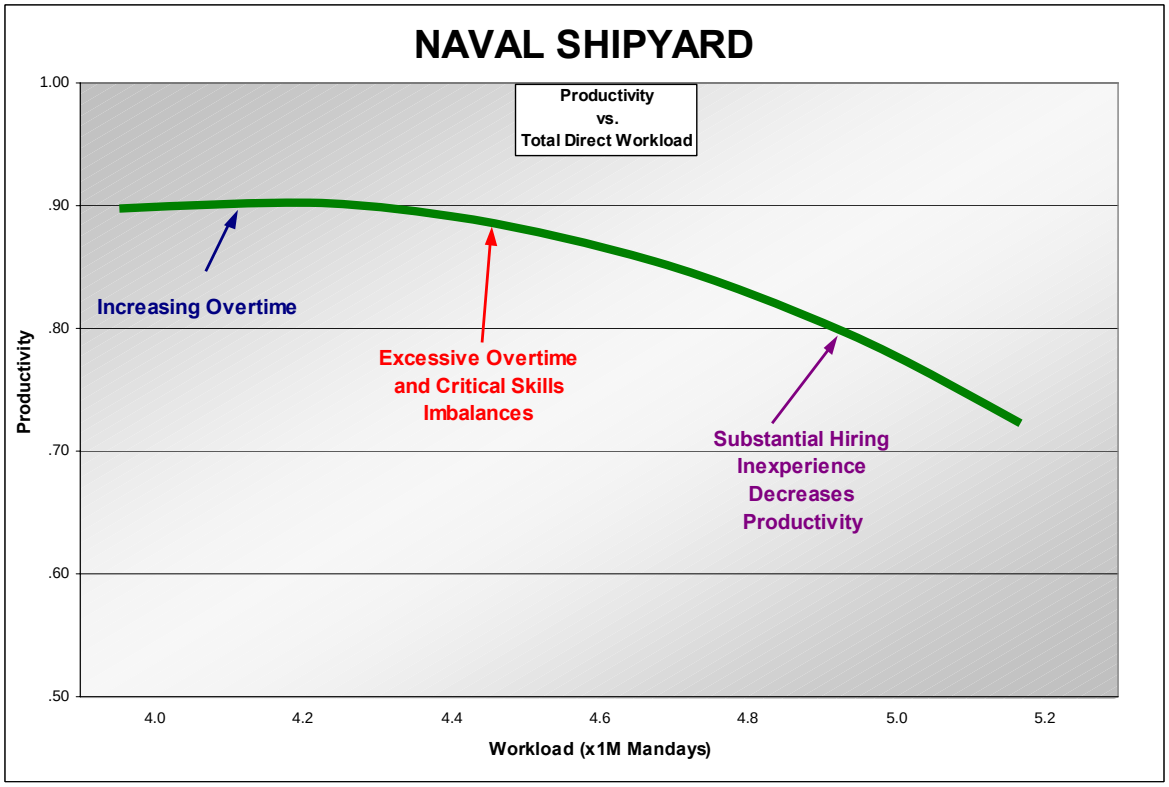
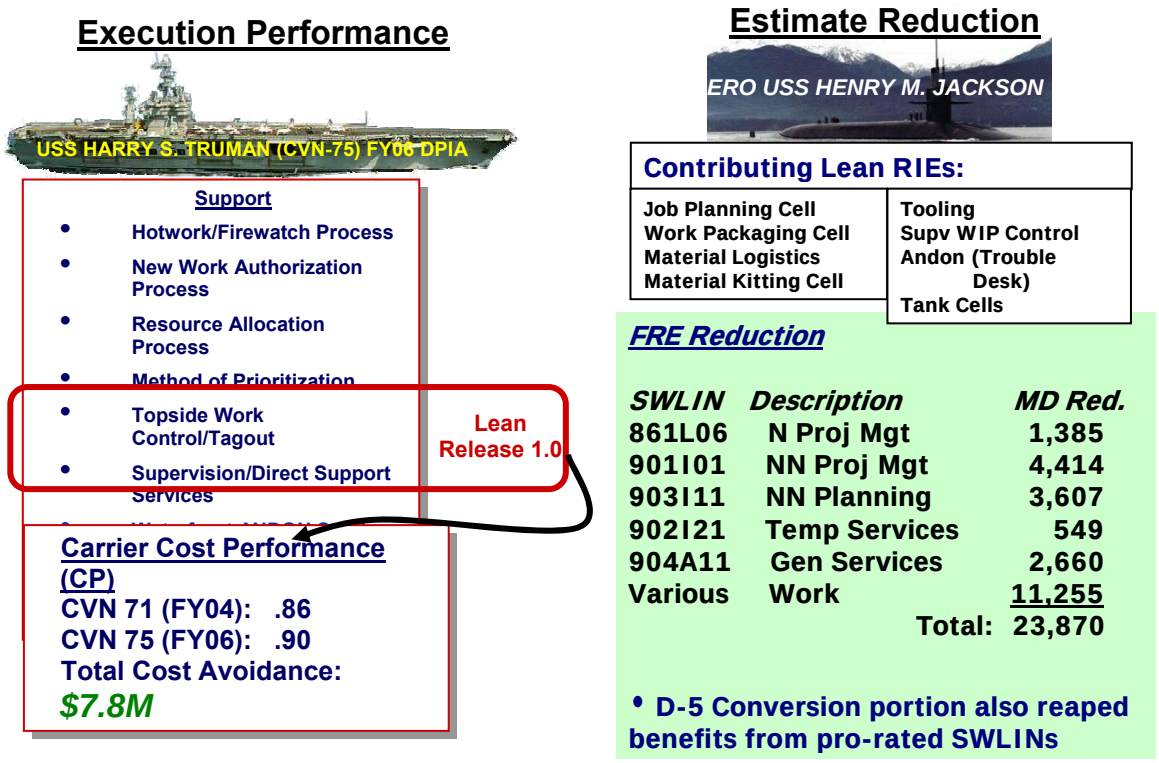


Figure 10 - Naval Shipyard Productivity as a Function of Workload

The Lean Six Sigma and other continuous process improvement initiatives discussed in Sections I.G. and III.E.2. are driving direct work productivity improvements. Careful management of overtime, hiring and attrition also aim to ensure worker productivity is optimized. In addition to the Overhead Efficiency Ratio, other metrics such as the Cost Performance Index (CPI) and the Schedule Performance Index (SPI) are used to measure performance at the individual ship availability level. The illustrations below show representative accomplishments and results in this area:



4. Conclusion: Based on the 50/50 analysis in Section I.C., the total Naval Shipyard workload across the four shipyards must be at least 3.6 million mandays per year on average. A higher workload up to 4.2 million mandays increases efficiency, as shown in Figure 9 (and also depicted in Figure 11 in Section III.C.), and produces an improvement in manday rate and resultant cost to the customer. With workload above 4.2 million mandays, direct worker productivity begins to degrade because of high overtime and "green workforce" (new hires, inexperience) effects. The best workload range in today's environment for the public shipyards is 3.8 to 4.2 million mandays to bring best value to the Navy. These analyses provide a framework for operation of the public sector shipyards and will be applied in Sections II and III, looking forward, to plan for the desirable workload and workforce in future years.

II. Where We Are Going

A. Overview

The Navy goal is to operate the Naval Shipyards efficiently and effectively in four locations, while looking for ways to continuously improve Fleet operational availability (Ao). Accomplishing this requires correctly predicting the ship maintenance required, stabilizing schedules with operational requirements, properly sizing the workforce, embedding the correct critical skills in the workforce and equipping the workforce with the right tooling, facilities and processes. Unless the actions of this plan are implemented in the FY09-12 period, Naval Shipyard workload is currently projected to fall below 3.6 million mandays per year. Additional Navy ship depot maintenance work will have to be added to the public sector or moved from the private sector to raise the public sector Naval Shipyards to at least 3.6 million mandays to meet the 50/50 statutory requirement. If no action is taken to achieve these goals, the workforce will not be ready; the workload and schedules, both public and private, will be out of balance reducing efficiency and jeopardizing compliance with statutes; business objectives will be missed; and maintenance support to the Fleet will not be optimum.

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NAVSEA and the Naval Shipyards must, therefore, carefully balance the following in conjunction with the Objectives and Assumptions outlined in Sections B and C below:

- **Shaping the workload**, to include meeting all 10 USC provisions and implementing new strategies to drive workload levels to enable higher efficiency
- **Shaping the workforce**, to include managing demographics / attrition, revitalizing the workforce, and sustaining critical skills, while reducing the overall employment level consistent with the overall downward trend in workload
- **Investing in infrastructure and information technology modernization**
- **Investing in continuous process improvement**

Of the above four factors, shaping the workload is the foundational variable. The Navy's ship depot maintenance requirement over the next twelve years will be less than it is today, primarily because of the substantially lower submarine depot maintenance requirement.

The Naval Shipyard workforce will decline accordingly, to the level required to efficiently and effectively maintain the core capability to perform critical maintenance on aircraft carriers, submarines, surface ships, and other ship weapons systems. To address the overall downward trend in ship depot maintenance, the total corporate workforce would be reduced by 20%, through attrition, to about 22,000.

During those years with lower SSN, SSBN, and CVN workload, the minimum Title 10 required workforce and infrastructure will be sustained by performing additional depot work in the public shipyards, with possible assignment of some non-traditional work otherwise performed in the private sector considered as a potential option, if necessary to comply with the 50/50 statute.

B. Key Objectives

- Support Fleet operational schedules, optimize Fleet operational availability (Ao), and minimize maintenance time and total cost to Navy.
- Provide responsive, effective, and efficient ship maintenance at the lowest total cost to the Navy.
- Size the workforce to support the most efficient execution of projected workload.
- Maintain workforce revitalization and skill mix without adverse personnel actions.
- Control overhead to maintain a constant efficiency ratio as workload declines.
- Pursue infrastructure investments and information technology to sustain and modernize the Naval Shipyards' industrial facilities.
- Foster a culture of continuous process improvement through Lean Six Sigma implementation.
- Lead industry effort to maintain focus on safety to better care for our people and protect our environment.

C. Key Business Assumptions

- Ship operational availability (Ao) is enhanced by minimizing the time in maintenance.
- Maintenance is executed in schedule windows provided by operational schedules.
- Four geographically dispersed Naval Shipyards, in the current locations, will be maintained as the Navy's core ship maintenance industrial capability and capacity.
- The overall mission and core capabilities of each shipyard will be maintained.
- Major physical constraints of each shipyard, such as number of drydocks and navigational approaches, will remain unchanged.
- Future homeporting decisions and/or changes to Class Maintenance Plan / Notionals may impact the Naval Shipyards' workload forecast and assignment.
- The SECNAV-approved guiding principles and business rules for making assignments of CNO ship depot maintenance availabilities will be the basis for assessing trade-offs and decision making:
    - Schedule maintenance in ship's homeport when possible, to support PERSTEMPO / Crew quality of life.
    - Optimize critical skill usage (One Shipyard concept).
    - Load public shipyards first to efficiently use organic capacity.
    - Consider impacts on crew, cost, operations, shipyard executability, Class Maintenance Plan, schedule, and modernization.
- All efforts will be made to avoid adverse personnel actions (reductions to be handled through attrition) to sustain a revitalized, balanced workforce.
- Efficiency levels of the public shipyards will be analyzed and used in shipyard loading decisions.
- Overtime will be reduced to more efficient and effective levels in both budget and execution.
- The One Shipyard managed movement of skilled resources to the location of workload demand will continue to play a major role in resolving periodic month-to-month workload/workforce imbalances.
- The Navy's Enterprise construct and business rules will be institutionalized.

- Mission funding will continue as the financial system at the four Naval Shipyards.
- Lean Six Sigma is institutionalized.
- Navy Enterprise Resource Planning (ERP/SAP) will be implemented in ship depot back-office functions. Investment in Naval Shipyard information technology is required to provide viable, suitable Maintenance, Repair and Overhaul (MRO) functionality.

D. Projected Workload Cycles

The current baseline workload of 3.9 million mandays for FY07 diminishes to 3.5 million mandays per year on average from FY08 to FY18, with a low of ~3.2 million mandays in both FY10 and FY14. The 3.5 million manday average is below the minimum level for efficient operations and may jeopardize compliance with 10 USC 2466 ("50/50 law").

The workload forecast reflects the Class Maintenance Plan depot work for the current projected force structure. CVN major availabilities are programmed to support a 32 month operating cycle. In general, submarine availabilities are scheduled to support a 48 month operating interval and 120 month operating cycle.

Naval Shipyard business planning analyses and assessments are categorized based on ship maintenance trends into three primary timeframes – short term, mid term, and long term:

1. Short Term (FY07 thru FY10): Workload declines significantly over the next 3 years based on FY08 budget projections. The significant decline is primarily due to the completion of SSN 688 Class refueling overhauls. Total Naval Shipyard workload is forecast to drop up to 20% from FY06 to FY09. There is a relatively stable level in the workload mix across the four Naval Shipyards. VIRGINIA Class depot maintenance workload is projected to commence in FY10.

2. Mid Term (FY11 thru FY18): Workload in this timeframe averages about 3.5 million mandays per year. The challenge is the high peaks and low valleys projected at both the corporate and the individual Naval Shipyards. Workload across the corporation varies 20% from 3.2 million to 3.9 million mandays per year during this period.

3. Long Term (FY19 and out): The post-FY18 SSBN workload will decline as the SSBN refueling overhauls are completed. If the VIRGINIA Class construction rate is increased to two ships per year starting in FY12, the future submarine EOH and SRA workload will increase, partly compensating for the lower SSBN work. Because of the significant uncertainty in the projected workload and high probability of change for this future time period, specific workload/workforce analyses are not addressed in this Business Plan, but will be evaluated in future updates.

To mitigate the fluctuations in projected public shipyard workload described above, actions are being taken to increase and stabilize Naval Shipyard workload in future years. These actions are described in Section III, How We're Getting There.

III. How We're Getting There

A. Overview

The way ahead and how we're getting there is foremost based on constancy of purpose for why we are here - to support and enhance the Fleet's operational availability and mission effectiveness. Our fundamental business objectives remain constant – a) accomplish the current readiness workload, b) sustain the core skills, process, and infrastructure capability and capacity for future workload, and c) continuously improve processes and systems to provide increased value and operational availability to our customers. The Objectives and Assumptions outlined in Sections II. B and C establish the business planning framework

NAVSEA and the Naval Shipyards will take the actions in the following areas:

- **Workload Shaping Actions** (Sections B and C below) to include meeting all Title 10 provisions and implementing new strategies to stabilize workload levels to enable higher efficiency.
- **Workforce Shaping Strategy** (Section D below) to include managing demographics / attrition, revitalizing the workforce, and sustaining critical skills, while reducing the overall employment level consistent with the overall downward trend in workload.
- **Key Strategic Investment Plans** (Section E below) to include investing in our workforce, physical infrastructure, information technology, and continuous process improvement.

B. Workload Shaping Actions

The current program of record Naval Shipyard workload has 3.9 million mandays for FY07, diminishing to 3.5 million mandays per year on average from FY 08 to FY18, with a low of ~3.2 million. Based on an earlier conclusion that 3.8 to 4.2 million mandays per year is the most efficient range, it is apparent that the program of record workload is not sufficient. Options reviewed for (1) adding work, (2) increasing productivity and (3) cutting overhead costs, identified a workable combination of actions that will put the Naval Shipyards in an efficient workload scenario. Analyzing the total cost to the Navy and associated risks of operating in that zone, a satisfactory solution has been determined, which will need to be regularly re-evaluated.

The following workload shaping actions will yield an average workload of about 3.8 million mandays, which is satisfactory to provide for legislative compliance and shipyard efficiency. The representative additional workload shown for each action is an estimated annual average in mandays, which will vary from year to year. Similarly, the cumulative total is an average which will vary, noting that the baseline POM 08 workload forecast includes years in which the workload dips below the 50/50 compliance level, and has a low of ~3.2 million mandays in both FY10 and FY14.

1. Sailor Shore Maintenance Billet Divestment: The Regional Maintenance Centers and Intermediate Maintenance Facilities have divested active duty sailor billets in POM 08. The intermediate-level workload represented by these billets is programmed in POM 08 and will be re-assigned to public and private shipyards. Up to 120K mandays of this work may potentially be accomplished in the Naval Shipyards.

2. Reduce Subcontracted Work: Examine work programmed in POM 08 that has been historically contracted out by the Naval Shipyards to assess the practicality and efficiency of completing that work in the public shipyards. Estimate 50K mandays per year total across the four Naval Shipyards.

3. Expand Tiger Team Utilization: Increase the use of Naval Shipyard Maintenance Traveling "Tiger" Teams, vice other private or public sector providers, for additional other productive work (OPW) and special circumstance jobs, which are not in the Naval Shipyards' current baseline. Estimate 25K mandays per year total across the Naval Shipyards.

4. Shift AIT Submarine Work: Move Alteration Installation Team (AIT) workload, already programmed in the POM 08 baseline, from current private sector vendors into the Naval Shipyards. Estimate 25K mandays per year total across the Naval Shipyards.

5. Implement Potential Notional Workload Changes: Ongoing Undersea Enterprise (USE) and Naval Aviation Enterprise (NAE) analysis of Class Maintenance Plans is concluding that upward adjustments to Naval Shipyard depot availability work are necessary through the FYDP. The average estimated increases for FY09–FY13 are ~85K mandays per year. This includes SSN 688, SSBN 726, and SSN 21 Classes, but does not include VIRGINIA Class. Additionally NAE projected new CVN 68 Class maintenance requirement will add 12K mandays per year. This yields a composite total of ~100K additional mandays per year, best performed in the public sector based on demonstrated performance. These notional workload analyses are incomplete, and this business plan includes the best data available at this time. The scope of the changes, and their technical rationale, will be presented and finalized as part of the PR 09 budget process.

6. Non-Traditional Naval Shipyard Work: Only in those years when other workload actions are insufficient to comply with the 50/50 statute, shift a small amount of POM 08 programmed non-traditional depot maintenance workload into the Naval Shipyards. When required, this option could add up to 50K mandays average to the Naval Shipyards.

Efficiency Improvement: Each of the above workload shaping actions is supported by efficiency improvement efforts and key strategic investment plans, as follows:

- Drive culture change and improvements in direct work productivity with Lean Six Sigma implementation and other continuous process improvement programs.
- Revitalize and shape the workforce. Careful management of overtime, hiring, the apprentice program, and attrition aim to ensure worker productivity is optimized.
- Invest in the Naval Shipyards' physical plant infrastructure and information technology systems to ensure future mission capability and Fleet readiness.

C. Impact of Workload Shaping Actions

Integrating and aligning the workload with the overhead efficiency and productivity relationships (Figures 9 and 10) yields the chart shown below, Figure 11.

As previously established, an efficient four Naval Shipyard workforce should be sized to perform in the range of 3.8 to 4.2 million mandays of direct work per year. This is the "green zone" in Figure 11.

Implementing the workload shaping actions discussed in Section III.B, the Naval Shipyards will operate on average in the band shown in Figure 11 from 3.8 to 4.0 million mandays per year. This workload range complies with the 50/50 statute, complies with the Fleet Response Plan policy, and ensures overhead efficiency and direct work productivity.

For workloads near or below 3.6M MDs, compliance with the 50/50 statute is in jeopardy, represented by the "red zone" on the left side of Figure 11. For workloads above 4.2 M MDs, there are adverse workforce and productivity implications, including excessive overtime, critical skills imbalances and worker inexperience.

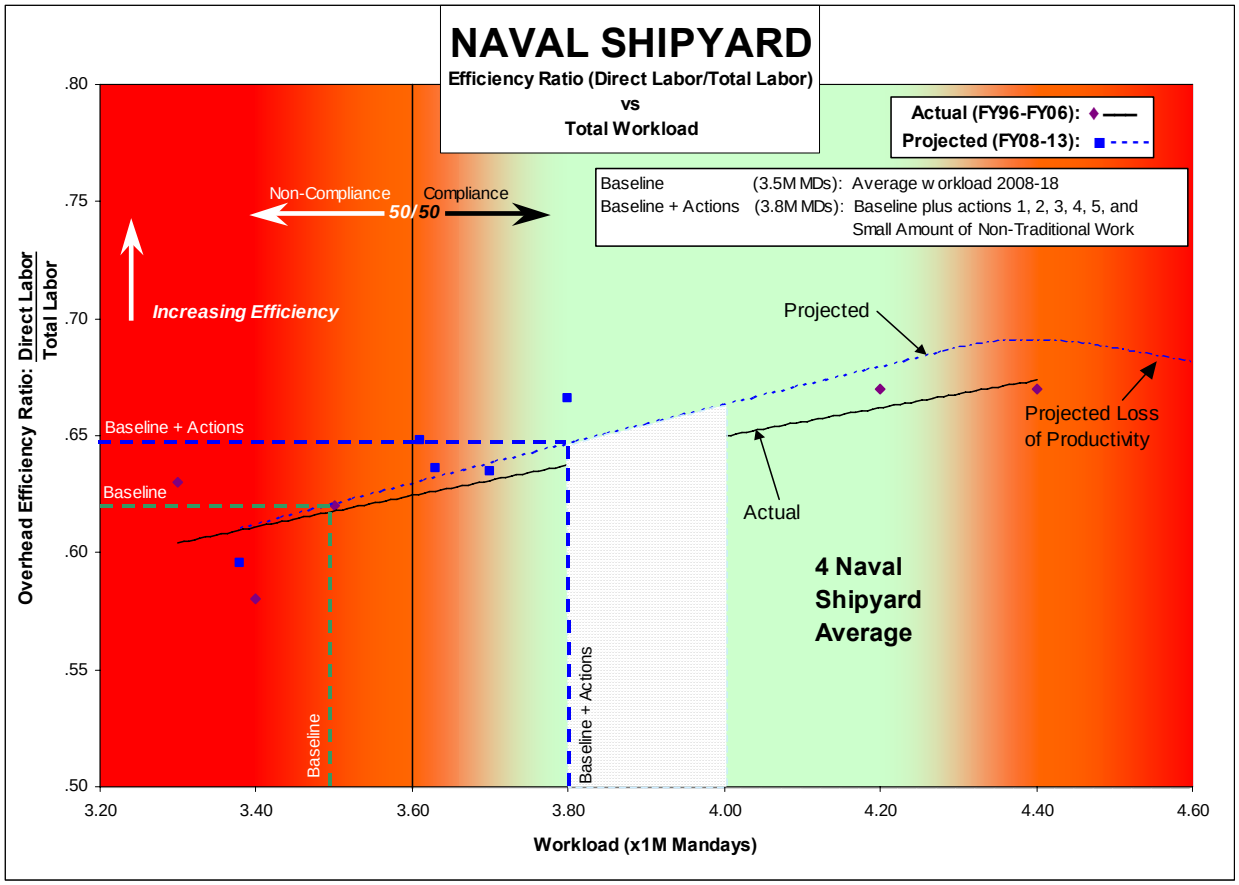

Figure 11 – Impact of Workload Shaping Actions on Naval Shipyard Efficiency

D. Workforce Shaping Strategy

Several key strategies will be employed to shape the workforce at the four Naval Shipyards in response to the annual and longer term fluctuations in workload. These include the three actions described below. Furthermore, the Workforce Strategies outlined as a key investment area in Section III.E.1, enables ongoing workforce shaping and facilitates improvements to efficiency and effectiveness.

1. Workforce Revitalization: The need to continue hiring of new employees in the Naval Shipyards, and maintain active and viable trade skill apprentice programs are important lessons learned from the late 1990s. Workforce revitalization initiatives are the key to adjusting skill balance and ensuring the future of the Naval Shipyards is sustained. Looking ahead, the skill mix will be adjusted for new technologies being introduced, which will likely create a higher demand for electrical/electronics skills.

2. Manage Rightsizing Via Attrition and Loans & Borrows: Rightsizing consistent with the overall downward trend in Navy ship maintenance workload will be accomplished primarily by managing normal attrition across the four Naval Shipyards using the corporate One Shipyard concept. As the corporate workload declines, all Naval Shipyards will adjust workforce simultaneously downward. The slope of the decline corporately is such that downsizing can be accommodated by expected attrition while maintaining revitalization. As a result, with the workload currently scheduled, all four Naval Shipyards will reduce civilian employment by 7% to 11% from current levels by FY10. Specific peaks/valleys in a Shipyard's workload will be accommodated using borrows/loans from yard to yard. As an example, in FY 07, Puget Sound NSY&IMF will be loaning approximately 50,000 mandays of labor to Norfolk NSY to accomplish a workload peak caused by the multiple carrier availabilities overlap. This proven practice of inter-shipyard borrows and loans is envisioned to continue not only thru FY10, but through the mid and long term views of this business plan as well, and is better enabled and facilitated with all four Naval Shipyards under mission funding.

Formal reductions in force (RIF) will be avoided to the maximum extent possible, as these cause excessive workforce churn and skill imbalances. Norfolk, for example, can accommodate approximately a 350 person per year reduction by projected attrition, without a RIF, and still maintain a revitalization plan. Puget Sound's attrition-based workforce decline is about 500 per year. Portsmouth and Pearl Harbor can each attrite about 300 per year without a RIF. In addition, the strategy across the four Naval Shipyards is to avoid extensive hiring at one shipyard while executing a considerable downsizing program at another shipyard. This would cause large gaps in experience between shipyards. Therefore, the corporate strategy is to have all the shipyards adjusting workforce smoothly as necessary to perform the One Shipyard corporate workload, not just reacting to the workload at a specific yard.

SURGEMAIN, short for Surge Maintenance, is a relatively recent development under the workforce strategy where U.S. Naval Reservists, with post-apprentice and journeyman level trade skills, perform their reserve duty at the Naval Shipyards. These teams of reserve component Sailors become a mobilization force when the Navy needs to "surge" its maintenance infrastructure to support fleet readiness and the Fleet Response Plan. The objective of the program is to provide depot-level skilled workers during peak workload periods without impacting Naval Shipyard mission funding, and without adding any additional man-days to project completion. Since the reservists work in the trades associated with their full-time civilian jobs, they are well qualified and require minimal training prior to shop assignment as a part-time, flexible, fully qualified maintenance workforce. For the USS TOPEKA (SSN 754) FY06 DSRA at Pt Loma, CA, SURGEMAIN reservists provided 12% of the workforce, with all major trades represented, at a time when 8 major ship availabilities were occurring on Puget Sound NSY&IMF's five waterfronts. Overall SURGEMAIN impact:

- FY05 Work Accomplished: 4787 mandays
- FY06 Work Accomplished: 6289 mandays
- This work performed with no billets
- CFFC approved SURGEMAIN in Jan 06; 2,000 RPN billets approved in POM 08
- 880 SURGEMAIN billets on-line in FY07
- 1000 more billets on-line by FY10/11
- Expected FY07 Work: >10,000 mandays
- Expected FY10 Work: ~40,000 mandays

3. <u>Management and Use of Overtime</u>: Employment and manning levels are also adjustable by varying the amount of overtime budgeted / worked versus the number of civilian employees onboard. As workload swings from year to year, employment levels will be smoothed by budgeting for more or less overtime, and then carrying the appropriate staff to execute the workload. This compensates for both year-to-year workload swings and long term trends. For example, overtime at Puget Sound was programmed at 8% in FY07 and FY08 in lieu of the historical 12% to 15%. This allows Puget Sound to smooth its workforce decline and maintain proper skill balances. At Portsmouth Naval Shipyard, overtime is being budgeted between 10 and 14% over the next several years to ensure smooth workforce transitions from year to year. In the recent years of high workload (FY04-FY06), actual executed four-shipyard total overtime has been between 19% and 22%. In the coming years of lower workload, overtime will be budgeted and executed at less than 15%.

Budgeting for a lower level of overtime is an inherent element of this strategy, coupled with the practice of not directly budgeting for surge. Corporately, each 1% overtime level is equivalent to approximately 160 employees per day change in employment level. In addition to smoothing workforce declines, by budgeting at lower overtime rates, a built-in surge capability is developed for emergent repairs and other Fleet maintenance needs. Surge can then be accomplished without an inordinate amount of actual overtime worked and the associated adverse affects on workforce morale and productivity.

E. Key Strategic Investment Plans

Across both the near term and mid term, there are four key strategic investment areas for NAVSEA and the Naval Shipyards. They are:

1. Workforce Strategies
2. Continuous Process Improvement
3. Infrastructure
4. Information Technology

The following sections provide a brief overview of the existing plans and programs in each of these areas. These initiatives are directly integrated and aligned with the workload / workforce actions outlined in the previous sections of this Business Plan. However, at the same time, these four areas are foundational to the Naval Shipyard fundamental business objectives - a) sustain the core skills, process, and infrastructure capability and capacity for future workload, and b) continuously improve processes and systems to provide increased value and operational availability to our customers – at any workload level.

Each of these areas faces specific challenges, as well as the overall challenges of constraints to strategic investments in a time of reduced workloads, reduced budgets and operational dynamics.

1. Workforce Strategies

The following list outlines the major elements and attributes of the Naval Shipyard Workforce Strategies:

- Workforce shaping via attrition, without any adverse personnel actions
- Revitalizing via apprentice program and entry-level hiring
- Sharing critical skills under the "One Naval Shipyard" concept and operations
- Supplementing the workforce with USN Reservists under the Surge Maintenance program
- Achieving Diversity Goals
- Tracking Age Demographics
- Leadership Development
- Standardizing Training
- Mentoring
- Workforce Training
- Performance Management Plan
- Integrated Hiring Plan
- Safety: Continued Improvement Goals
- Implementation of National Security Personnel System (NSPS)

NAVSEA's shipyard demographic goal is to smooth age distribution, as shown in Figure 12 below. As seen earlier in the demographic bar chart, Figure 7, each shipyard

has a valley in the mid-to-late 30 year old age group. The valley is an artifact of adverse personnel actions taken ten years ago. A key premise of this Business Pan is to preclude future adverse actions. The revitalization plan for these critical skills depends on a plan for continued investment in the apprentice program and hiring of entry-level engineers. The age of the workforce accounts for approximately 5 percent per year normal attrition. Workload declines that exceed 5 percent per year could trigger adverse personnel actions – workload programming during POM 08 allows for a smooth decrease in the size of each shipyard's workforce without relying on adverse personnel actions to downsize the workforce.

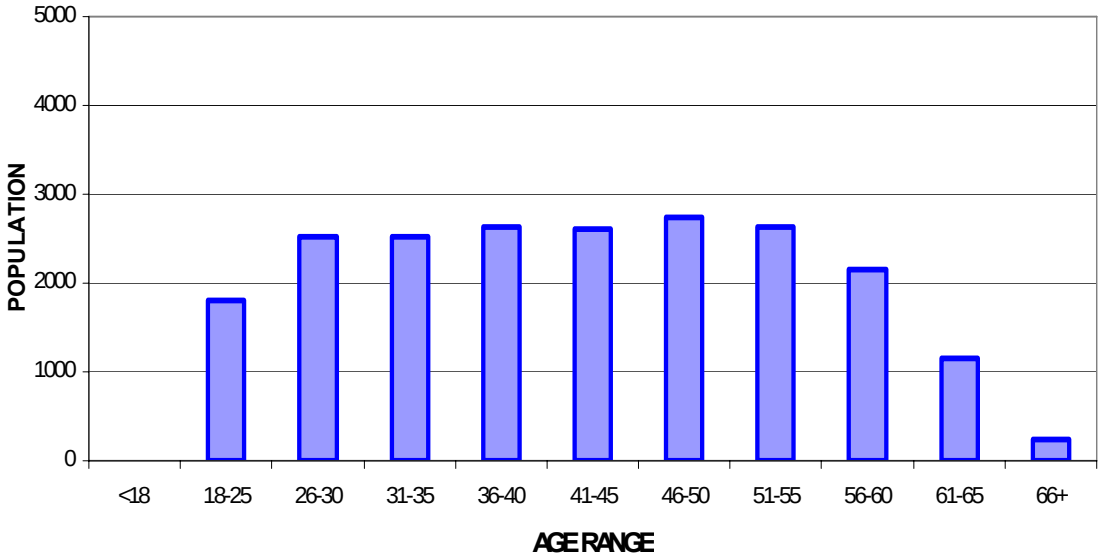

Figure 12 - Desired Naval Shipyard Workforce Age Profile

Optimizing the resulting employee base is also required. The keys to this are creating a modern workforce environment with trained and accountable supervisors, and motivated employees with career paths, proper training, and the tools to perform their job. Leadership development and mentoring programs are currently in place and being expanded, and career path definition through the use of Individual Development Plans is helping employees reach their goals.

A challenge of years ago to the Naval Shipyard workforce strategies may soon be returning. As the commercial nuclear power industry entertains restarting construction of new nuclear power plants for domestic electric power generation, the Naval Shipyards will again experience competition for trained nuclear production workers, technicians and engineers.

2. Continuous Process Improvement

NAVSEA and the Naval Shipyards' initiatives to improve processes will continue to focus on application of Lean Six Sigma and the use of other established improvement programs, such as technology insertion, described in Section I.G.

Integration and alignment with and across the Enterprises will further leverage and optimize the improvements and their value added. Executive-level support, data driven analysis, continuous process flow, and employee engagement & empowerment will continue to characterize the public shipyard drive for world-class performance. The Naval Shipyards are achieving vertical integration of continuous improvement as a strategic objective across Department of Defense, Department of Navy, Naval Warfare Enterprises, NAVSEA Task Force Lean, Naval Shipyard National Value Streams, and local improvement initiatives tied together by the One-Shipyard Enterprise. Expertise of process improvement strategies is carried forward by a large population of Black Belt and Green Belt change agents embedded throughout the Naval Shipyards, as well as a Lean Six Sigma-trained Senior Leadership base, and a powerful engine for continuing learning in the Lean Six Sigma College. Most importantly, the Naval Shipyards have established a foundation of successful continuous process improvement, change agents have won over many naysayers, and thousands of employees have been empowered by continuous process improvement. Lean Six Sigma in the Naval Shipyards will continue; they have the alignment, expertise, and support for its continued success.

The mandate for and commitment to Continuous Process improvement (CPI) is clear and unequivocal. However, there are recognized challenges to improving efficiency in a market place that is characterized by reducing workload. Efficiency improvements create added capacity - the capacity to do more work - on top of the available capacity created simply by a workload reduction. When improving efficiency in a "stable workload / workforce" environment, we must either further increase the workload or further reduce the workforce to account for the added capacity created by the improvements. COMNAVSEA has committed that no employees will lose their jobs as a result of Lean / CPI. There may be redeployment and/or retraining of individuals within the Naval Shipyards, coupled with managed attrition and ongoing workforce revitalization including the Apprentice Program, to address this aspect of workload / workforce leveling.

3. Infrastructure Modernization Plan

The Naval Shipyards are using two key investment streams, Military Construction (MILCON) and Capital Investment in Industrial Equipment (funded by Other Procurement, Navy (OPN)) to ensure the right capabilities are in place at the right time to support ship depot operations. The goals for the enablers are documented within the Naval Shipyard Depot Infrastructure Plan, which is currently being updated and due for completion in March 2007 and is aligned with Navy Ashore Vision 2030 (NAV2030).

The challenge is the limited amount of funding and competing priorities for these infrastructure investments. The competing priorities are both from within the Naval Shipyards – as "fact of life" mission essential projects such as pier replacements compete with our modernization / consolidation projects – and competing for scarce MILCON dollars with all other Navy activities as well.

a. **Military Construction** (MILCON). The FY08-13 Naval Shipyard MILCON program is focused on restoration and modernization of existing waterfront facilities, drydocks and maintenance piers and continuing reduction of inefficient footprint. Examples of near term MILCON Projects include:

- Puget Sound Naval Shipyard and IMF's CVN Maintenance Pier Replacement (P356), budgeted in FY 2008/09 at $91 million.
- Norfolk Naval Shipyard's Ship Repair Pier 5 Replacement (P516), budgeted in Fiscal Year 2010 at $197 million.

Longer term, the Naval Shipyard focus is on redesigning the activities into maintenance "hubs" centered on production lines and business operations to better support future workload. The hubs use the Lean Six Sigma processes to increase efficiency and reduce the Naval Shipyards' physical footprint. Examples of the projects of this nature include:

- Portsmouth Naval Shipyard's Structural Shop Consolidation (P266), at a projected cost of $19.8 million dollars.
- Pearl Harbor Naval Shipyard's Ship Maintenance Waterfront Facility (P210) at a projected cost of $19.0 million dollars.

b. **Capital Investment** (OPN). Critical to industrial operations is the industrial equipment used by the skilled labor force. The Shipyard Capital Investment Program (CIP) plans, develops, and executes Class 3 & 4 industrial plant equipment projects, ADP/IT, and personal property projects of a capital nature (>$250K) to maintain, modernize, and improve the infrastructure and industrial base at the mission funded Naval Shipyards and Intermediate Maintenance Facilities. The program is focused on major end items that constitute mid and long term return on investment justified by replacement, productivity, compliance, or new mission capabilities to best perform the mission of repair, conversion, and modernization of fleet ships and submarines in the most economical, efficient, environmentally sound, and safe manner possible.

The program is designed to provide equipment robust enough to handle multi faceted and constantly evolving product lines and replace antiquated industrial assets with modern technology able to provide increased capabilities at the Naval Shipyards. In the near term the program is focused on increasing industrial capability and reducing the pieces of outdated industrial equipment in order to support facility footprint reduction goals. Long term the Naval Shipyards are focused on providing industrial equipment that works in cell manufacturing/repair concept from Lean/Six Sigma doctrine. In addition, the Naval Shipyards are developing ways to network industrial assets to monitor performance and reduce maintenance costs.

Recapitalization of Class 3 and 4 plant property is an essential element in support of the Naval Shipyards' mission to provide maintenance, modernization, inactivation, and emergency repair of Navy ships. Continued deferment of planned capital investment equipment projects (major and minor) perpetuates a growing backlog of unsatisfied project requirements resulting in critical work delays, potentially unsafe working conditions, increased overhead costs, environmental compliance issues, and increased maintenance and repair costs to the Fleet customer.

The FY 2007 Defense Authorization Act amends Chapter 146 of Title 10, United States Code by adding Section 2476, Minimum Capital Investment for certain depots. 10 USC 2476 requires Navy depot capital investment at no less than 6% of the average combined workload of all Navy depots averaged over the preceding three fiscal years.

4. Information Technology Modernization Plan

Information systems are heavily relied on to support the complex industrial operations of the Naval Shipyards and for enabling process improvements. Navy Enterprise Resource Planning/SAP does not provide Maintenance Repair and Overhaul functionality to meet depot mission. Naval Shipyards have been in a "brown-out" scenario for information technology investment since FY00. Continued investment in Naval Shipyard systems is necessary to assure reliable, secure support of the shipyard mission. In the near term, the Navy Marine Corps Internet is being implemented.

Concurrently, information systems for ship maintenance must become more secure, more standardized, less costly, and more readily available to users throughout the maintenance and operational communities. To accomplish these goals, the Naval Shipyard community will actively participate in the Chief of Naval Operations Cyber Asset Reduction and Security (CARS) effort.

At NAVSEA and the Naval Shipyards, CARS will drive replatforming of shipyard applications from client-server to web-based architectures, consolidation of applications and databases to standardize Lean/best practice in corporate applications, central hosting of applications within Navy sanctioned networks/server farms, and continued adoption of emerging technologies (e.g., wireless, RFID) that support improved shipyard mission accomplishment. The CARS effort will centralize most information technology ownership and operations at the regional or Navy-wide level and consequently result in a reduction of personnel at the Naval Shipyards.

REPORT TO CONGRESS

on

Assessment of Ship Repair Industrial Base

Prepared by:
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June 2007

BACKGROUND

The FY 2007 Defense Authorization Conference Report 109-702 directs the Secretary of Defense to submit a report to Congressional defense committees on the current assessment of the ship repair industrial base. The conference report refers to Section 1017 of National Defense Authorization Act (NDAA): "The conferees agree that a strong ship repair industrial base is vital to the national security of the United States. Accordingly, it is important that the Secretary maintain a current assessment of the Nation's ship repair capabilities and capacity and, consistent with the Secretary's assessment, that the Department assign value to the accomplishment of overhaul, repair, and maintenance work in the United States for the evaluation of offerors' proposals in the awards of contracts to carry Department cargo. To guide formulation and implementation of the Secretary's acquisition policy, the Secretary shall conduct an assessment of the ship repair industrial base, to include: (1) a determination of ship repair requirements to support the National Military Strategy; (2) an evaluation of the repair industrial base's critical capabilities, capacity, competitive sourcing, geographical disposition; and (3) other critical factors as measured against the determined requirements."

EXECUTIVE SUMMARY

The current capacity and capability of the ship repair industrial base are adequate to satisfy the national security interests of the United States. The public shipyards and private sector shipyards collectively constitute the naval ship repair industrial base. The requisite facilities and manpower exist to meet navy ship depot maintenance requirements. The Multi-Ship Multi-Option (MSMO) contracting strategy provides continuity for planning and maintenance processes for Navy ships and contractors.

As the Navy enters the second half of this decade, having completed a peak period of major submarine maintenance, ship maintenance providers will experience a net reduction in the overall Navy projected ship depot maintenance workload during FY 2007-2010. Exacerbating the reduced workload are major carrier and submarine maintenance periods, which create significant, episodic surges for shipyard manpower and facilities. The future years' challenges are to

- determine the correct workload balance to maintain effective and efficient public and private shipyards,
- ensure compliance with statutory requirements for public shipyard capability and capacity, and
- allow for flexibility within the industrial base to meet Fleet surge demands.

The February 2007 Naval Shipyard Business Plan provides an assessment of the public sector ship repair industrial base and the way ahead in sustaining core skills, process, and infrastructure capability and capacity for the future. Consequently, this report will focus on the private sector ship repair industrial base.

SHIP MAINTENANCE REQUIREMENTS

Statutory Requirements:

U.S. Code Title 10 contains requirements for public depot maintenance capabilities and capacity. These statutes are also the foundation for building a bottom-up "zero-based" definition of Naval Shipyard capacity and baseline workload requirements.

- Title 10 USC 2464 requires a core logistics capability (skill, processes, and infrastructure) that is government-owned and government-operated, to ensure a ready and controlled source of technical competence and resources necessary to ensure effective and timely response for designated weapon systems.
- Title 10 USC 2466 limits to no more than 50 percent the amount of depot maintenance funds made available in a fiscal year that can be contracted out to the private sector.

- Title 10 USC 2472 requires public depot civilian employment to be managed solely on the basis of workload and the funds available for such depot maintenance. It prohibits management by "end strength."

Navy Requirements:
The total Navy ship depot maintenance workload is a function of the following:

- Force structure;
- Maintenance plans for each ship class (including the established intervals, durations, maintenance cycles and repair mandays for depot level maintenance availabilities)
- Fleet Modernization Plan;
- Homeport assignments;
- Fleet operational tempo; and
- Planning, Programming, Budgeting and Execution System, including the Capability Plan, which programs the funding and capacity necessary to execute the above workload with only limited surge capacity.

Workload distribution between the public and private sectors is accomplished using the availability assignment criteria approved by the Secretary of the Navy. The governing principles of these criteria aim to strike a balance between a ship's crew's quality of life, the cost of the work, the ship's operational availability, and the private sector or public sector depot's ability to execute work in accordance with cost and schedule goals. The assessment criteria are as follows:

- Schedule maintenance in ship's homeport when possible;
- Optimize critical skill usage; and
- Load public shipyards first to efficiently use organic capacity.

When there is more than one option for availability assignment, the following factors, as applicable, will be taken into account:

- Crew impact;
- Cost impact;
- Operational impact;
- Shipyard executability;
- Class Maintenance Plan impact;
- Schedule impact; and
- Modernization impact.

As the Naval Shipyard workload is performed primarily on nuclear-powered submarines, nuclear-powered aircraft carriers and large-deck amphibious ships, the depot maintenance work on the Navy's conventionally-powered surface ships and on Military Sealift Command (MSC) ships is primarily private sector workload. Refueling overhauls on nuclear-powered aircraft carriers and all maintenance work for USS ENTERPRISE (CVN 65) are performed in the private sector by Northrop Grumman Newport News (NGNN).

The six Regional Maintenance Centers (RMCs), located in Norfolk, VA, Mayport, FL, Ingleside, TX, San Diego, CA, Bremerton, WA, and Pearl Harbor, HI, are the Navy's contracting agents for private sector ship availabilities, and provide a single point of contact in each fleet concentration area for ship maintenance and modernization issues. In addition to providing contract oversight, the RMCs plan and execute maintenance per Fleet policy and guidance, and assure process compliance.

MSC ships are maintained by private sector shipyards. MSC operates ships under a commercial model using a variety of operating and ownership arrangements that affect how ship repair work is managed.

Government-owned vessels are maintained to commercial standards primarily on the basis of rules of the American Bureau of Shipping (ABS) and the regulations of the United States Coast Guard (USCG), with the exception of ships originally built to Navy standards. Government-owned and government-operated ship maintenance requirements are managed by government employees. Maintenance availabilities are generally competitively bid with some exceptions (e.g., work is sole-sourced at Guam Shipyard as start up work to allow Guam Shipyard to become a viable shipyard). Government-owned and contractor-operated ships are maintained by the commercial operator to commercial standards. Maintenance availabilities are competitively bid. Contractor-owned and contractor-operated ship maintenance is the responsibility of the independent owner.

CAPABILITIES AND CAPACITY

As of January 2007, 119 ship repair firms are certified capable to perform work on U.S. Navy ships. These contractors are geographically located in port areas throughout the Continental United States (CONUS), in Hawaii, and in Guam. Figure 1 provides a graphic illustration of the locations of the large commercial firms and the type of work that they perform.

Figure 1 – Private Ship Repair Contractors by Port Area

The process for certifying ship repair firms is controlled by the Master Ship Repair Agreement/Agreement for Boat Repair (MSRA/ABR) Program. The MSRA/ABR Program is an eligibility determination that evaluates a ship repair firm's capability and capacity to perform maintenance of U.S. Navy ships. The threefold purpose of establishing MSRAs is to:

- Identify and certify a qualified ship repair industrial base in each homeport area;
- Develop a uniform set of standard criteria to evaluate ship repair firms seeking to perform maintenance on Navy ships; and
- Provide consistent nationwide interpretation and application of the MSRA criteria in the certification and recertification process.

Ship repair firms holding an MSRA with the Navy must meet the following certification criteria:

- Capable of accomplishing a Selected Restricted Availability (SRA) on an FFG-7 Class (frigate) ship or larger;
- Perform 55 percent of the SRA using their own facilities and their own workforce; and
- Possess or have access to a pier with the requisite support and technical services available to accommodate an FFG-7 Class ship.

ABR certification criteria are less stringent and allow smaller ship repair firms to perform ship repair work. To qualify for an ABR, a contractor must be primarily engaged in ship and/or boat/craft repair. Contractors must meet the general criteria of the North American Industry Classification System (NAICS) code 335511, Shipbuilding and Repairing, or code 336612, Boatbuilding. Contractors must demonstrate managerial and technical capabilities. ABR contractors are also evaluated on their ability to accomplish a variety of industrial work, including ship fitting, sheet metal, welding, pipefitting, machinist, electrical, electronics, woodworking and rigging.

The intent of the MSRA/ABR Program is to provide a written instrument of understanding for the Navy to solicit and award single ship, firm fixed-price contracts to a universe of capable contractors. MSMO contracts, discussed in the following section, do not require an MSRA/ABR. However, the MSRA criteria are built into the MSMO solicitation. In addition, in accordance with Title 10 USC 7299a, solicitations for short-term repair availabilities (six months or less in duration) are restricted to firms capable of performing work within a ship's homeport, assuming adequate competition. Availabilities longer than six months in duration must be competed coast-wide.

Appendix A lists the MSRA and ABR certificate holders sorted by the port area.

Contracting Strategy:

MSMO contracts are repair and overhaul contracts for a specific number of ships in a ship class in a single homeport that are awarded to a prime contractor for a base plus several option years. The MSMO contract provides continuity for planning and maintenance processes for Navy ships and private sector teams awarded the work.

MSMO contracts awarded after May 2004 must meet the requirements of Title 10, USC 2382 "Consolidation of contract requirements: policy and restrictions," which requires the Department's senior procurement executive to:

- Address small business concerns;
- Conduct market research;
- Identify alternative contracting approaches involving a lesser degree of consolidation; and
- Determine that consolidation is necessary and justified.

MSMO contracts are crucial to meeting the Navy's Fleet maintenance needs, while supporting operational schedules. MSMO contracts provide execution planning, ship repair, modernization, and inter-availability maintenance coverage for a number of years vice issuing a single fixed-price contract for each ship repair action. Benefits of this arrangement include the following:

- Establishes a long term relationship between ship and contractor;
- Reduces cost and rework on repetitive alterations on same ship class/platform;
- Provides for a quick response to emergent work/growth (critical for surge capability concept);
- Provides program stability for the Fleet and contractor, creating added incentives for contractor facility investment;
- Facilitates level loading of work, resulting in improved contractor efficiencies and cost savings;
- Reduces time to the government and contractor resulting from issuing one contract to cover multiple years vice the time associated in the acquisition cycle to issue a single contract for each individual repair availability;
- Accommodates advance planning for repair availabilities throughout contract duration, which improves contractor efficiencies; and
- Establishes workforce familiarity with the specifics of a ship class enabling long-term functional excellence within a particular discipline.

The MSMO contracting strategy is used for surface ships (except carriers in San Diego) where the basic award is competed for a class of ships in a homeport and all subsequent availabilities for that class of ships are separate options that are effectively sole source to the MSMO winner. The MSMO contracting strategy is also used for carriers in San Diego; however, the basic award is not competed (i.e. carrier availabilities are competed in Norfolk and the Pacific Northwest were a Naval Supervising Activity is present to supervise the winning private firm). Although competition is sought for submarine availabilities, these are generally sole-source single availabilities.

Dry Docks:

The Navy manages a safety certification program for dry docking facilities and shipbuilding ways for U.S. Navy ships. The program functions to ensure the safety of U.S. Navy ships during all dry docking evolutions, launchings and lay periods, and to establish certified rated capacity of each facility. Certification is required for all Navy dry docking facilities and private sector dry docking facilities with contracts to build, overhaul or repair Navy ships. Certification is also required for MSC ships repaired in CONUS. The dry dock certification program serves to:

- Assure safe dry docking of U.S. Navy ships;
- Protect human life and property;
- Provide a sufficient number of certified dry docking facilities, geographically located, to meet Fleet requirements;
- Promote and maintain sound dry docking practices; and
- Maintain existing dry dock assets and ensure their adequacy in the future.

Certification is not required to dock small boats and service craft. Currently, 78 public and private facilities are in the dry dock safety certification program. Thirty-two of these facilities are in the private sector. Appendix B displays a matrix of ship classes and the certified private sector dry docks that can accommodate them.

Employment:
The private sector ship repair industrial base is comprised of the 36 MSRA holders and 83 ABR contractors. Employment of private sector workers occupied on Navy ship repair work has fluctuated over the years consistent with contracted workload and as a function of the cyclic nature of ship maintenance requirements. Figure 2 below shows both public sector and private sector shipyard employment engaged on ship repair work on all classes and types of U.S. Navy ships from 1990 to 2006. The private sector repair workforce has remained relatively stable at somewhat less than 20,000. Conversely, public sector shipyard employment has declined nearly 60 percent during that timeframe.

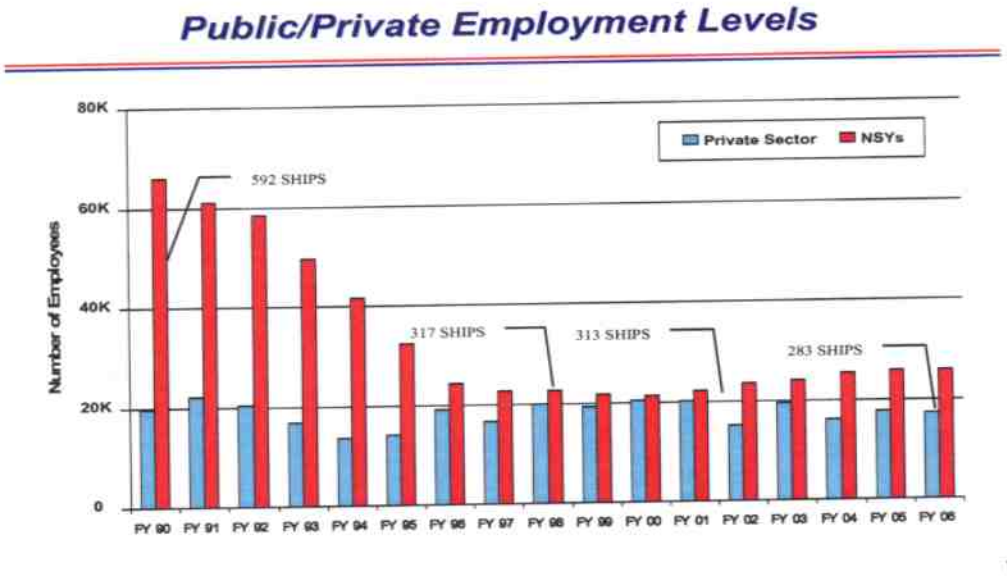

Figure 2 – Public & Private Ship Repair Employment FY 1990-2006

Capacity and Workload:
Capacity of the private sector ship repair industrial base is adequate to satisfy national security interests and fulfill current Navy ship maintenance requirements. Long-term maintenance trends fluctuate by region and will impact workload. In the Northeast and Mid-Atlantic regions, planned submarine depot maintenance work contracted to General Dynamics Electric Boat (GDEB) and NGNN, respectively, will phase out in FY 2007. Future submarine work for the private sector will be limited to an "on-exception" basis. Future homeporting plans and ship decommissionings will also have an impact. Navy repair work in the Ingleside, TX area will cease after FY 2009 as mine warfare ships relocate to San Diego, CA. Decommissioning of USS JOHN F. KENNEDY and FFGs will reduce workload in the Southeast. Due to cyclic nature of carrier maintenance, workload in the Pacific Northwest will decrease in FY 2008, but will rebound in FY 2009. Aggregate private sector surface ship loading will remain relatively constant in the Mid-Atlantic area. In San Diego, private sector workload will increase slightly from FY 2007 as the mine warfare forces and Littoral Combat Ship homeporting occurs. Hawaii private sector workload will remain constant.

The private sector capacity to perform ship repair work is displayed below by region in table 1. The capacities are estimates of the number of production workers available per day within the port area for FY 2006. The production workforce is composed of trade skill workers, and does not include engineers and support personnel.

Region/Port	Capacity
Northeast/Groton, CT	1,800
Newport News, VA	5,200
Mid-Atlantic/Norfolk, VA	3,600
Southeast/Mayport, FL	750
South Central/Ingleside, TX	250
Southwest/San Diego, CA	4,300
Northwest/Puget Sound, WA	1,500
Hawaii/Pearl Harbor, HI	450
	17,850

Table 1 – Private Sector Capacity, by Region

OTHER CRITICAL FACTORS

One Shipyard

In 2001, the Naval Sea Systems Command (NAVSEA) introduced the One Shipyard concept of the Industrial Base Workload and Resource Enterprise to provide the most efficient ship maintenance for the Fleet operating via a Surge, Sustain and Reconstitute construct. One Shipyard focuses on cost, schedule, and quality through standardizing processes, sharing resources among public yards, and partnering with private yards. Other vital elements of the One Shipyard concept are a corporate approach to material support and the resolution of critical skill shortages. One Shipyard is a descriptor for this distributed complex of facilities, people and processes. The size and location of the public sector and private sector industrial base workforce can create geographic critical skill shortfalls, particularly when the actual workload varies from programmed workload in a surge scenario. To mitigate skill imbalances, workers are loaned and borrowed across shipyards rather than having each shipyard hire, train and employ capacity to execute peak workload that would be underutilized and costly to maintain during off-peak times. Although the industrial base today has adequate worker capacity, the workers must be carefully managed and moved to where the work is geographically located. This facet of ship repair is unique in the depot industry – all other depot repairs are conducted by moving the units to be repaired to where the workers are employed.

Partnerships

In accordance with Title 10 USC 2474, the public shipyards are designated Centers of Industrial and Technical Excellence (CITE) for maintenance and repair, modernization, inactivation, disposal, and emergency repair of Navy ships, systems, and components. Title 10 USC 2474 authorizes and encourages public private partnerships, permits performance of work related to core competencies, and permits use of facilities and equipment. The conversion of four USS OHIO Class Ballistic Missile submarines (SSBN) to Guided Missile submarines (SSGN) are prime examples of CITE partnering between the Naval Shipyards and private industry. In partnership with GDEB, both Norfolk Naval Shipyard (NNSY) and Puget Sound Naval Shipyard and Intermediate Maintenance Facility (PSNS&IMF) provided facilities, equipment, and augmented production resources to execute the conversion work.

The One Shipyard concept has been instrumental in fostering partnerships between the public and private sectors. Private sector partnering with the Naval Shipyards has resulted in GDEB support on submarine availabilities at Groton, CT and at Portsmouth Naval Shipyard (PNSY). Likewise, the Naval Shipyards

have provided support at both GDEB and NGNN. Partnering is not limited to submarine work. In the Norfolk area, the public sector shares carrier work with Earl Industries and large-deck amphibious ship work with BAE Systems Norfolk Shipbuilding. PSNS&IMF shares carrier work with Todd Shipyard in the Northwest. In San Diego, PSNS&IMF also shares carrier work with the private sector in that NGNN serves as an integrator, subcontracting to local private firms. In Hawaii, Pearl Harbor Naval Shipyard (PHNSY)&IMF partners with BAE Systems Hawaii Shipyards in providing the facility and support for docking surface ships.

Many more partnerships and teaming arrangements exist among private contractors. In the past, MSMO contracting has strongly encouraged the prime contractor to subcontract work to small businesses through incentives. A new policy requires that MSMO contracts awarded after May 2004 include a requirement to subcontract 40 percent of the work to small businesses. Teaming arrangements by joint ventures and partnerships have been a result of MSMO contracting. When the Navy awards a MSMO contract to a prime contractor involved in a contractor team arrangement, the Navy, acting under the Federal Acquisition Regulation, recognizes the integrity and validity of that arrangement while retaining its right to require consent to subcontracts, to pursue its policies on competitive subcontracting, and to hold the prime contractor fully responsible for contract performance.

CONCLUSION

The post-9/11 environment has seen the Fleet shift from a rotational cycle to the Fleet Response Plan enhanced surge capability. The shift requires the maintenance community infrastructure to be flexible in response to an evolving demand signal from Combatant Commanders. One Shipyard and MSMO contracting provide flexibility to help meet the demand. The Navy will continue to require the private sector and the Naval Shipyards to provide operational and combat ready ships and weapon systems required by the Fleet.

Current capacity and capability of the private sector ship repair industrial base are adequate to satisfy the national security interests of the United States. The Navy's goal is to maintain a viable private sector ship repair industrial base while balancing public shipyard workload to comply with Title 10.

Appendix A
List of MSRA and ABR Contractors

CONTRACTOR	TYPE	PORT AREA
BATH IRON WORKS CORPORATION	MSRA/ABR	BATH
ROCKLAND MARINE CORPORATION	ABR	BATH
ELECTRIC BOAT CORPORATION	MSRA/ABR	GROTON
GUAM SHIPYARD	MSRA/ABR	GUAM
AMERICAN INDUSTRIAL MARINE, INC.	ABR	GULF COAST
ATLANTIC MARINE, INC – MOBILE	MSRA/ABR	GULF COAST
AVONDALE INDUSTRIES, INC., SHIPYARDS DIVISION	MSRA/ABR	GULF COAST
BENDER SHIPBUILDING & REPAIR COMPANY, INC.	MSRA/ABR	GULF COAST
BOLAND MARINE & MANUFACTURING CO., INC.	ABR	GULF COAST
BOLLINGER SHIPYARDS, LOCKPORT, LLC	ABR	GULF COAST
BUCK KREIHS COMPANY, INC.	ABR	GULF COAST
COLUMBIA RESEARCH CORPORATION	ABR	GULF COAST
DIXIE MACHINE WELDING & METAL WORKS, INC.	ABR	GULF COAST
HALTER MARINE, INC. - MOSS POINT DIV.	MSRA/ABR	GULF COAST
INDUSTRIAL MAINTENANCE AND MACHINE, INC.	ABR	GULF COAST
INGALLS SHIPBUILDING INC	MSRA/ABR	GULF COAST
KNIGHTS' MARINE & INDUSTRIAL SERVICES, INC.	ABR	GULF COAST
KNIGHTS' PIPING, INC.	ABR	GULF COAST
MASTER MARINE, INC.	ABR	GULF COAST
OCEAN TECHNICAL SERVICES, INC.	ABR	GULF COAST
STEINER SHIPYARD, INC.	ABR	GULF COAST
SWIFTSHIPS	ABR	GULF COAST
TEXTRON MARINE & LAND SYSTEMS DIV. OF TEXTRON, INC.	ABR	GULF COAST
TIBBETTS BOAT WORKS	ABR	GULF COAST
UNITED STATES MARINE INC.	ABR	GULF COAST
WORLD WIDE MARINE SERVICES, INC.	ABR	GULF COAST
ANTEON CORP.	ABR	INGLESIDE
GULF COPPER GROUP, INC.	ABR	INGLESIDE
GULF COPPER SHIP REPAIR INC.	ABR	INGLESIDE
HOUSTON SHIP REPAIR, INC.	ABR	INGLESIDE
SOUTHWEST MARINE, INC. (INGLESIDE DIVISION)	ABR	INGLESIDE
ATLANTIC DRY DOCK CORPORATION	MSRA/ABR	JACKSONVILLE
ATLANTIC MARINE, INC. – JACKSONVILLE	MSRA/ABR	JACKSONVILLE
COAST ENGINE & EQUIPMENT COMPANY, INC. (CEECO, INC.)	ABR	JACKSONVILLE
COASTAL SHIP REPAIR, INC.	ABR	JACKSONVILLE
DETYENS SHIPYARDS, INC.	MSRA/ABR	JACKSONVILLE
GULF MARINE REPAIR CORPORATION	ABR	JACKSONVILLE
INTERMARINE USA (SAVANNAH YACHT & SHIP)	MSRA/ABR	JACKSONVILLE
METAL TRADES, INC.	MSRA/ABR	JACKSONVILLE
NORTH FLORIDA SHIPYARDS, INC.	MSRA/ABR	JACKSONVILLE
TAMPA BAY SHIPBUILDING & REPAIR CO.	MSRA/ABR	JACKSONVILLE
NEWPORT NEWS SHIPBUILDING AND DRYDOCK CORPORATION	MSRA/ABR	NEWPORT NEWS
ACME REPAIR COMPANY, INC.	ABR	NORFOLK
ADVEX CORPORATION	ABR	NORFOLK

Appendix A (Continued)
List of MSRA and ABR Contractors

CONTRACTOR	TYPE	PORT AREA
AEPCO, INC.	ABR	NORFOLK
ALLIANCE TECHNICAL SERVICES, INC.	ABR	NORFOLK
AMERICAN SHIPYARD COMPANY, LLC	MSRA/ABR	NORFOLK
AMSEC, LLC	ABR	NORFOLK
ANTEON CORP	ABR	NORFOLK
ASSOCIATED NAVAL ARCHITECTS, INC.	ABR	NORFOLK
ATLANTIC ORDNANCE & GYRO, INC.	ABR	NORFOLK
B & A MARINE COMPANY INC.	ABR	NORFOLK
BAE SYSTEMS, NORFOLK SHIPBUILDING & DRYDOCK CORP.	MSRA/ABR	NORFOLK
BAY METALS & FABRICATION INC	ABR	NORFOLK
COLONNA'S SHIPYARD, INC.	MSRA/ABR	NORFOLK
CUNNINGHAM MARINE HYDRAULICS CO., INC.	ABR	NORFOLK
DAVIS BOAT WORKS	ABR	NORFOLK
EARL INDUSTRIES, L.L.C.	MSRA/ABR	NORFOLK
EAST COAST REPAIR & FABRICATION, INC	ABR	NORFOLK
EASTERN TECHNICAL ENTERPRISES, INC.(BROOKLYN NY DIV)	ABR	NORFOLK
GOLTEN MARINE CO., INC.	ABR	NORFOLK
HOLMES BROTHERS ENTERPRISES, INC.	ABR	NORFOLK
KERNEY SERVICE GROUP, INC.	ABR	NORFOLK
LPI TECHNICAL SERVICES INC	ABR	NORFOLK
LYONS SHIPYARD, INC.	ABR	NORFOLK
MARINE HYDRAULICS INTERNATIONAL, INC.	MSRA/ABR	NORFOLK
MARLEN C. ROBB & SON BOATYARD & MARINA, INC.	ABR	NORFOLK
METRO MACHINE CORP.	MSRA/ABR	NORFOLK
MILCOM SYSTEMS CORPORATION	ABR	NORFOLK
NETWORK INDUSTRIES, LTD.	ABR	NORFOLK
NEWPORT NEWS INDUSTRIAL, INC.	ABR	NORFOLK
NORFOLK SHIP REPAIR & DRYDOCK CO., INC.	MSRA/ABR	NORFOLK
OCEANEERING	ABR	NORFOLK
PROMET MARINE SERVICES CORPORATION	ABR	NORFOLK
PURE WATER TECHNOLOGIES	ABR	NORFOLK
Q.E.D. SYSTEMS, INC.	ABR	NORFOLK
STEVENS TECHNICAL SERVICES, INC.	ABR	NORFOLK
TECNICO CORPORATION	MSRA/ABR	NORFOLK
UNIDYNE CORP.	ABR	NORFOLK
BAE SYSTEMS HAWAII SHIPYARDS, INC., (BAE-HIS)	MSRA/ABR	PEARL HARBOR
C & S SERVICES, INC.	ABR	PEARL HARBOR
HAWAII SHIPYARDS INC	ABR	PEARL HARBOR
HONOLULU MARINE, INC.	ABR	PEARL HARBOR
HSI ELECTRIC, INC.	ABR	PEARL HARBOR
MARISCO, LIMITED	ABR	PEARL HARBOR
PACIFIC SHIPYARDS INTERNATIONAL, LLC	ABR	PEARL HARBOR
CASCADE GENERAL, INC.	MSRA/ABR	PUGET SOUND

Appendix A (Continued)
List of MSRA and ABR Contractors

CONTRACTOR	TYPE	PORT AREA
EVERETT SHIPYARD INC	ABR	PUGET SOUND
FOSS SHIPYARD, d/b/a FOSS MARITIME COMPANY	ABR	PUGET SOUND
LAKE UNION DRY DOCK COMPANY	MSRA/ABR	PUGET SOUND
MAR COM, INC.	ABR	PUGET SOUND
MODUTECH MARINE, INC.	ABR	PUGET SOUND
PACIFIC MARINE FIELD SERVICES, LLC	ABR	PUGET SOUND
PUGLIA ENGINEERING, INC.	ABR	PUGET SOUND
TODD PACIFIC SHIPYARDS CORPORATION SEATTLE DIVISION	MSRA/ABR	PUGET SOUND
AL LARSON BOAT SHOP	MSRA/ABR	SAN DIEGO
AMSEC, LLC	ABR	SAN DIEGO
BAY CITY MARINE, INC.	ABR	SAN DIEGO
BAY SHIP & YACHT CO.	MSRA/ABR	SAN DIEGO
CONTINENTAL MARITIME OF SAN DIEGO, INC.	MSRA/ABR	SAN DIEGO
CONTROLS ENGINEERING MAINTENANCE CORP. (CEM-CORP)	ABR	SAN DIEGO
EPSILON SYSTEMS SOLUTION, INC.	ABR	SAN DIEGO
FRASER'S BOILER AND SHIP REPAIR, LLC	ABR	SAN DIEGO
HUD-MAC MARINE SERVICES	ABR	SAN DIEGO
MARITIME SOLUTIONS, LLC	ABR	SAN DIEGO
MILLER MARINE	ABR	SAN DIEGO
NATIONAL STEEL & SHIPBUILDING CO. (NASSCO)	MSRA/ABR	SAN DIEGO
PACIFIC DEFENSE SYSTEMS	ABR	SAN DIEGO
PACIFIC SHIP REPAIR AND FABRICATION, INC.	MSRA/ABR	SAN DIEGO
PACORD, INC.	ABR	SAN DIEGO
PROPULSION CONTROLS ENGINEERING, INC.	ABR	SAN DIEGO
SAN FRANCISCO DRYDOCK, INC.	MSRA/ABR	SAN DIEGO
SAN PEDRO BOAT WORKS, INC.	ABR	SAN DIEGO
SOUTH BAY BOAT YARD, INC.	ABR	SAN DIEGO
SOUTH BAY BOILER REPAIR, INC.	ABR	SAN DIEGO
SOUTHWEST MARINE, INC. (SAN DIEGO DIVISION)	MSRA/ABR	SAN DIEGO
SOUTHWEST MARINE, INC. (SAN PEDRO DIV.)	MSRA/ABR	SAN DIEGO
STONE BOAT YARD, INC.	ABR	SAN DIEGO
WILLARD MARINE, INC.	ABR	SAN DIEGO

Appendix B
Matrix of Certified Drydocks and Ship Classes

FACILITY	Ship Class	AGSS-555	AR5-50	AS-39	CG-47	CV-63/67	CVN-65	CVN-68	CVN-78	DDG-51	EDD-964	FFG-7	LCC-19/20	LHA-1	LHD-1	LPD-4	LPD-17	LSD-41	MCM-1	MHC-51	MTS-635	NR-1	SSBN-726	SSN-21	SSN-23 (Ohio)	SSN-688	SSN-774
EAST COAST FACILITIES	Type																										
ATLANTIC MARINE FLORIDA, Mayport, FL MR 246	MR	✓	✓									✓							✓	✓		nn					
ATLANTIC MARINE FLORIDA, Mayport, FL AFDM-7	FL	✓	✓	xc	✓					✓	✓	✓				✓		xc	✓	✓	nn	nn				nn	nn st
BATH IRON WORKS, Bath, ME DD 3	FL	✓	✓	✓	xc					✓	✓	✓	✓	xc	xc	✓	✓	✓	✓	✓	nn	nn	nn	nn	nn	nn	nn
COLONNA'S SHIPYARD, Norfolk, VA DD 1	FL	✓	✓	xc	xc					xc		✓				✓		xc	✓	✓		nn					
DETYENS SHIPYARD, Charleston, SC DD-1	GR	✓	✓								st xc	✓				✓		xc	✓	✓	nn	nn				nn	nn
DETYENS SHIPYARD, Charleston, SC DD-2	GR	✓	✓							✓	st xc	✓				xc			✓	✓	nn	nn			nn st	nn	nn xc
DETYENS SHIPYARD, Charleston, SC DD-5	GR	✓	✓	✓						✓	✓	✓	✓			✓	xc	✓	✓	✓	nn	nn		nn	nn st xc	nn	nn
GENERAL DYNAMICS, Groton, CT GD 1	GR	✓	RC									RC							✓	✓	✓	✓	fba	✓	st sb	✓	✓
GENERAL DYNAMICS, Groton, CT GD 2	GR	✓	✓							st	xc	✓				✓			✓	✓	✓	✓	✓	✓	st sb	✓	✓
GENERAL DYNAMICS, Groton, CT GD 3	GR	✓	✓		✓					✓	xc	✓							✓	✓	✓	✓	✓	✓	✓	✓	✓
GD, Groton, CT, SHIPPINGPORT (ARDM-4)	FL	✓	✓									✓							✓	✓	✓	✓				✓	xc
METRO MACHINE CORP., Norfolk, VA "Speede"	FL	✓	✓	✓	✓					✓	✓	✓	✓	xc	✓	✓	✓	✓	✓	✓	nn	nn				nn	nn
NEWPORT NEWS, Newport News, VA DD 1	GR	✓	✓	✓	st					st	✓	✓				✓		✓	✓	✓	✓	✓				✓	
NEWPORT NEWS, Newport News, VA DD 2	GR	✓	✓	✓								st	✓	xc	xc	✓	✓	✓	✓	✓	✓	✓				✓	
NEWPORT NEWS, Newport News, VA DD 4	GR	✓	✓									✓				✓			✓	✓	✓	✓				✓	xc
NEWPORT NEWS, Newport News, VA DD 10	GR	✓	✓	✓	xc					st		✓	xc	xc	xc	✓	✓	✓	✓	✓	✓	✓	fba	fba		✓	✓
NEWPORT NEWS, Newport News, VA DD 11	GR	✓	✓	✓	✓	✓	✓	✓	✓	st	✓	✓	✓	✓	st	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
NEWPORT NEWS, Newport News, VA DD 12	GR	✓	✓	✓						st	st	✓	✓	✓	st	✓	✓	✓	✓	✓	✓	✓	fba	fba		✓	✓
NEWPORT NEWS, Newport News, VA DD 1 (FL)	FL	✓	✓	✓						✓	st	✓	✓			✓	✓	✓	✓	✓	✓	✓		st	st	✓	✓
BAE NORFOLK, Norfolk, VA "Titan"	FL	✓	✓	✓	✓					✓	✓	✓	✓	xc	xc	✓	✓	✓	✓	✓	nn	nn		nn	nn st	nn	nn
BAE NORFOLK, Norfolk, VA DD 1 "Old Dominion"	FL	✓	✓	xc	st					st	✓	✓				✓		✓	✓	✓	nn	nn				nn	nn
GULF COAST FACILITIES	Type																										
AVONDALE SHIPYARDS, Westwego, LA DD 1	FL	✓	✓	✓	✓	rb				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	nn	nn		nn	nn st	nn	nn
INGALLS SHIPBUILDING, Pascagoula, MS Floating	FL	✓	✓	✓	✓					✓	✓	✓	✓			✓	✓	✓	✓	✓	nn	nn			nn st	nn	nn
WEST COAST FACILITIES	Type																										
CASCADE GENERAL, Portland, OR DD 1(YFD-69)	FL	✓	✓		xc					xc	xc	✓				✓		xc	✓	✓		nn					
CASCADE GENERAL, Portland, OR DD 3	FL																										
GUAM SHIPYARD, Apra Harbor, Guam "Machinist"	FL	✓	✓	✓	st xc					✓	✓	✓	✓	xc	✓	✓	✓	✓	✓	✓	nn	nn		nn st		✓	nn
NATIONAL STEEL, San Diego, CA BD 1	GR	✓	✓																✓	✓		nn					
NATIONAL STEEL, San Diego, CA DD 2	FL	✓	✓	✓	✓					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	nn	nn				nn	nn
BAE SAN FRANCISCO, San Francisco, CA DD 2	FL	✓	✓										✓		✓	✓	✓	st	✓	✓		nn					
BAE SAN DIEGO, San Diego, CA DD 3	FL	✓	✓	✓	✓					✓	✓	✓	✓			✓		✓	✓	✓	nn	nn	nn	nn	nn st	nn	nn
TODD SHIPYARDS, Seattle, WA DD 1 (YFD-70)	FL	✓	✓		st					st	✓	✓				✓		xc	✓	✓		nn					
TODD SHIPYARDS, Seattle, WA AFDM-10	FL	✓	✓	xc	✓					✓	st xc	✓						xc	✓	✓	nn	nn				nn	nn

Appendix B (continued)
Legend for Drydocking Matrix

Facility Types:

FL Floating Dry Dock
GR Graving Dock
MR Marine Railway

Symbol/Abbreviation:

✓ Indicates that the ship will dimensionally fit in the dry dock at practical docking drafts and the ship's displacement is within the dock's certified capacity. Also may indicate that the ship or like ship has been safely docked previously which may have exceeded the certified capacity of the dock. The ship can be docked using standard docking practices. A blank indicates that a ship will not dimensionally fit at practical docking drafts or is unsuitable for other reasons.

[ ] Indicates that the ship/dock combination has not yet been verified using the latest assumptions.

Upper case abbreviation indicates that the hull will dimensionally fit, but it is impossible to dock the ship without dock modification/relocation.

FS	Fueling sponsons
PD	Prior docking, below light load
RC	Dock cover precludes docking
RM	Multiple restrictions

Lower case abbreviation indicates that the hull will dimensionally fit, and a potential docking capability/limitation exists. In some docks the blocking arrangement will have to be modified.

ba	Use of existing buoyancy assist modules (BAMs)
fba	BAMs could be designed to accommodate ship
hd	Hang dome over end of pontoon
hp	Hang propeller(s) over end of pontoon
nn	Not nuclear capable
rb	Bridge restriction
ri	Existing interferences must be removed
st	Use of special techniques to reduce required water depth such as installing moveable/hinged blocks (more than six)
sb	Use of special blocking arrangment reqired to meet certified limits
xc	Ship fits in dock, but exceeds the certification capability limits
xtr	Tray removal docking exceeds the certification capability limits

Depot Integrated Maintenance Capability Strategic Plan
Naval Undersea Warfare Center Division, Keyport

6 December 2007

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Executive Summary

The Naval Undersea Warfare Center Division, Keyport, WA, is one of the Military Services' 22 organic depot maintenance activities. As one of the Nation's organic maintenance depots we provide both the capabilities and the management mechanisms needed for agile product support to the warfighter under a wide variety of operating conditions and constitute a portion of the DoD's core weapon system sustainment capability supporting the Navy Enterprises and joint national defense requirements. This **NUWC Division Keyport (Depot) Integrated Maintenance Capability Strategic Plan** provides the framework for maintenance planning and management processes that will yield robust, flexible organic depot maintenance capabilities to support the Navy Enterprises.

The purpose of this strategic plan is to ensure that the Division's technical capabilities and infrastructure are postured and resourced to meet the national security and material readiness challenges of the 21st century. The Division's vision for the future is "***The Naval Undersea Warfare Center Division, Keyport, Integrated Undersea Warfare Depot provides agile, responsive, and integrated maintenance capabilities in support of Navy Enterprises and joint national defense requirements****."* Its goals and objectives mirror DoD's Maintenance Strategy and Implementation plans by aligning maintenance operations metrics with warfighter outcomes (performance driven outcomes), identifying and sustaining requisite core maintenance capability, developing and sustaining a highly capable, mission-ready maintenance workforce, and ensuring an adequate infrastructure to execute assigned maintenance workload.

The Division's transformational strategies and actions include leveraging its designation as a Center for Industrial and Technical Excellence (CITE) to increase flexibility in responding to emergent needs of the warfighters; revitalize the essential knowledge, skills and abilities of its workforce; and maintain a robust Lean/Continuous Improvement Program to provide an efficient and effective "one-stop shop" delivering timely, integrated-maintenance solutions to its customers. The Division's vision and strategies are consistent with, and help pursue NAVSEA's "Top 5" initiatives:

- Driving behavior to align with the Naval Enterprise
- Supporting a competency-aligned organization
- Focusing on workforce diversity
- Measuring output with customer-driven metrics
- Documenting and improving processes through Lean/Six Sigma

One challenge to the Depot is supporting the Naval Enterprise as it reshapes field and depot-level materiel maintenance while keeping complex weapon systems and their components in top operating condition. As the Naval Enterprise consolidates field- and depot-level maintenance and merges depot-level and intermediate-level maintenance activities, the role of organic depot maintenance support continues to evolve. NUWC Division, Keyport, began living these trends with the integration of Lightweight Torpedo maintenance (Depot and Intermediate-Level) activities in the late 1990's and is implementing an innovative, government-owned, contractor-supported solution for Heavyweight Torpedo maintenance. The Navy's legacy weapons and systems continue to age as new systems struggle to come on-line; that aging results in an increasing customer need for integrated material

maintenance support, obsolescence management, and custom-engineering solutions including advanced industrial technology and rapid prototyping. NUWC Keyport Depot's role is to provide that controlled and ready source of integrated maintenance technical capabilities specifically designed to support weapons and systems overhaul, repair, modification, conversion, and limited production requirements for current and future customers.

In summary, as one of the Navy's and the Nation's premier organic depots, NUWC Keyport's Integrated Undersea Warfare Depot undertakes the challenges of sustaining current and future warfighter readiness very seriously. The Depot's warfighting customers deserve no less than the Depot's very best efforts.

Introduction

Scope

This *Integrated Maintenance Capability Strategic Plan* for the Depot at Naval Undersea Warfare Center (NUWC) Division, Keyport, WA, provides the steps necessary to communicate, guide and implement agile, multi-product, integrated, maintenance planning and management processes to yield a robust, flexible, organic depot with integrated maintenance capabilities. These capabilities are required by our customers to achieve the material availability and reliability needed to support the fleet while reducing ownership cost and mean down time. These capabilities once put in place will yield the organic depot maintenance necessary to meet current and future undersea enterprise, navy enterprise, and national defense requirements while also satisfying the statutes, directives, and instructions.

Purpose and Structure of This Plan

The purpose of this strategic plan is to ensure that the NUWC Keyport Depot's technical capabilities and infrastructure are postured and resourced to meet the material readiness challenges associated with the national security requirements of the 21st century.

Background & Context

Heritage:

The location of the Pacific Coast Torpedo Station (as the Naval Undersea Warfare Center Division, Keyport, Washington, was then known) was selected in 1914 as the ideal location for an in-water torpedo testing facility on the West Coast. By the 1920's, the PCTS was well established and became a center of instruction with a fully equipped torpedo school. In 1930, the Pacific Coast Torpedo Station was officially renamed the United States Naval Torpedo Station (NTS). During World War II, employment at the Naval Torpedo Station grew at a rapid pace; the workload associated with torpedo proofing reached a peak of up to 100 torpedoes per day (7,000 per year) in 1944. In the 1950's the world's first 3-dimensional underwater acoustical tracking ranges were designed and installed, and new generations of anti-submarine warfare (ASW) acoustic homing torpedoes were tested and perfected on those ranges. In 1963, the joint U.S.-Canadian 3-dimensional underwater tracking range was placed in operation in the Strait of Georgia and is still in operation today.

Expertise:

NUWC Keyport ensures Fleet operational readiness through life-cycle support of undersea warfare systems for submarines, surface ships, torpedoes, mines, mine countermeasures, land-attack systems, and Fleet training systems. Life-cycle support services include in-service engineering, Fleet technical support, system performance analysis, logistics support, configuration management, and training.

NUWC Keyport operates the Navy's Pacific Northwest complex of cold-water undersea test ranges where the performance of undersea weapons and vehicles is evaluated. The Division also operates test and evaluation facilities for USW ships and ship systems located in Hawaii

and Southern California. These facilities, co-located with major Fleet concentrations, provide a forward presence for operational readiness assessment, shipboard testing, and training support. NUWC Keyport's Detachment Pacific, with Divisions in Hawaii and San Diego, also provides mobile underwater targets for ASW proficiency training exercises. The Division's Shipboard Electronic Systems Evaluation Facilities (SESEF sites) are located in the Pacific Northwest, California, and Hawaii. The SESEF sites verify, calibrate, and certify communication, navigation, and tactical data links aboard aircraft, ships, submarines, and shore sites.

Organizational Lineage and Organization:

The Naval Undersea Warfare Center Division, Keyport, WA, as an Echelon IV command under the Naval Sea Systems Command, provides support for undersea warfare systems.

NUWC Keyport provides Depot maintenance support which includes sustaining production, maintenance, repair, and logistics for the Undersea Enterprise (USE). The depot provides for the development, manufacture, and supply of items and technologies critical to the production and sustainment of advanced undersea weapon systems. It also maintains advanced research and development support capabilities to provide USE with test and evaluation systems capable of ensuring technological superiority over potential adversaries.

The NUWC Keyport Depot is a Center of Industrial and Technology Excellence (USC Title 10 Section 2474). Per SECNAV MEMO (19 July 2002), NUWCDIVKPT is "delegated authority to enter into Public/Private Partnerships to perform work related to depot maintenance core for maintenance and repairs of Fleet Undersea Weapons and Vehicles, Electronic Systems, Ordnance, and Associated Test and Fleet Material Support".

Depot support functions provided by NUWC Keyport's Depot leverage off a broad test and evaluation; in-service engineering, maintenance, and repair; Fleet readiness; and industrial-base support for undersea warfare systems.

The NUWC Keyport Depot provides to the Programs a combination of skilled personnel, facilities and equipment, processes, and technology needed to maintain and repair systems to fulfill strategic and contingency plans. The Depot also provides an assured capability to sustain both peacetime readiness and wartime surge capability at an affordable cost.

The NUWC Keyport Depot provides the highest level of repair and maintenance and can return a weapon system or major end item to a fully mission-capable condition. This covers all maintenance and repair functions including Organizational (O), Intermediate (I), and Depot (D) level maintenance of systems and equipment, including:

- Depot maintenance operations and related industrial support
- All maintenance work performed for Torpedoes and Targets systems including O, I and D-level activities.
- Repair and maintenance of any weapon system or major end item to bring it back to a fully mission capable condition.

The NUWC Keyport Depot provides integrated-maintenance technical capabilities in three areas which align with the goals and objectives of the Division's strategic plan:

- Torpedo and UUV Maintenance and Repair (KP04)
- Obsolescence Management (and Custom Engineered Solutions) of USW and National Defense Systems (KP05)

- Undersea Warfare Depot (KP06)

Within these technical capabilities we support the maintenance and repair of undersea warfare systems and provide technical capability to maintain $784 Million dollars worth of Sponsor Owned Material.

Customer/Program Demographics:

The Depot's customers include both those who are in direct support for the Division's undersea warfare mission (both core and non-core support) and those who have taken advantage of the Depot's capability to provide them the same high level of quality products.

Environmental Scan:

An environment scan was undertaken of customer demographics and demands, commercial technology, industrial market-place drivers, organizational influences, and policies and procedures which impact the Depot's ability to perform work. The scan identified the following major factors:

- An increasing number of systems obsolescence issues, an increase in incidents of vendor abandonment, and an accelerating need for organic expertise to resolve these issues through proactive obsolescence management and custom-engineered solutions
- Consolidation/transformation of Operational, Intermediate and Depot maintenance capabilities to better support Warfighters at reduced costs
- New systems acquisition cost increases and schedule delays which reduce the ability to provide new capability to the Naval Enterprises and the Warfighters
- Use of contractors as Lead Systems Integrators in development and sustainment of program product support strategies has not been effective
- Continued use of Performance Based Logistics and public-private partnerships as vehicles to provide systems support
- Increased emphasis on, and need for, effective oversight of contracts to ensure quality products are received by the government at a reasonable cost
- Continued loss of critical knowledge, skills, and expertise from the Depot workforce as it ages, with the inability to effectively train the new workforce to the same levels of capability due to the decline of program workload
- Aging Depot systems for conducting the test and repair of fleet hardware — and competition for sustainment funding, including funds for Depot support, test equipment, and facilities modernization and maintenance
- Continuing emphasis on use of Lean and continuous improvement initiatives to reduce operation and maintenance costs

Part 1 –Integrated Maintenance Strategic Plan

NUWC Keyport Mission Statement

The mission of the Naval Undersea Warfare Division, Keyport, is: “To support the mission of the Naval Undersea Warfare Center by providing test and evaluation, in-service engineering, maintenance and repair, fleet support, and industrial-base support for undersea warfare systems, undersea weapon systems, countermeasures, and sonar systems. Perform such other functions and tasks as may be directed by higher authority”.

NUWC Keyport Depot Maintenance Mission

To sustain undersea warfare systems world wide with a responsive depot level maintenance, repair and technical support.

Maintenance Capabilities Vision

The NUWC Keyport Depot is to provide an agile, responsive, and integrated maintenance capability in support of, navy enterprises and joint national defense requirements.

Goals & Objectives

1. Align NUWC Keyport Depot maintenance operations metrics with warfighter outcomes.

   Goal: Establish and maintain a NUWC Keyport Depot maintenance infrastructure that provides required materiel readiness to the warfighter at least cost.

2. Identify and sustain requisite NUWC Keyport Depot core-maintenance capability.

   Goal: Achieve and maintain a depot maintenance infrastructure that can sustain current and future core-capability requirements.

3. Develop and sustain a highly capable, mission-ready NUWC Keyport Depot maintenance workforce.

   Goal: A highly capable, mission-ready NUWC Keyport Depot maintenance workforce.

4. Ensure an adequate infrastructure to execute assigned NUWC Keyport Depot maintenance workload.

   Goal: A NUWC Keyport Depot maintenance infrastructure that is adequate to efficiently execute current and future workloads.

Implementation Plan (Strategies and Actions)

1. Aligning maintenance operation metrics with Warfighter outcomes: To achieve this the product outcome requirements will be determined and the current cost, schedule, performance reporting system will be adapted to include customer product outcome requirements, generating Performance-Driven Outcomes (PDOs) related to the following:

   - Materiel Availability
   - Materiel Reliability
   - Ownership Cost
   - Mean Down Time

2. Continuous process improvement: Continue to use the existing NAVSEA Lean Six Sigma Implementation within the NUWC Keyport Depot for continuous process improvement initiatives. Apply these tools (which include Lean, Value Stream Mapping, Six Sigma, and Theory of Constraints) to organic depot maintenance processes and procedures as a management process to align and refine maintenance processes.

3. Sustainment planning during systems acquisition: Engage NAVSEA and affiliated PEOs and the respective In-Service Engineering support activities that are related to the NUWC Keyport mission to establish customer agreements that allow involvement of the Keyport Depot in the development of current and future programs product support strategies, including assisting in development of the Depot Source of Repair analysis, Level of Repair Analysis, and related core-logistics capabilities analyses.

   a. Reliability-Centered Maintenance: Engage NAVSEA and affiliated PEOs and the respective In-Service Engineering support activities that fund workload in the depot, to assist in the development or update of reliability-centered maintenance programs related to depot workload supported by the Keyport Depot

   b. Condition-Based Maintenance Plus: Engage NAVSEA and affiliated PEOs and the respective In-Service Engineering support activities that fund workload in the depot, to assist in the development of condition-based maintenance practices and expand and accelerate the application of these concepts to enhance maintenance efficiency and effectiveness and integrate all functional aspects of the life-cycle management processes.

4. Identify and sustain requisite core maintenance capability by:

   a. Source of Repair Determination: Offer assistance in validation and adoption to all major Depot customers, within their programs of the new DoD *Depot Source of Repair (DSOR) Determination Process* Instruction when issued.

   b. Core Capability Determination:

      i. For all of the Depots major customers, validate within their programs that the core maintenance requirements flow down into the NUWC Keyport Depot workload, if applicable, as a part of the work acceptance process.

      ii. For customers within the Division's mission areas, evaluate support provided by the NUWC Keyport Depot based on historical mission and systems areas, if there may be future workload which potentially is core. Assist in identifying and rectifying any core-capabilities deficiencies found.

      iii. For those systems which the Depot supports, conduct a biennial review of capacity utilization and capabilities using the newly issued DODINST 4151.18h

   c. Public-Private Partnerships: Continue to pursue public-private partnership which leverage the Depot's maintenance capability

5. Develop and sustain a highly capable, mission-ready NUWC Keyport depot maintenance workforce by:

   a. Conducting annual reviews of workload, technology, and workforce demographics to assess potential gaps and develop revitalization actions.

   b. Developing, socializing, and implementing Lean/Continuous Improvement initiatives.

c. Ensuring an adequate infrastructure to execute assigned maintenance workload.
d. Conducting annual reviews of facilities, equipments, and production and support processes to assess potential gaps and develop revitalization actions.

Metrics

1. Implement quality performance metrics covering depot maintenance operations:
   a. Monitor established Operational Readiness Indicators (ORIs) for Depot quality management system processes (existing I and D level ORIs).
   b. Monitor Product Quality Deficiency Reports (PQDRs), Material Defect Reports (MDRs) and customer complaints.
   c. Review the findings of the Certification Examining Boards that have evaluated the maintenance operations for Torpedo and Targets Programs.
   d. Monitor schedule metrics for delivery of parts and materials from Depot maintenance processes (existing I and D level schedule performance charts).

2. Use system performance metrics:
   a. Within the established Operational Readiness Inspection framework, monitor component reliability for key maintenance-related drivers.
   b. Within the NUWC Keyport Depot for Depot automated test equipment and tools monitor:
      i. Equipment Availability
      ii. Equipment Reliability
      iii. Equipment Ownership Cost
      iv. Mean Down Time
   c. For depot workload (core and non-sustaining core) and workforce sustainment, using the Baseline vs. Gap Analysis (stop light) and Revitalization Status charts.
   d. To monitor the infrastructure revitalization/investment status and continuous improvement initiatives.
   e. To develop a measure of performance for sustaining production, maintenance, repair, and logistics in support of NUWC Keyport Depot workload.
   f. To develop a measure of performance for maintaining advanced test and evaluation support for research and development for use with systems capable of ensuring technological superiority over potential adversaries.
   g. To develop a metric to measure development, manufacture, and supply of items and technologies critical to the production and sustainment of USE Depot workload.
   h. To utilize the existing Technical Warrant Pyramid and Health-monitoring process to identify and develop action plans to resolve issues related to:
      i. Human Capital
      ii. Processes
      iii. Standards
      iv. Tools

Logistics Transformation

1. The NUWC Keyport Depot's future role has three prime components:
   a. Providing agile, responsive, and integrated organic maintenance capability in support of the Depot's undersea warfare mission for maintenance and repair of undersea weapons systems and components.
   b. Providing agile, responsive, and integrated organic maintenance capability for the Navy in support of custom engineered solutions and obsolescence management, including reengineering and redesign of obsolete components.
   c. Providing a test and evaluation capability to support undersea systems development and quality evaluation of systems and components
2. The Depot will continue to use the Lean Six Sigma Continuous Process Improvement process and re-engineering strategies to create a robust Lean/continuous improvement program for Warfare Center national value streams (torpedoes, targets, combat systems, etc.)
3. The Depot will maximize the flexibility and utility of depot maintenance capabilities, including the use of public and private-sector sources, joint and inter-Service capabilities, and multinational capabilities.
   - CITE authorized Public Private Partnership Initiatives
   - Repair Technology (REPTECH) Program
   - Manufacturing Technology (MANTECH) Program
   - Performance-Based Logistics
4. The management approach to integration of depot maintenance capabilities is to maximize the cost, schedule, and performance efficiencies and effectiveness of the variety of maintenance support options available to the Depot from the public and private sectors, including joint and inter-Service capabilities while retaining the capability of providing an assured, readily available source for maintenance of materials within its mission areas.

Workforce Revitalization

1. Implement the Naval Sea Systems Command's competency-alignment strategy within the NUWC Keyport Depot.
2. Use the existing Technical Warrant Pyramid and Health monitoring process to identify and develop action plans to resolve issues related to:
   a. New skill requirements and "reengineering" of existing employees' skills to satisfy new capability requirements.
   b. Forecasting workforce replenishment requirements using quantitative data on projected annual losses due to retirements and other reasons to project annual new hire requirements.
   c. Developing and implementing replenishment strategies to recruit and train new employees.

3. The Depot workforce reengineering strategy includes both retraining and redeploying the existing workforce and recruiting new employees into the workforce with critical skills in the new technology areas that are required to support the growing workloads in maintenance and obsolescence engineering support.
    - Included in each individual employee's development plan will be the skill areas which they need to retain their technical capability and to transition into new, planned-redeployment areas.
4. The Depot's workforce replenishment strategy includes a multi-faceted approach of hiring in critical technology areas and using a combination of both new and mid-career personnel to fill the human-capital gap that is occurring as the existing workforce retires. The approach to fill identified organization-wide prioritized critical skill areas includes using the Apprentice Program, temporary employees, college recruitment, and open vacancy announcements.

Capital Investment

1. The Depot will utilize the Capital Equipment Investment process to upgrade and improve maintenance processes. Benchmarks will be established to evaluate investment as a part of the NUWC Keyport Capital Improvement Program budget and investment priorities will be established to support Naval Enterprise maintenance requirements.
2. The facilities and equipment costs to maintain the core capabilities supporting the NUWC Keyport depot organic maintenance requirements will be identified. Priority of investments will be placed on:
    - Maintaining the core maintenance capability to meet readiness requirements.
    - Maintaining the core maintenance capability to meet projected surge requirements.
    - Investing in new technology for improving maintenance processes and reducing ownership costs.

External Factors

1. Naval Undersea Warfare Center Division, Keyport, recognizes that there are external factors which will influence its ability to achieve its strategic goals and objectives which include:
    a. New ship construction cost/schedule overruns strain scarce resources and creates competition between ship-systems modernization and sustainment.
    b. Protracted new systems development and acquisition cycles and resultant extended legacy system life-cycles results in systems aging, obsolescence, and increased maintenance costs.
    c. Continued competition between systems modernization and sustainment resources.
    d. Budget-constrained hiring authority.

Program Evaluation Aspects

1. The Depot strategic plan will be reviewed annually as a part of the Naval Undersea Warfare Center Division, Keyport Executive Planning process. Strategic goals and objectives will be evaluated and revised if needed
2. Performance metrics will be evaluated as part of the semi-annual Strategic Planning/Action Status Review...
3. Quarterly Program Reviews with program sponsors will review cost, schedule, and performance requirements for each maintenance program. These reviews will include metrics, issues, risk assessments, and financial status.
4. The annual A-11 Budget Submit and Approval process will provide another opportunity to evaluate the depot maintenance program.

NAVSEA
WARFARE CENTERS
CRANE

Depot Maintenance Strategic Plan

December 2007

EXECUTIVE SUMMARY

NSWC Crane in Fiscal Year 2008 will continue to focus business efforts supporting Electronic Warfare/Information Operations, Special Missions, and Strategic Missions, while implementing corporate initiatives aligned with the Naval Sea Systems Command's Commander's Top Five Priorities.

The NAVSEA Commander's Guidance for 2008 continues to call for an overarching theme of alignment that requires continued behavioral changes to ensure mission success. NSWC Crane will exhibit "Enterprise Behavior" as it aligns to its customer's business model for optimum support of the Navy and establishes customer-driven output metrics focused on those things most important to the customer.

NSWC Crane partners with Depots of other Services that have specific DSOR assignments, to help them avoid contracting core workload that they may not have the specific capability or capacity to perform. Depot Maintenance Inter-Service Agreements (DMISAs) are negotiated between the Service Principal and NSWC Crane as Agent DSOR. NSWC Crane supports the Joint Depot Maintenance (JDM) Program within National Stewardship product and functional areas where the capability and capacity currently exists. Supporting the JDM process maximizes the efficient use of organic depot resources.

NSWC Crane performs proactive, sustainment engineering for multiple systems across our strategic focus areas. Our knowledge and expertise is put into practice for both custom designed applications and commercially available products resulting in both cost effective supply side and engineered solutions. Electrical and mechanical engineering skills at the product level include technology insertion, reverse engineering, and re-engineering. NSWC Crane serves as the Obsolescence Management technical capability for the Naval Surface Warfare Center. Our recognized capabilities include source availability analysis, technology trending, system impact analysis, and risk mitigation alternatives. NSWC Crane performs sustainment engineering as an integrated approach to the engineering and logistics aspects of operational support.

NSWC CRANE MISSION AND VISION

The mission of the Naval Surface Warfare Center (NSWC) – Crane Division is to provide engineering and technical services with a product focus in sensors, electronics, electronic warfare and special mission weapons. NSWC Crane has identified three joint mission focus areas and product focus areas that align with Crane's capabilities and expertise and support joint warfighting requirements. These focus areas are Electronic Warfare/Information Operations, Strategic Missions, and Special Missions. The product focus area is aligned with two defense technology areas including Sensors, Electronics and Electronic Warfare, and Weapons specific to Special Missions. Crane is making substantial progress in aligning the organization to these mission focus areas. Crane has established focus area teams comprised of subject matter experts that are developing the way ahead for our mission focus areas. Crane has established Joint Mission Office Directors (JMODs) that are responsible for achieving strategic vision. Based on the JMOD strategic vision, detailed business plans have been developed that outline plans for alignment, growth, and change. Crane is currently transitioning out of work that was best performed by other organic and/or commercial partners and actively pursuing other opportunity areas that align with mission focus

The foundation of this mission focus is predicated upon superior execution of customer requirements and being a preferred supplier by maintaining a safe work environment, delivering quality products, ensuring superior customer satisfaction, and developing and participating in academic and evolving technology curriculum that provide opportunities for the Crane workforce to achieve the skills, knowledge, and experience necessary for their development and advancement as we strive to become a Competency Aligned Organization (CAO).

Current and future NSWC Crane depot strategies will focus on the Naval Sea Systems Command (NAVSEA) top priorities:

- Drive Our Behavior to Align with the Naval Enterprise
- Transform to a Competency Aligned Organization
- Focus on Diversity
- Document and Improve our Processes through Lean Six Sigma
- Measure our Output through Customer Driven Metrics

There are many other blocks that must also be built upon our foundation in order to realize our goal. They include, in no particular order, leadership development, Warfare Center leadership involvement, community relations—both state and local, resource "stewardship," division performance, and management by metrics.

DEPOT TRANSFORMATION STRATEGY

Performance Based Logistics

Performance Based Logistics (PBL) is DoD's preferred approach for implementing product support. PBL is a strategy for weapon system product support that employs the purchase of support as an integrated performance package designed to bring higher levels of system readiness with affordable costs. PBL delineates outcome performance goals of weapon systems for the overall life-cycle management of system reliability, supportability, and total ownership cost. DoD Directive 5000.1, "The Defense Acquisition System," of May 12, 2003, provides policies that apply to all acquisition programs. According to the Directive, program managers (PM) are required to develop and implement PBL strategies that optimize total system availability while minimizing cost and the logistics footprint. The Directive also requires Program Managers (PM) to become the single point of accountability for accomplishing program objectives for total life-cycle systems management, including sustainment.

Product Support Integrator

The PM, while charged with support responsibility, executes that responsibility through us of a range of support sources, public and private, to deliver a best value, operational effectiveness to the warfighter. Increasingly the PM uses Product Support Integrator (s) (PSI) to ensure that the efforts of all support providers align are optimized to fulfill these responsibilities. NSWC Crane serves in the PSI capacity, for focus area workload, integrating all sources of support, public and private defined within the scope of the PBL agreements to achieve the desired outcomes.

Performance Based Logistics Public-Private Partnerships

DOD policy for Public-Private Partnerships for Depot-Level Maintenance is:

"Public-private partnerships for depot-level maintenance shall be employed whenever cost effective in providing improved support to the warfighter, and to maximize the utilization of the government's facilities, equipment, and personnel at DoD depot-level maintenance activities. Performance-Based Logistics implementation strategies shall consider public-private partnerships to satisfy the core capabilities requirements of Title 10 section 2464 and the limitations on the performance of depot-level maintenance and materiel requirements contained in Title 10 section 2466."

As a Center of Industrial and Technical Excellence, in accordance with Title 10 Statue 2474, Crane continues to enter into Public-Private partnerships in areas consistent with our focus areas responsibilities and DOD guidance.

Depot Maintenance Interservice

In accordance with joint instruction OPNAVINST 4790.14, AMC-R 750-10, AFMCR 800-30, MCO P 4790.10A, Logistics Maintenance Interservice, NSWC Crane supports the Joint Depot Maintenance (JDM) Program within National Stewardship product and functional areas where the capability and capacity currently exists. Supporting the JDM process maximizes the efficient use of organic depot resources. Inter-service support is recognized as In-house Organic for the purpose of 10 USC 2466. Therefore, it not only does not violate the 50 percent In-house rule, but also enhances the Services ability to use contracted support in other, non-core areas.

NSWC Crane partners with Depots of other Services that have specific DSOR assignments, to help them avoid contracting core workload that they may not have the specific capability or capacity to perform. Depot Maintenance Inter-Service Agreements (DMISAs) are negotiated between the Service Principal and NSWC Crane as Agent DSOR.

Sustainment Engineering

Sustainment Engineering is the technical effort to support a system in its operational environment to ensure continued operation and maintenance of the system with managed risk. It is the application of interdisciplinary skills which requires a team approach including program management, logistics, engineering, the vendor, and supply support. A proactive approach is critical to maintaining the system at its designed-for operational availability and management of life cycle cost. Included, by definition, is a focus on the diminishing manufacturing sources of parts, reliability and maintainability trending, failure cause and effect, and periodic review of system performance against baseline requirements.

NSWC Crane performs proactive, sustainment engineering for multiple systems across our strategic focus areas. Our knowledge and expertise is put into practice for both custom designed applications and commercially available products resulting in both cost effective supply side and engineered solutions. Electrical and mechanical engineering skills at the product level include technology insertion, reverse engineering, and re-engineering. NSWC Crane serves as the Obsolescence Management technical capability for the Naval Surface Warfare Center. Our recognized capabilities include source availability analysis, technology trending, system impact analysis, and risk mitigation alternatives. NSWC Crane performs sustainment engineering as an integrated approach to the engineering and logistics aspects of operational support.

Stewardship

Stewardship is the oversight of talent and resources needed to preserve an industrial base capability. Stewardship is vital to defense technologies for which supply cannot be disrupted due to severe negative impact to long term supportability of fielded systems. Stewardship is required when industry is at risk to lose expertise or plant for business or technical reasons. NSWC Crane serves as the Executive Agent for critical technology, product, and components. Assignments include formal, DoD Executive Agent for

Microwave Tubes, or informal, Interconnect Technology, Radiation Hardened Devices, Batteries, Pyrotechnics.

Critical component and technology stewardship areas include:

- Batteries
- Microelectronics
- Printed Wiring Boards
- Radiation Hardening
- Commercial Off-The-Shelf
- Ordnance
- Vacuum Tubes

Continuous Improvement

NSWC Crane will continue to document and improve our processes through Lean Six Sigma. Lean and process improvements continue to be a high-visibility priority within the Navy Enterprise. NSWC Crane is the Warfare Center Enterprise Continuous Improvement model of excellence. As such, Crane will continue to lead the way.

Crane will continue aggressive pursuit of organizational improvement in Fiscal Year 2008, planning to execute more than 200 Rapid Improvement Teams (RIT) in the coming year. Crane's growth in certified full-time lean six sigma professionals will contribute to the organization's greater level of self-sufficiency in continuous improvement efforts. The conduct of 2nd, 3rd, and 4th passes within value streams will enhance Cranes efforts. Crane will pursue further integration of Lean, Six Sigma, Quality (ISO9001:2000) and Value Engineering in order to accelerate the improvements we are making and sustain the gains made. Crane will implement corporate metrics based on voice of the customer focusing on cost, quality, and schedule in an effort to monitor progress and strategically focus future improvement opportunities. Additionally, Crane will identify and execute more Six Sigma projects.

STRATEGY FOR MAINTAINING CORE MAINTENANCE CAPABILITY

The primary concern that drives the preservation of core capability is the need for a ready and controlled source of depot-level maintenance and repair capability to ensure timely response in the event of mobilization or emergency. Fundamental to the determination of the core requirement is a biennial process that assesses candidate workloads. The core analysis is conducted as a collaborative process within each enterprise. In the FY 2007 Navy Core Depot Maintenance Requirements report, NSWC Crane identified direct labor hours to maintain core capability in the areas of Aircraft Instruments, Avionics/Electronics, Submarines, Surface Combatants, Radar, Radio, Electronic Warfare, Navigational Aids, Computers, Support Equipment, Conventional Weapons, Small Arms/Personal Weapons, Strategic Missiles and Fleet/Field Support. NSWC Crane maintains a responsive and relevant core capability for those systems and equipments as defined by that review process. Both sustainment and modernization

follow from the disciplined process of looking to the long-range planning horizon for warfighter-based capability requirements.

NSWC Crane's core capability is augmented by other DoD industrial sources, to the extent possible, on the basis of value and risk. Intra and inter-service collaboration is a valuable practice that reduces redundant capabilities and improves cost-effectiveness while satisfying statutory core requirements. In addition, as a Center of Industrial and Technical Excellence for maintenance and repair of Fleet Weapons and electronic systems, ordnance, and associated equipment and components, NSWC Crane will continue to pursue public-private partnerships in accordance with 10 USC 2474.

REVITALIZING THE DEPOT MAINTENANCE WORKFORCE

Developing the necessary technical knowledge and skills plus maintaining the optimum size of the depot maintenance workforce is vital to sustaining a proper and efficient core capability. This is especially critical in this time of force structure changes, introduction of new weapons systems, aging or modification of existing weapons systems, technology changes, emerging technologies and changes in battle doctrine to counter emerging threats. Combine all of those considerations with the bow wave of an aging workforce nearing retirement; an aggressive strategy to maintain and develop the workforce must be implemented.

The Naval Surface Warfare Center Crane will implement, as part of its Strategic Business Plan, a Human Capital Strategy (HCS) to shape the future workforce and to meet future depot maintenance requirements. As part of the overall HCS, each Division will perform a Capabilities Health Assessment. The Assessment will analyze knowledge base 'needs' and 'haves' relative to current and projected workloads. The HCS process will gather data for current and future workload, perform a skills analysis of current and future requirements evaluate current versus future skill and personnel gaps, target training needed to develop existing employees future skills or "reengineer" existing employees to meet new capability requirements and target particular workforce recruiting needs. Once these steps have been accomplished, the results will be communicated and implemented. The gaps between the core depot maintenance requirements and the current capability and capacity will be the basis for developing the HCS for the depot workforce. The result will determine the future workforce shaping.

It is anticipated that the future depot workforce will need to have higher skill sets, be better educated, and be more mobile—ready to deploy with tools and technical data to support the combat forces. The NSWC Crane HCS will identify future skill requirements and "reengineer" existing employees' skills to satisfy anticipated workload and capability requirements. Although it should be noted that forecasting future skill sets involves risks and does not guarantee future workload.

Depot maintenance is not the primary function of NSWC Crane but is integrated within several departments' operations. The depot maintenance supports engineering efforts

within the three direct departments and is not centrally managed; rather each department manages depot operations.

To meet the need of HCS, NSWC Crane will utilize programs/tools currently in place along with a new program just established:

a) The newly created Crane Learning and Employment Center for Veterans with Disabilities, is an exciting new concept to assist U.S. disabled military veterans develop skills needed for living their lives with dignity and meaning. This new ground breaking Program is a cooperative of Crane, the State of Indiana, Veterans Agencies and local educational facilities. It will be utilized to assist in shaping the workforce by providing needed training to meet veteran's needs and the needs of the NSWC Crane and the Navy.

b) As an aid to performing the Capabilities Health Assessment, NSWC Crane will conduct an NSWC Crane wide Skills Management Survey (with planned yearly updates) to baseline the knowledge and skills of the workforce. This data will be used by supervisors and employees to better identify training needs as well as provide needed information for longer term Human Capital Strategy to identify current or potential gaps to help assure competencies required for future workload and sustainment of current core workload.

c) The Student Educational Employment Program (Coop Program) will be utilized to introduce talented students to the advantages and challenges of working for NSWC Crane. This provides an opportunity to the student of enhancing their education with actual related work experience. In exchange, NSWC Crane has the opportunity evaluate the student and to develop/shape the organization's future workforce.

d) NSWC Crane currently has a requirement for each individual employee to complete a yearly Career Development Plan (CDP). The CDP is generated by the employee with guidance from their supervisor, and is utilized to plan for the future needs of the employee and the organization. From this assessment of employee developmental needs, requirements for training and certifications are identified and planned for each fiscal year. NSWC Crane is committed to providing essential developmental training to its employees. In addition to meeting mission needs, training bolsters employee morale, enhances productivity, creates a positive work environment and improves workforce retention.

e) NSWC Crane has an active Mentoring Program that utilizes the experience and talents of senior and seasoned employees of NSWC Crane to be teachers, coaches and advisors to the more junior members of the workforce. This ensures the workforce will have access to subject matter expertise through out their professional careers and ultimately help shape the future workforce

SPACE AND NAVAL WARFARE

SYSTEMS COMMAND

DEPOT MAINTENANCE

STRATEGIC

PLAN

OCTOBER 31, 2007

Executive Summary

This Depot Maintenance Strategic Plan (DMSP) articulates the SPAWAR Depot strategy and provides plans and processes designed to ensure that its organic depot maintenance infrastructure is postured and resourced to meet the national security and material readiness challenges of the 21st century. This is a living document which will periodically be updated to capture details of the execution of plans described within. Although updates to this Plan will be synchronized with DoD Depot Maintenance Plan refreshment (scheduled for no later than 6 months after the publication of each future Quadrennial Defense Review (QDR), the intention is to review this Plan yearly and update as needed in order to maintain focus on efforts required to support Depot operations.

The SPAWAR Depot Maintenance Strategic Plan consists of the following:

Section 1 - Introduction
Introduces the SPAWAR DMSP and provides background on the history, organization and structure of SPAWAR Depot operations. This section also provides references used in SPAWAR Depot operations and in generating this Plan.

Section 2 - Aligning Maintenance Metrics with Warfighter Outcomes
Codifies the alignment of SPAWAR Depot maintenance operation metrics with warfighter outcomes. Specifically, this Section identifies goals and objectives, operational processes, skills and human resources, technology and information resources, capital and other resources, Depot metrics, external risks and program / process evaluations.

Section 3 - Identifying & Sustaining Requisite Maintenance Capability
Delineates how requisite maintenance capabilities will be identified and sustained.

Section 4 - Core Logistics Capability Assurance
Describes core logistics capability assurance processes.

Section 5 - Ensuring Adequate Infrastructure to Execute Workload
Relates how SPAWAR plans to ensure that an adequate infrastructure remains in-place.

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1. Introduction

1.1 Purpose

The purpose of this Plan is to provide a strategic vision and viable strategy for SPAWAR Depot Maintenance in an effort to support the ever changing requirements of the Warfighter and to ensure that material readiness and sustainment for the Warfighter's Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) equipment is supported.

This DMSP supports the Department of Defense's (DoD's) Depot strategy and the plans of the Deputy Under Secretary of Defense (Logistics and Material Readiness) (DUSD[L&MR]) which ensure that DoD's organic depot maintenance infrastructure is postured and resourced to meet national security and materiel readiness challenges of the 21st century.

1.2 Mission of SPAWAR Depot Operations

SPAWAR Systems Center San Diego and SPAWAR Systems Center Charleston Depots are designated as Centers of Industrial and Technical Excellence (CITE) under 10 U.S.C., Section 2474 (see Appendix A for a copy of the designation letter). SPAWAR's Depot Mission is to provide flexible cost-effective engineering, management, life cycle support, test, restoration, assessment support, prototype modeling and manufacturing of C4ISR equipment in support of the ever changing requirements of the Warfighter.

1.3 Background / History

1.3.1 SPAWAR Depot Maintenance

At present SPAWAR operates two organic depot operations. The largest is on the West Coast of the United States in San Diego, California at the Space and Naval Warfare Systems Center San Diego (SSC SD) with a much smaller activity located on the East Coast in Charleston, South Carolina at the Space and Naval Warfare Systems Center Charleston (SSC CH).

SPAWARSYSCOM 4.3 has purview over Depot policy. Depot personnel respond to SPAWARSYSCOM on all data calls, including those related to Title 10 of the U.S. Code, which are further examined in Section 2 of this Plan.

SSC SD and SSC CH have been designated as Centers for Industrial and Technical Excellence (CITE) for maintenance and repair of C4ISR systems, equipment, and products. The Depots provide and are evaluated on the following metrics: Repair Turn Around Time (RTAT), Backorders, Throughput, Cost, and On-time Delivery of customer demands. This data is provided via monthly status reports to customers. SPAWAR possesses several diverse, strategically located work areas, and holds a combined value of more than $80 million worth of test, fabrication, overhaul, repair, and calibration equipment. This is augmented by ongoing training programs which maintain technician awareness and expertise in technology innovations affecting C4ISR equipment. Although San Diego houses the majority of SPAWAR's Organic Depot operations, there is an interesting and unique history associated with both East and West Coast Depots as noted below.

1.3.2 SSC SD Depot Overview

History / Mission:

In 1966, the Naval Electronics Systems Engineering Activity (NAVELEXENGACT), Southwest Division established an 80-person calibration and repair shop at the Taylor Street facility in San Diego. Since that time, the facility has changed names several times and is known today as the SSC SD Depot located in Building 1 of the Old Town Campus.

Over the past 30 years, there has been one overriding mission: to provide Depot-level support for a variety of communications, navigation and electronic equipment to DoD users.

The San Diego Depot is the largest SPAWAR Maintenance Depot activity with the majority of the C4ISR workload.

The operation encompasses facilities that enable it to serve as the Designated Overhaul Point (DOP) and repair facility for assigned repairables which include assemblies, modules, and printed circuit boards drawn from electronic warfare, special communications, Teletype, CRYPTO, and C4I systems and equipment.

Included in the SSC SD Depot's tasking is responsibility for installation of field changes and engineering change orders, system and module testing, fabrication, modification and repair / overhaul services for SPAWARSYSCOM, NAVICP, the Naval Sea Systems Command (NAVSEA), the Naval Air Systems Command (NAVAIR), the National Security Agency (NSA), inter-service, foreign military, and Naval Fleet and shore commands.

The Depot develops and performs operational certification of Test Program Sets (TPS), Technical Repair Standards (TRS), and repair procedures. Depot personnel also evaluate hardware, software, and procedures for Automatic Test Equipment (ATE) used in the Depot for support of assigned repairable, modules, and systems.

The SSC SD Depot provides acquisition, technical, logistics, and maintenance support services for a wide range of multi-service communications, electronics, and cryptographic systems. In addition to those above, other services include:

- System Test and Evaluation
- Advanced Test Technology Assessment
- Consolidated Automated Support System (CASS) support
- Non-Developmental Item (NDI) / Commercial Off the Shelf (COTS) supportability
- In-service Engineering Agent (ISEA)
- Service Life Extension
- Certified Soldering Surface Mount Technology (SMT)
- Composite Material Repair
- Corrosion Mitigation and Restoration
- Electronic Surveillance Measures (ESM) equipment repair and overhaul

- Electronic Counter Measures (ECM) equipment repair and overhaul
- Extremely Low Frequency (ELF) to Extremely High Frequency (EHF) equipment repair and overhaul
- General Purpose Electronic Equipment (GPETE) / Special Purpose Electronic Test Equipment (SPETE) repair and calibration
- Printed Circuit Board (PCB) repair
- Identification, Friend or Foe (IFF) system overhaul and maintenance
- Tactical Airborne Navigation (TACAN) system restoration
- Power supply repair / overhaul
- Teletype equipment repair / overhaul
- Global Positioning System (GPS) repair and overhaul
- System Operational Verification Testing (SOVT)
- Interoperability testing
- Aircraft and Ship Electro-Mechanical instrument calibration and repair
- Stress and vibration screening
- Site surveys and technical assistance visits to ship and shoresites
- Technical training facilities and equipment support
- Cryptographic repair
- Marine Air Traffic Control and Landing System (MATCALS) support
- Overhaul, modification, and restoration efforts
- Navy, Coast Guard, and Reserve Forces support
- Depot Maintenance Interservice Support Agreement (DMISA) workloading

Size:

The San Diego Depot has grown from a small 80-person calibration and repair shop in 1966 and now has the following facilities:

- 100,000 square foot complex on Pacific Coast Highway
- 7,000 square foot complex at the Naval Station (NAVSTA) San Diego
- 4,000 square foot complex at Battery Ashburn Point Loma

TECHNOLOGICAL ENHANCEMENTS:

SSC SD serves as the Navy prototype Depot for Environmental Stress Screening (ESS) on the TRIDENT class submarine ESM Systems. It is also the Center of Excellence for (1) submarine ESM overhaul, (2) C4I equipment overhaul, and (3) CASS. In addition it is the only Primary Crypto Repair Facility (CRF) in the U.S. Navy.

SSC SD is implementing new sealing and coating technologies, including the extensive use of Triglycidylisocyamurate (TGIC) Powder Coating. The part is then subjected to an elevated temperature of 350 Degrees Fahrenheit causing the powder to melt to form a uniform film which is approximately 0.005 inches thick. The material is a polyester resin that is flexible and has extremely good ultraviolet (UV) and moisture resistance. Utilization of new corrosion prevention techniques such as this has dramatically reduced corrosion and extended the useful life of many systems.

1.3.3 SSC CH Depot Overview

SSC CH conducts depot level maintenance at both the Charleston facilities and within two facilities in the Tidewater area of Virginia.

History / Mission:

The Engineering Support Facility Division (formerly known as the Module Maintenance Facility (MMF) Division) was established at Charleston, SC in 1961 to repair Strategic Systems Programs (SP-23) Fire Control modules. In 1962, the repair activity expanded to include Navigation (SP-24), Launcher (SP-22), and Missile Test and Readiness Equipment (ISP-27).

In 1985, the Commanding Officer of Strategic System Programs (SSP) informed the MMF that they could seek additional customers to offset a number of declining Navy platforms and higher overhead costs (prior to this, only work on SSP tactical equipment was allowed). In 1989, SSP allowed trainer (SP-11) repair capability. In 1993, the MMF acquired Building 237 and warehouse 216 to consolidate material stored in Charleston Naval Shipyard Buildings 69A, 1505, and warehouse 3452 on the South Annex.

Beginning in Fiscal Year 1995, the MMF was transferred from Charleston Naval Shipyard to the facility which became SSC CH, due to a 1993 Base Realignment and Closure (BRAC) action. The ESFD is a unique state-of-the-art electronic, electro-optical facility that can repair circuit cards and complex electronic equipment for the Navy, government, or commercial applications. Since 1961, SSP has relied on the facility to repair / upgrade and refurbish components of the Fleet Ballistic Missile Weapons System (FBMWS) for Polaris and Poseidon programs. The ESFD is now supporting the Strategic Weapons System (SWS) for Trident I and Trident II programs by repairing and delivering a quality product at a substantial cost savings.

The ESFD currently supports program managers in SPAWAR as well as such customers as NAVSEA, Strategic Systems Programs (SSP), NAVICP, United Kingdom (UK), Marine Corp Headquarters, Composite Health Care System, and various other Naval activities. The ESFD provides preventive, corrective, and emergency on-site / off-site electronic maintenance for security systems. This maintenance includes technical support, operator training, module repair, fiber optic maintenance, and microcomputer repair. The ESFD is connected to the SSC CH Local Area Network (LAN) and the World Wide Web, which provides exchange of information throughout the command and the world.

State-of-the-art automated test equipment provides the ESFD the ability to test and repair complex electronic equipment. This provides minimal turn around time, low cost, and high production output.

Size:

The ESFD has an area of approximately 5.6 acres where three buildings are located. The three buildings have a total of 83,600 square feet separated into the following:

- 3,000 square feet of office space

- An Administrative Facility of 3,000 square feet, which contains a supply and packing area, conference room, LAN room, library, electrical closets and a shop planning area
- A 49,200 square foot laboratory where electronics, hydraulic, optical, machines, and gasket fabrication functions are performed. This area also contains an equipment wash room
- A warehouse occupying 28,400 square feet

Significant Current Capabilities / Technological Enhancements

The ESFD's capabilities include repair, restoration, upgrade, overhaul, installation and calibration associated with the following:

1. Electronic systems reverse engineering
2. Video terminal and closed circuit television
3. Computers
4. Procedure development for test, certification and calibration
5. Hydraulic valves and actuators
6. Office equipment
7. Cable fabrication
8. Gasket fabrication
9. Security systems, fiber optic equipment
10. Corrective and preventive maintenance and training for Arms, Ammunition & Explosives (AA&Es)
11. Fire Control Optical Alignment Group (OAG)
12. Trident II thermal printers
13. Ships binoculars and theodolites
14. Forward looking infrared (FLIR) equipment
15. Automated Computer Aided Design (AutoCAD)
16. Computerized engraving

The above efforts are implemented by technicians who hold and maintain skills in soldering, wire-wrap, gold plating, crimping, Electro-Static Discharge (ESD), and hazardous material handling.

Quality Assurance Branch capabilities include:

- Inspection of incoming repair / replacement parts
- Screening system stock
- Maintaining control of hazardous materials
- Visual and final inspection of SSP modules
- Configuration control
- Destination inspection
- Mercury screening
- Bar coding and labeling
- Repackaging of hazardous material
- Report generation
- Internal and external audit and follow-up corrective actions

The packaging area performs packaging in accordance with applicable DoD and Navy guidance including MIL-P-2073 and NAVICP 4030.4. Packers are certified in Performance Oriented Packaging (POPS).

The training area conducts training on wiring and soldering techniques including Surface Mount Technology (SMT) soldering, solderless connections (crimping), wire-wrap, electro-static discharge (ESD) control, measuring and testing equipment (MTE) certification, gold plating, emergency control (lockout / tagout), hazardous material communication, quality assurance standards, and introduction to computers.

A complete machine shop exists along with multi-craft tiger teams for installations / ripouts.

All SSP work is tracked using the Automated Repair Tracking System (ARTS) using the Advanced Revelation database. Other specialized databases exist according to customer requests.

TECHNOLOGICAL ENHANCEMENTS:

Automatic Data Processing (ADP):

- The ESFD is updating all personal computers (PCs) to state-of-the-art audio / visual components. This will allow the ESFD to utilize numerous network platforms. The ESFD is now capable of operating on UNIX, Novell, and Banyan Vines network operating systems.

- Automatic Fault Detection Enhancements - The ESFD has ordered the HUNTRON Tracker Model 5100DS. Using the power of a PC, the Huntron makes testing electronic components quick and easy. Digital storage means it never forgets test data. It will also allow you to share data with other tracker equipment technicians. This will allow the ESFD to economically create test routines for low volumes, wide varieties and inadequately documented printed circuit boards. The 5100DS digitizes the analog signature and the computer reads, compares and stores the information digitally for instant recall for future work.

- Automatic Test Equipment (ATE) - The ESFD has purchased the Schlumberger S645 - VME Test Station. The Schlumberger can test digital boards, analog boards and a combination of both. The tester has an electronic library of thousands of Integrated Circuits (ICs). If a certain IC is not listed, a program can be written and loaded in to the computer.

- The PRC 2000 Process Control System from PACE is used for component replacement. This is a microprocessor-controlled workstation with all accessories needed to remove faulty components. The PRC 2000 is capable of through-hole and Surface Mount Technology (SMT). Training is available for civilians and military personnel.

- The ESFD has also purchased the Hewlett Packard VXI platform, which includes the VME (Versa Module Eurocard buss or IEEE #488) extension. The IEEE interface makes it easy to control and collect data from instruments. The VXI accepts large modules and backplanes that provide better electrical shielding. Additional pins on the backplane are defined that provide

additional power supplies, triggering lines, clock signals, and local bus lines, thus allowing modules to communicate with each other.

- The ATE listed above will enable the ESFD to trouble-shoot and repair the latest state-of-the-art micro-miniature technology into the future. This will also allow the ESFD to maintain fewer test sets and decreases time to repair failed units.

- Calibration Laboratory – The Calibration Laboratory provides calibration services to SSC CH, Charleston Naval Weapons Station, Nuclear Power Training Unit, Nuclear Power Training School, Mobile Mine Assembly Groups, NSWC, and various other DoD customers.

Module Test and Repair (MTR) work centers have the following equipment and capabilities:

- Miniature / micro miniature (2M) station
- Trained & certified technicians (2M & MTR)
- AN/USM-646 (V) Electronic Test Station (Gold Disc)
- Gold Disk Developers

Electrostatic Discharge Prevention Enhancements - SSC CH ESFD continually upgrades their electrostatic prevention techniques thereby increasing the percentage of the depot that is part of the ESD envelope. All packaging materials and processes are reviewed and proper prevention methods implemented as necessary. This enhanced attention to potential ESD problems associated with today's circuits eliminates the risk of ESD damage to assets throughout the overhaul process.

Precise Time and Time Interval (PTTI) Facility (Code 6233), St. Juliens Creek Portsmouth, VA - The PTTI Facility provides repair, overhaul, and engineering support for all Frequency and Cesium Time Standards. Customers include all of DoD, excluding the Air Force. This facility is the repository for all spare Navy assets. Operational units are shipped on short notice to anywhere in the world.

1.4 Organization

SPAWAR Depot maintenance falls under the purview of the Space and Naval Warfare Systems Command located in San Diego, California. SPAWAR is undergoing reorganization to a Competency Aligned Organization (CAO) and as such, the Depots are part of the Logistics and Fleet Support Competency, 4.0 and fall under the purview of Integrated Logistics Support (ILS) 4.3.

The points of contact for Depot information / efforts at SPAWAR are:

The Maintenance Inter-Service Office (MISO) representative, Mr. Somvang Chanthathone, email: somvang.chanthathone@navy.mil, phone: (858) 537-0177.

The MISO is located in the office of the Technical Director for Supply Support, Ms. Barbara Hauenstein, email: barbara.hauenstein@navy.mil, phone: (619) 524-7822 or (619) 607-2096.

1.5 References

The following references were used to complete this strategic plan and are used on a daily basis to support depot efforts, core determinations, data calls and certifications.

(a) 10 U. S. C., Section 2460, Depot Mix, Defines Depot-Level Maintenance and Repair as "touch labor"
(b) 10 U. S. C., Section 2464, CORE, Core Capability, Workload Retention and Public- Private Partnership
(c) 10 U. S. C., Section 2466, 50/50 Rule, Limits the Depot Level Maintenance and Repair by non-Federal employees to 50%
(d) 10 U. S. C., Section 2469, $3Million Rule, before Open Competition
(e) 10 U. S. C., Section 2474, Center of Industrial and Technical Excellence (CITE)
(f) 10 U. S. C., Section 2563, Sub-Contracting, Sale of Organic Articles or Services to a Commercial Source
(g) Department of Defense Depot Maintenance Strategic Plan, March 2007
(h) DODD 4151.18, Maintenance of Military Materiel, 31 March 2004
(i) DODD 5000.1, The Defense Acquisition System, 12 May 2003
(j) DODI 4151.19, Serialized Item Management (SIM) for Material Maintenance, 26 Dec 2006
(k) DODI 4151.20, Depot Maintenance Core Capabilities Determination Process, 5 Jan 2007
(l) DODI 5000.2, Operation of the Defense Acquisition System, 12 May 2003
(m) Joint Depot Maintenance Program DSOR Acquisition Guide
(n) Depot Maintenance Inter-Service (DMI) Review or Study
(o) Deputy Under Secretary of Defense for Logistics and Materiel Readiness Memorandum, Life Cycle Sustainment Metrics, 10 March 2007
(p) Deputy Under Secretary of Defense for Logistics and Materiel Readiness Memorandum, Implementation of Depot Maintenance Core Policy and Methodology, 10 November 2003
(q) OPNAVINST 4790.14A, Logistics, Joint Depot Maintenance (JDM) Program, 31 March 1999 (with interim supplement)

2. Aligning Maintenance Metrics with Warfighter Outcomes

2.1 General Goals and Objectives

SPAWAR Depot goals and objectives are as follows:

(1) Align maintenance operations metrics with Warfighter outcomes
(2) Identify and sustain requisite core maintenance capability
(3) Develop and sustain a flexible, highly capable, mission-ready maintenance workforce
(4) Ensure that adequate infrastructure exists to execute assigned maintenance workload
(5) Operate and manage Depot workload in accordance with applicable regulations, statutes, instructions and other applicable guidance.

2.1.1 Operational Processes

Currently, the Depots have processes in-place to communicate with NAVICP, Mechanicsburg, In-Service Engineering Agents (ISEAs) and SPAWARSYSCOM throughout the year with a focus on monthly reports and quarterly workload conferences. The San Diego Depot is developing a formal, chartered committee with defined membership and processes in order to better align depot maintenance operations with future Warfighter outcomes. This will ensure that the Depot communicates regularly with all stakeholders to evaluate future needs and requirements in order to strategically posture themselves to provide improved future, core, organic and contractor maintenance and support. SPAWARSYSCOM conducts biennial reviews of core capabilities in accordance with DODD 4151.18 and DODI 4151.20. Annual reviews of facilities, equipment, production and support processes are conducted to assess potential gaps and overlap and to revitalize the infrastructure.

2.1.2 Skills and Human Resources

SPAWAR updates skill set inventories and human resource requirements annually as part of workload, technology and workforce demographics to assess gaps and overlap as well as to streamline efforts.

2.1.3 Technology and Information Resources

SPAWAR reviews current and future technology and information resource requirements annually as part of workload, technology and workforce demographics in order to assess potential gaps and overlap and to mainstream Depot efforts.

2.1.4 Capital Resources and Other Resources

SPAWAR Depot efforts are not mission funded as a level of effort, but rather are specifically tasked by customers through NAVICP, SPAWAR, Fleet and others utilizing primarily Navy Working Capital Funds (NWCF). Because of this, SPAWAR is not able to re-invest infrastructure capital consistent with a minimum annual funding target, as cited by the DoD Depot Maintenance Strategic Plan. Instead, SPAWAR works closely with Program and Project Managers of systems for which it provides maintenance in areas requiring compliance which are not centrally funded, such as Serialized Item Management (SIM) and Item Unique Identification (IUID) in order to determine the best method to achieve compliance. The Depot also works

closely with SPAWAR 4.3 in determining how best to comply with these and potential future efforts for which there is no central funding. SPAWAR 4.3 recently provided central funding to assist with the SIM / IUID effort by ensuring that equipment and training is made available to assist with the start-up of these strategic imperatives.

2.2 Metrics

2.2.1 Centralized Data Calls

Centralized Depot metrics, most relative to Title 10, Subtitle A, Part IV, Chapter 146 requirements, are conducted by SPAWARSYSCOM 4.3 Integrated Logistics Support and provided to the Chief of Naval Operations (CNO) Code N43 and the Joint Maintenance Activities Group (JDMAG). Following is an overview of these routine data calls:

2.2.1.1 50 / 50 Report - Title 10, Section 2466

Section 2466 provides limitations on the performance of depot-level maintenance by the private sector with the intention of keeping the workload balanced at a 50 / 50 ratio (public to private sector) by Service in order to protect workload within Organic facilities. SPAWARSYSCOM 4.3 obtains information from supported Program Offices regarding application of funding for depot maintenance which is provided to CNO and rolled up into summary data for total Navy. Section 2466 states the following:

(a) Percentage Limitation.— Not more than 50 percent of the funds made available in a fiscal year to a military department or a Defense Agency for depot-level maintenance and repair workload may be used to contract for the performance by non-Federal Government personnel of such workload for the military department or the Defense Agency. Any such funds that are not used for such a contract shall be used for the performance of depot-level maintenance and repair workload by employees of the Department of Defense.

(b) Waiver of Limitation.— The Secretary of Defense may waive the limitation in subsection (a) for a fiscal year if—

(1) the Secretary determines that the waiver is necessary for reasons of national security; and

(2) the Secretary submits to Congress a notification of the waiver together with the reasons for the waiver.

(c) Prohibition on Delegation of Waiver Authority.— The authority to grant a waiver under subsection (b) may not be delegated.

(d) Annual Report and Review.—

(1) Not later than April 1 of each year, the Secretary of Defense shall submit to Congress a report identifying, for each of the armed forces (other than the Coast Guard) and each Defense Agency, the percentage of the funds referred to in subsection (a) that was expended during the preceding fiscal year, and are projected to be expended during the current fiscal year and the ensuing fiscal year, for performance of depot-level maintenance and repair workloads by the public and private sectors.

(2) Not later than 90 days after the date on which the Secretary submits a report under paragraph (1), the Comptroller General shall submit to Congress the Comptroller General's views on whether—

(A) the Department of Defense complied with the requirements of subsection (a) during the preceding fiscal year covered by the report; and
(B) the expenditure projections for the current fiscal year and the ensuing fiscal year are reasonable.

2.2.1.2 CORE Biennial Data Call - Title 10, Section 2464

CORE is a specific requirement in Title 10 of the U.S. Code, Subtitle A, Part IV, Chapter 146, Section 2464 (a) intended to maintain a ready and sustained source of Depot maintenance capabilities and sustaining workload in support of Joint Chiefs of Staff (JCS) Scenarios. This requires reporting every two years in the January time frame. This data call reports information on CORE capabilities within the Program Offices and at SPAWAR field activities.

2.2.1.3 Depot Maintenance Business Profile (DMBP) - Section 2464

DMBP information is requested of SPAWAR supported Program Offices and field activities. Information contained in the DMBP identifies funding, Direct Labor Hours (DLH), capacity and workload. The DMBP data call is conducted on a yearly basis and due in June.

2.2.1.4 1397 Depot Maintenance Cost System Data Call

The 1397 data is requested of SPAWAR supported Program Offices and field activities. This data call is required by the DoD Financial Management Regulation and provides cost and labor-hour data. The data is conducted yearly and submitted in December.

2.2.1.5 Additional, Non-routine Data Calls

The following additional data calls are conducted on an as-requested basis:

- Best Business Practice Data Call
- Federal Employee Data Call
- Sustainment Depot Maintenance Data Call

2.2.2 Metrics to Monitor Depot Health

The following additional metrics are currently being tracked: Repair Turn Around Time (RTAT), Back Orders (B/O), Throughput, Unit Cost (UC), On-Time Delivery (OTD) of Customer Demand, Turn-Over of Personnel (TOP) and Core-Sustaining Workload (CSW). SPAWAR will continue to perform detailed metrics reviews to ensure tracking of valuable input, process, and output metrics that adequately monitor Depot health.

2.2.3 Direct Labor Hours (DLH)

The workload data shown in Figures 1 and 2 provides information as to the amount of Depot workload and capacity within SPAWAR Depot operations. Figure 1 shows that SPAWAR performs approximately 1% of the total Navy Depot workload. Figure 2 demonstrates the relative size of each SPAWAR Depot location's efforts as compared to one another. Figure 3 provides SSC SD and SSC CH Depot workload and capacity for FY04 through FY11.

The source for data reflected within these figures is the DoD Depot Maintenance Strategic Plan of March 2007. This data does not include depot maintenance requirements associated with resetting the force in support of Operations Iraqi and Enduring Freedom that have been funded through supplemental appropriations.

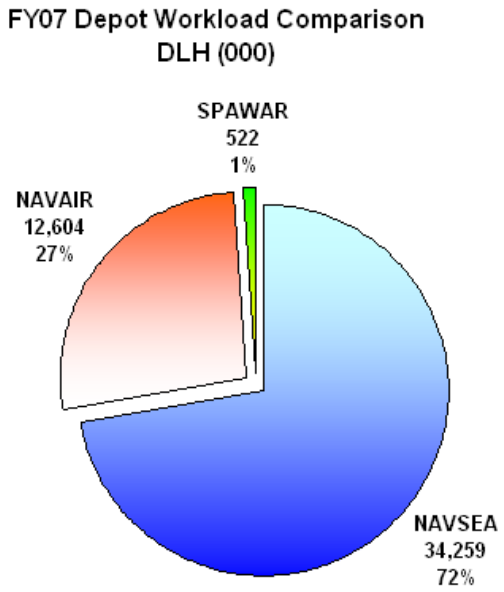

Figure 1. Organic Depot Workload Comparison (Navy) by SYSCOMs in DLH (000)

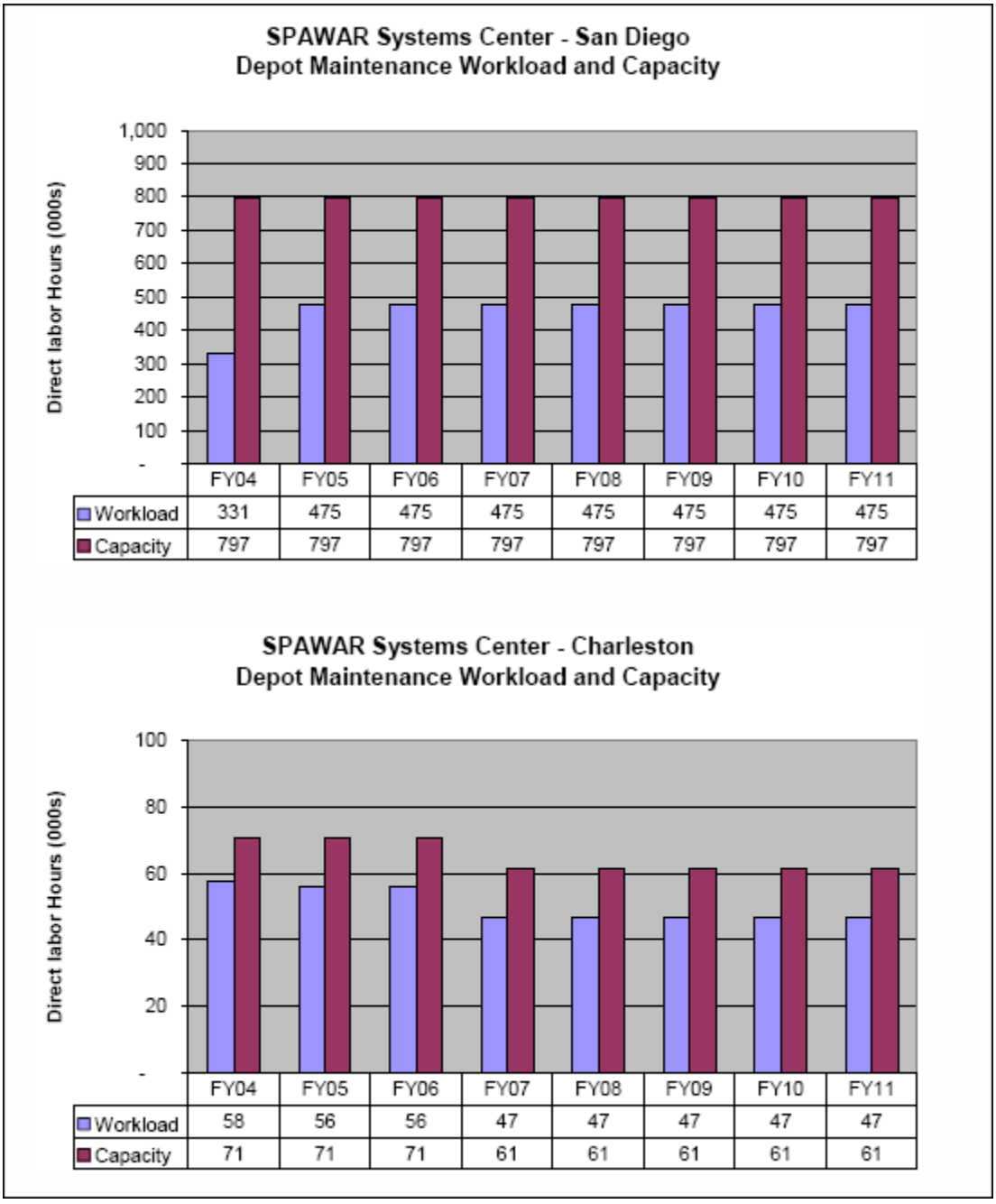

Figure 2. Depot Maintenance Workload in DLH (000) and Capacity for SSC SD and SSC CH

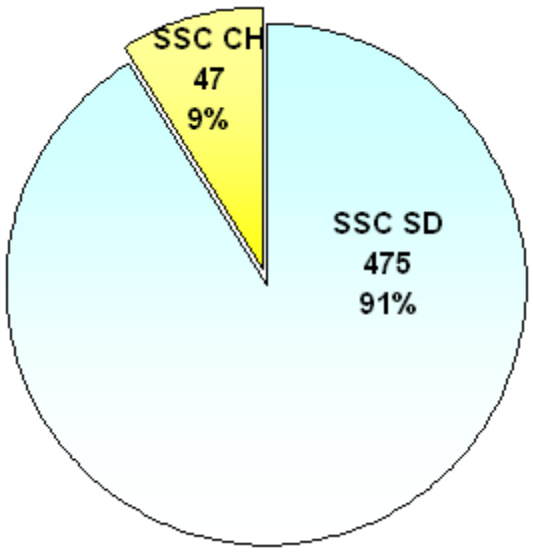

Figure 3. Comparison of SSC CH to SSC SD Workload DLH (000)

2.2.4 Depot Workforce / Personnel

Figures 4 through 6 provide personnel breakdowns for SSC SD, SSC CH and total SPAWAR Depot operations by Civilian and Military employees for FY05 through FY07.

ACTUAL SSC SD	CIV	MIL	TOTAL
FY05 Direct	74	0	74
FY05 Indirect	5	0	5
FY05 Depot Total	**79**	**0**	**79**
PROJECTED SSC SD	**CIV**	**MIL**	**TOTAL**
FY06 Direct	74	0	74
FY06 Indirect	5	0	5
FY06 Depot Total	**79**	**0**	**79**
FY07 Direct	74	0	74
FY07 Indirect	5	0	5
FY07 Depot Total	**79**	**0**	**79**

Figure 4. SSC SD Personnel Breakdown

ACTUAL SSC CH	CIV	MIL	TOTAL
FY05 Direct	37	0	37
FY05 Indirect	1	0	1
FY05 Depot Total	**38**	**0**	**38**
PROJECTED SSC CH	**CIV**	**MIL**	**TOTAL**
FY06 Direct	27	0	27
FY06 Indirect	0	0	0
FY06 Depot Total	**27**	**0**	**27**
FY07 Direct	21	0	21
FY07 Indirect	0	0	0
FY07 Depot Total	**21**	**0**	**21**

Figure 5. SSC CH Personnel Breakdown

ACTUAL (SSC SD and SSC CH)	CIV	MIL	TOTAL
FY05 Direct	111	0	111
FY05 Indirect	6	0	6
FY05 Depot Total	**119**	**0**	**119**
PROJECTED (SSC SD and SSC CH)	**CIV**	**MIL**	**TOTAL**
FY06 Direct	101	0	101
FY06 Indirect	5	0	5
FY06 Depot Total	**106**	**0**	**106**
FY07 Direct	95	0	95
FY07 Indirect	5	0	5
FY07 Depot Total	**100**	**0**	**100**

Figure 6. Total (SSC SD and SSC CH) Personnel Breakdown

2.3 External Key Factors or Risks

2.3.1 Funding

Funding is a risk in all businesses, including Depot programs. SPAWAR Depot operations rely on workload which is budgeted on a quarterly or in the case of PBL-O's, yearly basis. These efforts are typically funded by SPAWARSYSCOM or NAVICP.

Depot workload consists of both 7G and 2Z Cog items. As an example of risks incurred / realized by Depot operations, budget cuts over the past two years have eliminated 2Z Cog surface and shore site equipment from receiving SPAWAR funded Depot maintenance. The risk mitigation effort for this issue is to have the Fleet fund future Depot maintenance. As a result, these items are being currently in-review for transition to 7 Cog.

2.3.2 Legacy Systems Entering the Disposal Phase

Legacy items nearing the Disposal Phase of their life cycle pose a risk to sustainment of Depot operations within SPAWAR due to the fact that SPAWAR Depot operations support several systems which have exceeded their expected lifespan. The disposal of any of these systems could have a detrimental effect on depot workload. Risk mitigation efforts include working with C4ISR Program Managers to identify SPAWAR organic capability in the hopes that they will see new workload coming as part or all of the Depot strategies being conceived by Program Management Offices executing upgrades and replacements of legacy systems.

2.3.3 Diminishing Manufacturing Sources and Material Shortages (DMSMS)

SPAWAR remains diligent in efforts to maintain and seek new manufacturing or vending sources for components used to repair and overhaul legacy modules, sub-assemblies, assemblies, sub-systems, systems and equipment. This is extremely important due to extended life expectancies of some legacy systems which have exceeded their original lifespan.

2.3.4 Immediate, Heavy, but not Sustained Demand

There is a risk associated with sudden immediate, heavy demand which could deplete 'A' (ready for issue) condition units and exceed the production capabilities of SPAWAR Depot operations. This would require fluctuation of personnel in that temporary support would be sought. Due to unplanned costs of temporary employees, should they be retained too long, they may increase unit cost or detract from overhead. Due to this potential fluctuation, careful and diligent production efforts must be adhered to by way of forecasting demands and keeping workload level.

2.3.5 Diminishing Training Sources

Sources of training for legacy systems are diminishing. As legacy systems remain in use past their intended life, the sources of adequate training diminish and pose a challenge for organic facilities. Level and continued workloading will ensure that qualified, trained personnel exist until legacy systems complete the disposal phase of their life cycle.

2.4 Program / Process Evaluation

Although some key processes and metrics have been identified and are in-use (as exemplified in Monthly and Quarterly metrics and reporting/discussions), SPAWAR's Competency Aligned Organization (CAO) initiative will identify and formalize additional processes and metrics.

The CAO initiative began in FY07 and will be completed over the next two years. This construct will create the necessary structure to identify and review all processes and metrics with the goals of proactively forecasting future workload and capacity to include those metrics associated with new systems and major systems upgrades. CAO will ensure focus on positive as well as negative trends, including high turnover of personnel and diminishing workload, each of which poses significant risk to Organic operations. SPAWARSYSCOM's CAO initiative will focus on alignment of Depot operations into the parent competency to ensure that career development and workload of new systems becomes a focus. CAO, along with other innovative initiatives which formalize processes and program evaluations will be further discussed in Section 3.

3. Identifying & Sustaining Requisite Maintenance Capability

3.1 Logistics Transformation

3.1.1 Future Role / Capabilities

Because performance based logistics (PBL) operations are the preferred method to providing support to military equipment, SSC SD has actively pursued transitioning several systems from traditional Depot support to PBL-Organic (PBL-O) support.

The CAO initiative briefly mentioned in Section 2 is also playing a key role in transforming Depot maintenance within SPAWAR, as CAO will ensure that formal, chartered integrated product teams (IPTs) are created to more closely align Depot maintenance operations with future Warfighter outcomes.

SPAWAR is also joining with other Navy activities to implement Navy Enterprise Resource Planning (NAVY ERP) which will provide detailed visibility into the inter-relationship of Sponsor funding with tasking / workloading efforts within SPAWAR Depot operations.

In addition to PBL-O, CAO and NAVY ERP, SPAWAR has begun utilizing continuous process improvement (CPI) techniques to ensure optimum support is provided to customers / stakeholders.

3.1.2 Specific Actions to Transform Depot Operations

3.1.2.1 Performance Based Logistics - Organic (PBL-O)

Performance Based Logistics (PBL) implementation is part of logistics transformation and is mandated by reference (i) and other acquisition guidance documents. Understanding the benefits of PBL within the acquisition and during the life cycle of a system, SSC SD's Depot transitioned several systems from traditional Depot workload to Organic Performance Based Logistics (PBL-O) operations under a Memorandum of Agreement (MOA) with NAVICP. This structure allows yearly funding at the beginning of each fiscal year, rather than incremental, quarterly funding, thereby allowing more flexibility to procure long lead items used in the overhaul of military equipment. Additional systems will be reviewed for transition to this approach in an effort to comply with DoD acquisition guidance where proven cost effective through the use of a Business Case Analysis (BCA).

3.1.2.2 Competency Aligned Organization (CAO) Initiative

The definition of a Competency is:

> A community of practice consisting of skilled and knowledgeable people of a particular discipline within defined communities of practice which includes the necessary training, work processes, and tools to deliver the required products and professional services needed by teams, Program Management Offices, PEOs, the Fleet, and other customers.

Under the CAO, Integrated Product Teams (IPTs) will draw together workforce expertise from the Competencies (such as Logistics) to support delivery of products and services to meet Fleet

requirements and customer-driven tasks. Work is accomplished within established IPTs as defined in Figure 7 below to increase and standardize product quality of the highest levels and to reduce response time and redundant activities, thereby avoiding inefficiencies of serial work processes and in multiple locations. Work performed in this manner will provide a responsive, single voice of accountability and authority to the customer. The IPTs will be responsible for establishing and forecasting resource requirements for the Program / Project by Competency.

Competency Domain Leaders under the CAO construct will supply:

- Clearly defined paths for career growth
- Standard processes, "rules and tools" across the command and within Depot operations
- A workforce, organized around defined competencies, which matches workload demand
- A multi-disciplinary group responsible for all aspects of a weapon or Information Technology (IT) system from concept through disposal.

These multi-disciplinary IPTs will be chartered to satisfy customer requirements, using common technical and business processes defined by the Competencies.

CAO will ensure compliance with the external increased pressures SPAWAR Depot operations are facing with regard to effectiveness and efficiency, delivery of capability vs. products, speed to delivery and performing the right work with a right size workforce. By participating in CAO, SPAWAR will leverage what we've learned from existing internal strategies and be better suited to reduce the risks.

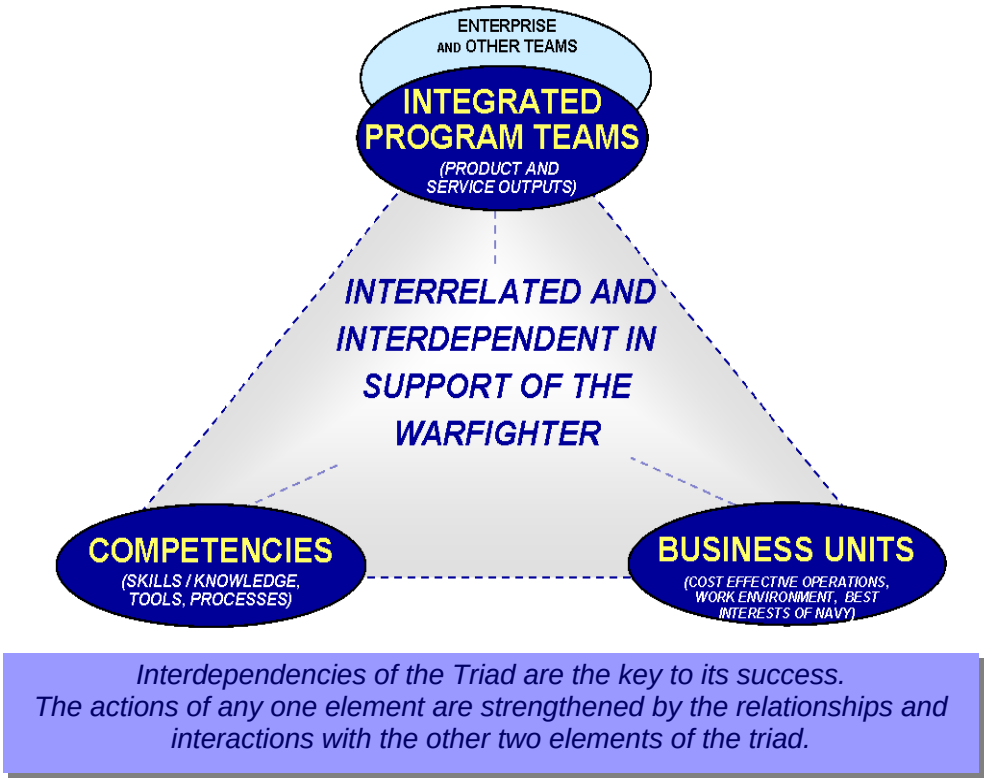

Figure 7. Competency Aligned Organization (CAO) - IPT Triad

3.1.2.3 Navy Enterprise Resource Planning (NAVY ERP)

SPAWAR will begin to utilize the Navy Enterprise Resource Planning (NAVY ERP) construct. Just as CAO will align the workforce by competencies to assure that correct personnel are assigned to perform the correct functions at the appropriate times, NAVY ERP will provide total enterprise resource planning, collaboration and visibility within one information system. Labor and time will be directly correlated to tasking, with all enterprise functions interlinked. Both of these initiatives will improve SPAWAR as a whole, and better document and align key Depot processes and metrics.

SPAWAR Depot personnel will communicate with all stakeholders to evaluate future needs in order to strategically position the Depot focus in areas requiring support. As the Warfighter's future needs are incorporated into Depot operations and Program Management Offices provide guidance as to Core capability requirements of new systems and major upgrades, the Depot will be prepared to position the workforce to provide the right amount of maintenance and logistics support to customers.

3.1.2.4 Continuous Process Improvement (CPI) Programs

SSC SD is implementing three major process improvement initiatives concurrently. Each initiative may be considered as a different tool in the process improvement toolbox. These tools may be used individually or in combination. They complement each other in a synergistic and collaborative manor. All contribute to satisfying the Center's Balanced Scorecard Strategic Objective – Standardize Technical Work Processes. They all contribute to improving SSC SD Depot operation organizational performance (decreasing project cost, decreasing RTAT, delivering higher quality products and services, reducing variation, improving productivity, and improving customer satisfaction). Figure 8 below displays the three approaches to process improvement which will standardize technical work processes. Appendix B details the role each initiative plays in the overall improvement effort.

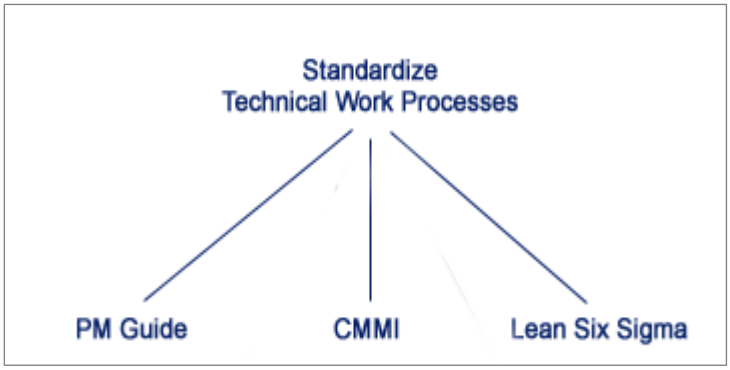

Figure 8. SSC SD Standard Technical Process Improvement Processes

The Project Management (PM) Guide standardizes project management across SSC SD Depot operations and applies best practices to all projects.

Capability Maturity Model Integration (CMMI®) provides a long-term, strategic framework for performance improvement. The focus of this initiative is on an organizational unit (e.g., Department, Division, Branch) rather than individual projects.

Under Lean Six Sigma, "Lean" is focused on speed, efficiency, and quality, i.e., identifying and eliminating non value-added activities and improving cycle time. Six Sigma is focused on precision through variation control and is data-driven. The key tenet is the problem solving methodology called Define-Measure-Analyze-Improve-Control (DMAIC). Lean Six Sigma is a proven business process that combines Lean's focuses of eliminating non-value added activities and improving cycle times, and Six-Sigma's focuses of controlling variation of redesigned processes and maintaining high repeatability. Lean Six Sigma has been undertaken by SPAWAR with the goal of cutting costs by increasing efficiency and effectiveness. SPAWAR and the Navy plan to recapitalize from the resulting cost savings.

3.1.3 Integration of Depot Maintenance Capabilities

Under CAO, all SPAWAR Depot operations will be reviewed by a CAO IPT, as defined in Figure 12 above. The IPT will review other operations with SPAWAR and other activities and services (including multi-national) to determine if there are other viable efforts where SPAWAR Depot operations might integrate or leverage. Additional integration efforts are described within Section 4.

4. Core Logistics Capability Assurance

4.1 Actions to ensure identification of Core requirements and encourage Formation of Public-Private Partnerships

Figure 9 below provides an illustration of the relationship between the following Team SPAWAR activities:

- Space and Naval Warfare Systems Command
- Space and Naval Warfare Systems Center San Diego
- Space and Naval Warfare Systems Center Charleston
- Space and Naval Warfare Systems Center New Orleans
- Space and Naval Warfare Systems Center Norfolk
- Space Field Activity Virginia
- Program Executive Office Command, Control, Computers, Communications and Intelligence (PEO C4I)
- Program Executive Office Space Systems (PEO SS)
- Program Executive Office Enterprise Information Systems (PEO EIS)
- Joint Program Executive Office Joint Tactical Radio System (JPEO JTRS)

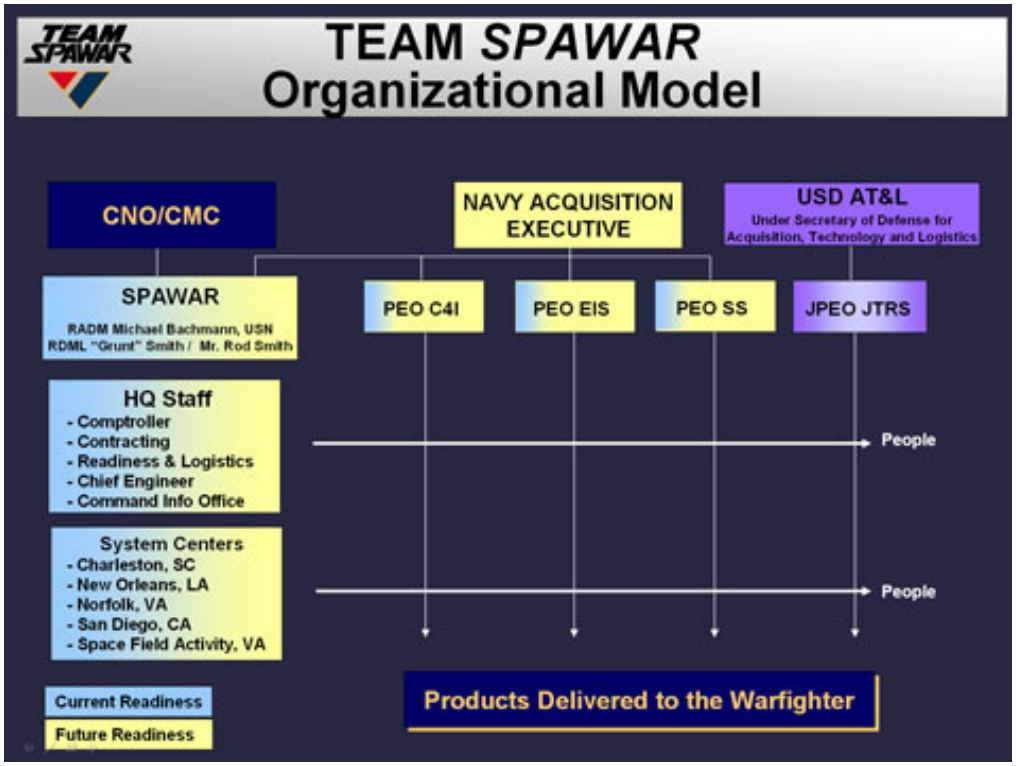

Figure 9. Team SPAWAR Organization Model

Programs within Team SPAWAR perform the following mandatory processes during the acquisition phase prior to fielding, in accordance with the DODI 4151.20 and OPNAVINST

4790.14A. Compliance with these requirements is demonstrated during Independent Logistics Assessments (ILAs) conducted in preparation for Milestone reviews.

4.1.1 Core Determination

Core determination is made through a Core Analysis in accordance with DODI 4151.20. Every program within Team SPAWAR is obligated to accomplish core analysis. Core analysis must be performed early in the program's acquisition process, with the results of the analysis / determination listed in the program's Acquisition Strategy.

4.1.2 Depot Source of Repair (DSOR)

DSOR is determined through the use of a Depot Maintenance Interservice (DMI) Review or Study utilizing OPNAVINST 4790.14A and the Joint Depot Maintenance Activities Group (JDMAG) DSOR Acquisition Guide. SPAWAR is also involved in a process improvement IPT with NAVICP aimed at standardizing how Depot Overhaul Points (DOPs) are selected.

4.1.3 Public-Private Partnerships (PPP)

SSC SD has begun researching PPP initiative and, if deemed to make good business sense, will solicit industry to find private partners with which to enter into teaming agreements.

4.1.4 Depot Maintenance Interservice Agreements (DMISAs)

In January 2007, SSC SD entered into a ten-year DMISA with the Air Force which leverages the expertise of SSC SD and standardizes workload operations on Air Traffic Control and Landing Systems (ATCALS) across the Navy and the Air Force. SSC SD is pursuing additional DMISA efforts in an effort to provide long-term continuity to Depot operations.

4.2 Method Used for Workload Estimating

The current method used for workload estimating is to evaluate existing historical data and provide projections at quarterly workload conferences with NAVICP Mechanicsburg.

4.3 Effects of C4ISR Equipment Retirements

The effects of the retirement of C4ISR Systems (such as the AN/URT-23, AN/WSC-3 and AN/URN-25) are many and varied. SPAWAR Depot operations will work closely with Program Managers to conduct in-depth analyses to determine the impact of end of life actions to the Depot and the customer. Replacement work / funding and plans in the area of Demilitarization and Disposal requirements for systems nearing end of life are a few of the considerations that must be given legacy systems approaching end of life. Effects on Depot operation functional areas from storage space of 'A' and 'F' condition assets, to disposition of technical documentation (e.g., Technical Manuals, Production and Overhaul, Life Cycle documentation), disruption to workload and update of the Weapon System File are some of the effects of retiring legacy systems. As previously mentioned, the CAO initiative will stand up IPTs to assist in the evaluation of impacts and determining offsets to assist Depot operations in providing continuing support for remaining efforts.

5. Ensuring Adequate Infrastructure to Execute Workload

5.1 Workforce Revitalization

5.1.1 Reengineering Strategies

Depot workload is forecasted on a quarterly basis. New and emergent technology is introduced to the Depot workforce in order to maintain an edge in the support of C4ISR equipment. Technicians receive ongoing, updated training on a regular basis which keeps the workforce up to date and maintains technical expertise.

5.1.2 Replenishment Requirements and Strategies

SPAWAR's key goal is to provide the best customer support at the lowest possible cost. In order to keep costs low, SPAWAR uses predictive analysis to ensure that the optimum number of qualified personnel are employed. Management personnel follow DoD, Navy and SPAWAR hiring guidelines when filling vacancies within the Depots. Continuous on-the-job training, as well as mentoring from experienced personnel provides a continuous learning environment within SPAWAR Depot operations.

5.2 Capital Investment

5.2.1 Benchmarks for Evaluating Adequacy of Investment Funding

SPAWAR utilizes thorough, vigorous and robust Business Case Analyses (BCAs) and Risk Analyses to determine benefits associated with capital investments. Under the CAO, Depot IPTs will evaluate each formal proposal for investment, plotting both cost and risk in order to determine optimum investments. Proposals will be plotted on a cost-risk continuum to compare proposals against the same criterion and to scientifically rank them against each other. The IPT(s) must then determine selection criteria, with the emphasis following the premise of lowest net investment (cost), lowest risk and highest cost savings proposals implemented first and highest cost, highest risk, and lowest cost savings proposals implemented last.

5.2.2 Method for Articulating Capabilities/Deficiencies Planned Investment Will Provide

5.2.2.1 Method for prioritizing needed investments

Using information outlined in paragraph 5.2.1, urgency of need or urgency of new requirements will be evaluated to prioritize needed investments within the each year's budgetary restrictions.

5.2.2.2 Quantitative data on projected funding for facilities and equipment

SPAWAR Depot operations will identify budgeted and actual funding for facility improvements, facilities and equipment as a part of an annual analysis.

Appendix A. CITE Designation Letter

DEPARTMENT OF THE NAVY
OFFICE OF THE SECRETARY
1000 NAVY PENTAGON
WASHINGTON, D.C. 20350-1000

19 July 2002

MEMORANDUM FOR COMMANDER, NAVAL AIR SYSTEMS COMMAND
COMMANDER, NAVAL SEA SYSTEMS COMMAND
COMMANDER, SPACE AND NAVAL WARFARE SYSTEMS COMMAND
COMMANDER, MARINE CORPS MATERIAL COMMAND

Subj: DESIGNATION OF CENTERS OF INDUSTRIAL AND TECHNICAL EXCELLENCE UNDER 10 U.S.C. 2474

Ref: (a) DUSD(L&MR) memo of 30 Jan 02; Subj: Public-Private Partnerships for Depot Maintenance.

Pursuant to Section 2474 of Title 10, United States Code (hereinafter "Section 2474"), depot maintenance activities listed on attachment (1) are designated as Centers of Industrial and Technical Excellence (CITEs).

In accordance with subsection (b) of Section 2474, I delegate authority and encourage each CITE Commanding Officer to enter into public-private partnerships to perform work related to the depot maintenance core competencies of the particular CITE. These partnerships shall be in support of the objectives identified in subsection (b)(2) of Section 2474. In addition to Section 2474, partnerships and depot operations will comply with all other statutes that may apply to the specific situation and with Secretary of Defense policy promulgated by reference (a).

The above delegation of authority may not be further delegated, and is subject to the following conditions. First, before a CITE can enter into a public-private partnership, a business case analysis demonstrating that it is in the best interest of the Government must be approved at the Systems Command level (flag/SES official). Second, legal and comptroller review shall be obtained prior to approval of the partnership. Third, upon approval, the Systems Command will provide written notification to the Assistant Secretary of the Navy (Research, Development, and Acquisition) (Attn: Acquisition and Business Management).

I hereby delegate my authority in all other Section 2474 matters to the Assistant Secretary of the Navy (Research, Development and Acquisition).

Points of contact for questions on this memorandum are CDR A. Lopez, ASN(RD&A), 703-602-9977, Ms. L. Normand, CNO(N43), 703-601-1662, and Ms. D. Petrasek, USMC(LPC-2), 703-695-8958.

Gordon R. England
Secretary of the Navy

Attachment: a/s

Copy to:
OSD (L&MR)
CNO (N43)
CMC (LPC-2)

a. Naval Air Depot Cherry Point, NC; Naval Air Depot Jacksonville, FL; and Naval Air Depot North Island, CA; for the repair, overhaul, and modification of sea-based and maritime aircraft and related aeronautical systems/equipment and for the technical expertise (engineering and logistical) required to acquire and safely maintain these aircraft and systems/ equipment.

b. Portsmouth Naval Shipyard, NH; Norfolk Naval Shipyard, VA; Puget Sound Naval Shipyard, WA; and Pearl Harbor Naval Shipyard and Intermediate Maintenance Facility, HI, for maintenance and repair, modernization, inactivation, disposal, and emergency repair of Navy ships, systems, and components.

c. Naval Undersea Warfare Center, Keyport, WA, for maintenance and repair of Fleet undersea weapons and vehicles, electronic systems, ordnance, and associated test systems and Fleet material support.

d. Naval Surface Warfare Center, Crane Division, IN, for maintenance and repair of Fleet weapons and electronic systems, ordnance, and associated equipment and components.

e. Space and Naval Warfare Systems Centers San Diego, CA, and Charleston, SC, for maintenance and repair of Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) systems, equipment, and products.

f. Marine Corps Logistics Bases, Albany, GA and Barstow, CA, for combat and combat support systems (to include amphibious), combat/tactical vehicles, automotive/construction equipment, ordinance/weapons, general purpose equipment and communications/electronics equipment.

Appendix B. SSC SD Continuous Process Improvements

Initiative	Focus	Scope
PM Guide	*Project Management best practices* - Standardize project management across the depots and apply project management best practices to all projects.	Required for *all projects at both depots*. Each project is classified by line management as Tier I or Tier II, with corresponding minimum requirements. Appropriate tailoring determines how best practices are implemented on each project.
CMMI®	Comprehensive set of *project management best practices*, *engineering best practices*, *support best practices*, and *process management best practices*. Provides a long-term, strategic framework for performance improvement across the enterprise. The focus of CMMI® is on the organizational unit (e.g., Department, Division, Branch) rather than individual projects, which tailor plans, processes, procedures, etc. from organizational standards in accordance with tailoring guidelines.	CMMI® applies to *any kind of project* - hardware, software, services, large, or small. Supersedes the SW-CMM®.
Lean Six Sigma	Combines Lean, Six Sigma™, and Theory of Constraints (each is described separately below) to *cut costs* by increasing efficiency and effectiveness. CNO plans to recapitalize the Navy from the resulting cost savings.	*Every Navy program* will seek to continuously cut government and industry cost. Initial implementation will focus on key processes in the Navy's Acquisition System. SSC San Diego will also apply to Center-level business processes.
Lean	Developed by Toyota. Focuses on *eliminating waste (tasks that are non-value-added from the perspective of the customer)*. Seven types of waste are: defects, waiting, transporting, inventory, unnecessary motion, over processing, and over production. Although the application to manufacturing is obvious, it works just as well for any process you can document.	One component of Lean Six Sigma.

Initiative	Focus	Scope
Six Sigma™	Developed by Motorola. Focuses on the "Voice of the Customer". Uses statistical tools and the Define, Measure, Analyze, Improve, Control (DMAIC) process to *quantitatively* define the performance of key processes and *continuously improve process performance* by eliminating defects and reducing variation in the process.	One component of Lean Six Sigma
Theory of Constraints	*Project management* - Improves on Critical Path Management (CPM) by ensuring that the project schedule is feasible and immune from reasonable common cause variation (uncertainty or statistical fluctuations).	One component of Lean Six Sigma
Top Ten Best Practices	Subset of best practices in CMMI® Maturity Level 2. Being implemented across Department 240. Provides a quick start towards eventual implementation of CMMI® across the Department.	Required for *all Department 240 projects with three or more full-time government staff members*. Training sessions recorded on DVD, allowing other Departments, Divisions, Branches, or projects to reuse, if desired.
SW-CMM®	Comprehensive set of *project management best practices, software engineering best practices, process management best practices,* and *support best practices*.	Applies to *software projects*. Superseded by CMMI®. SW-CMM® projects at SSC San Diego are encouraged to transition to CMMI® and continue their improvement efforts.
ISO 9000 Family of Standards	*Quality management system* focused on fulfilling the customer's quality requirements, and applicable regulatory requirements, while aiming to enhance customer satisfaction, and achieve continual improvement of its performance.	Selected projects at SSC San Diego that are required by their sponsor or have elected to become ISO 9001:2000 certified.

Appendix C. Acronym List

Appendix—Acronyms

AA&E	Arms, Ammunition & Explosives
ACAT	Acquisition Category
ADP	Automatic Data Processing
ADUSD	Assistant Deputy Under Secretary of Defense
ARTS	Automated Repair Tracking System
ATCALS	Air Traffic Control and Landing Systems
ATE	Automatic Test Equipment
AutoCAD	Automated Computer Aided Design
B/O	Backorder
BCA	Business Case Analysis
BRAC	Base Realignment and Closure
C4ISR	Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance
CAO	Competency Aligned Organization
CASS	Consolidated Automated Support System
CITE	Center of Industrial and Technical Excellence
CIV	Civilian
CMMI	Capability Maturity Model Integration
CNO	Chief of Naval Operations
COTS	Commercial Off the Shelf
CPI	Continuous Process Improvement
CPI	Continuous Process Improvement
CRF	Crypto Repair Facility

CSW	Core Sustaining Workload
DLH	Direct Labor Hour
DMAIC	Define-Measure-Analyze-Improve-Control
DMBP	Depot Maintenance Business Profile
DMI	Depot Maintenance Inter-Service
DMISA	Depot Maintenance Interservice Support Agreement
DMISA	Depot Maintenance Inter-Service Activity
DMSMS	Diminishing Manufacturing Sources and Material Shortages
DoD	Department of Defense
DoDD	Department of Defense Directive
DoDI	Department of Defense Instruction
DOP	Designated Overhaul Point
DSMP	Depot Maintenance Strategic Plan
DSOR	Depot Source of Repair
DUSD	Deputy Under Secretary of Defense
ECM	Electronic Counter Measure
EHF	Extremely High Frequency
ELF	Extremely Low Frequency
ESD	Electro-Static Discharge
ESM	Electronic Surveillance Measures
ESS	Environmental Stress Screening
FBMWS	Fleet Ballistic Missile Weapons System
FLIR	Forward looking infrared
FY	Fiscal Year
GPETE	General Purpose Electronic Equipment

GPS	Global Positioning System
IC	Integrated Circuit
IFF	Identification, Friend or Foe
ILA	Independent Logistics Analysis
ILS	Integrated Logistics Support
IPT	Integrated Process Team
IPT	Integrated Product Team
ISEA	In-service Engineering Agent
IT	Information Technology
IUID	Item Unique Identification
JCS	Joint Chiefs of Staff
JDM	Joint Depot Maintenance
JDMAG	Joint Depot Maintenance Activities Group
JPEO JTRS	Joint Program Executive Office Joint Tactical Radio System
JROC	Joint Requirements Oversight Council
L&MR	Logistics and Materiel Readiness
LAN	Local Area Network
MATCALS	Marine Air Traffic Control and Landing System
MIL	Military
MISO	Maintenance Inter-Service Office
MMF	Module Maintenance Facility
MOA	Memorandum of Agreement
MR&MP	Materiel Readiness and Maintenance Policy
MRSSG	Materiel Readiness Senior Steering Group
MTE	Measuring and testing equipment

MTR	Module Test and Repair
NAVAIR	Naval Air Systems Command
NAVELEXENGACT	Naval Electronics Systems Engineering Activity
NAVICP	Naval Inventory Control Point
NAVSEA	Naval Sea Systems Command
NAVSTA	Naval Station
NDI	Non-Developmental Item
NERP	Navy Enterprise Resource Planning
NSWC	Naval Surface Warfare Center
NUWC	Naval Undersea Warfare Center
NWCF	Navy Working Capital Funds
OAG	Optical Alignment Group
ODUSD	Office of the Deputy Under Secretary of Defense
OSD	Office of the Secretary of Defense
OTD	On-Time Delivery
PBL	Performance-Based Logistics
PBL-O	Organic Performance Based Logistics
PC	Personal Computer
PCB	Printed Circuit Board
PEO C4I	Program Executive Office Command, Control, Computers, Communications and Intelligence
PEO EIS	Program Executive Office Enterprise Information Systems
PEO SS	Program Executive Office Space Systems
PM	Program Manager
PMW	Program Manager Warfare

POPS	Performance Oriented Packaging
PPP	Public-Private Partnership
PSI	Product Support Integrator
PTTI	Precise Time and Time Interval
QDR	Quadrennial Defense Review
RCM	Reliability-Centered Maintenance
RTAT	Repair Turn Around Time
SIM	Serialized Item Management
SMT	Surface Mount Technology
SOVT	System Operational Verification Testing
SPAWAR	Space and Naval Warfare Systems Command
SPETE	Special Purpose Electronic Test Equipment
SSC CH	Space and Naval Warfare Systems Center Charleston
SSC SD	Space and Naval Warfare Systems Center San Diego
SSP	Strategic System Programs
TACAN	Tactical Airborne Navigation
TGIC	Triglycidylisocyamurate
TOC	Theory of Constraints
TRS	Technical Repair Standards
U.S.C.	United States Code
UC	Unit Cost
UK	United Kingdom
UV	Ultraviolet
WIPT	Working Integrated Process Team