

**HEADQUARTERS BIENNIAL REVIEW OF SITE
NUCLEAR SAFETY PERFORMANCE**


FINAL REPORT

for the

OFFICE OF DEFENSE PROGRAMS (NA-10)



October 2007


Richard Crowe, Team Leader

CONTENTS

EXECUTIVE SUMMARY	iii
1.0 INTRODUCTION	1
1.1 Objectives	1
1.2 Functional Areas	1
1.3 Team Composition and Functional Area Assignments	2
2.0 OVERALL APPROACH.....	2
2.1 Scope.....	3
2.2 Grading	4
3.0 ASSESSMENT RESULTS.....	5
3.1 Directives (DIR).....	5
3.2 Engineering and Project Management (E&PM).....	6
3.3 Emergency Management (EM).....	6
3.4 Feedback and Improvement (F&I).....	7
3.5 Integrated Safety Management System Implementation (ISMS)	8
3.6 Line Oversight (LO)	9
3.7 Nuclear Explosives Safety (NES).....	10
3.8 Quality Assurance (QA)	12
3.9 Safety Basis (SB)	13
3.10 Startup and Restart of Nuclear Facilities (SNF)	14
3.11 Federal Training and Qualification (T&Q).....	15
4.0 CONCLUSIONS AND RECOMMENDATIONS	16
ACRONYMS AND ABBREVIATIONS	19
APPENDIX A: ASSESSMENT FORMS.....	A-1

EXECUTIVE SUMMARY

The Office of the Chief of Defense Nuclear Safety (CDNS) was established to enhance confidence of National Nuclear Security Administration (NNSA) management in the safety of nuclear operations. To that end, the CDNS reviews nuclear safety performance at NNSA nuclear sites and Headquarters and has recently completed its first biennial review cycle.

NNSA's Site Offices report to the Deputy Administrator for Defense Programs (NA-10). Essentially all of the nuclear safety responsibilities that the Site Offices execute are delegated responsibilities. In some cases, the delegation is written directly into governing documents such as Departmental Orders, Notices, and Manuals, or organizational Functions, Responsibilities, and Authorities Manuals (FRAMs). In other cases, delegation is conferred by a memorandum from a Secretarial Officer, usually NA-10 or the Administrator. Regardless of how the delegation is made, the Cognizant Secretarial Officer retains oversight responsibilities with respect to the effectiveness of the delegate in carrying out the delegated authorities, and in many cases has other responsibilities that are not delegated to the field and that support field operations. Effective execution of these responsibilities is essential to provide the necessary support and oversight to ensure consistent and effective execution of nuclear safety requirements.

This report documents the results of the first biennial review of the NA-10 Headquarters organization. The review was conducted in accordance with the principles of the *Biennial Review of Site Nuclear Safety Performance Protocol*. However, this review used a different set of Criteria and Review Approach Documents (CRADs) than was used for the Site Office reviews. The NA-10 CRADs were developed by extracting Secretarial Officer and Defense Programs requirements and responsibilities from Departmental directives that affect nuclear safety at NNSA's nuclear facilities. An initial survey of applicable directives resulted in 33 pages of requirements that apply to NA-10. These were consolidated and reduced into 11 CRADs.

This review was a line management self-assessment, conducted on behalf of the NNSA Administrator. It was not an independent review; several Team Members work for organizations that report to NA-10, and other Team Members provide routine assistance to NA-10 personnel in performing nuclear safety oversight. Nevertheless, every attempt was made to ensure objectivity. The overall purpose was to provide credible, objective, value-added information to NNSA line managers related to the status of NA-10 nuclear safety oversight and implementation of nuclear safety requirements. The review was designed to facilitate continuous improvement in the:

- implementation and maintenance of nuclear safety requirements of the Nuclear Safety Management Rule, 10 CFR 830;
- implementation and institutionalization of Integrated Safety Management (ISM) Systems that affect the implementation and maintenance of nuclear safety requirements;
- Federal oversight processes for the protection of workers, the public, and the environment; and

- Federal training and qualification essential for NNSA technical competence and capacity.

NA-10's mission is to strengthen and support U.S. security through nuclear deterrence by the capability to:

- Maintain a safe, secure, and reliable nuclear weapons stockpile to help ensure the security of the United States and its allies, deter aggression, and support international stability;
- Maintain a flexible, responsive, robust nuclear weapons complex infrastructure to address new challenges; and
- Execute testing and research and development (R&D) activities to support U.S. leadership in science and technology.

To accomplish this mission, NA-10 oversees nuclear operations at seven geographically separated sites. These sites are the Los Alamos National Laboratory, the Lawrence Livermore National Laboratory, Sandia National Laboratories, the Y-12 National Security Complex, the Pantex Plant, the Nevada Test Site, and the Savannah River Site. Nuclear activities and operations that fall under NA-10 cognizance are extremely diverse; they include, but are not limited to, nuclear explosive operations, reactor and nonreactor nuclear operations, destructive and nondestructive evaluation of nuclear materials, complex chemical processing of fissile and other radioactive solutions, production of weapons components, production of nuclear materials, and packaging and transportation of special nuclear material. Offsite transportation activities were not included in the scope of this review.

The review team concluded that NA-10 nuclear safety oversight and assessment processes met expectations in two of eleven functional areas: Emergency Management and Nuclear Explosive Safety. Review objectives were not met in the functional areas of Directives; Engineering and Project Management; Feedback and Improvement; Integrated Safety Management; Line Oversight; Quality Assurance; Safety Basis; Startup and Restart of Nuclear Facilities; and Training and Qualification.

Although determination of corrective actions is outside the scope of the review, the Team does not believe that a large, bureaucratic reorganization or infusion of personnel is necessary to address the issues raised. Rather, a more careful evaluation, documentation, and assignment of responsibilities, together with appropriate balancing of NA-10 resources, should be adequate to obtain the needed improvements. It should be noted that this review was a sampling of information. A more thorough analysis is needed to determine the full extent of the issues.

In several cases, it was clear that certain requirements were not written to reflect the NA-10 organizational structure and reporting relationships, which differ from those of other Secretarial Offices. However, in most cases, an adjustment to the requirements will not solve the underlying issues that are identified in this report. Most applicable requirements serve valid safety functions, and NA-10 action is needed to ensure that they are adequately met.

The team identified two noteworthy practices with respect to the Nuclear Explosives Safety (NES) functional area. The first is that the NES Study Group (NESSG) minority opinion process requires that the NESSG majority respond to the minority position in the NES evaluation report

for NA-12's consideration. This practice ensures that both sides of a technical issue clearly understand the opposing viewpoint and that a complete picture is presented to the Approval Authority. Other review activities and decisionmakers would benefit from adopting a similar approach.

The second noteworthy practice was the NES Division practice of developing in-house training by more experienced peers in the organization. Reliance on in-house expertise is fiscally responsible and facilitates tailoring of training to individual needs.

Under the protocol for conducting biennial reviews, a management concern is defined as "a significant issue or several similar issues that indicate a systemic problem." Of the issues identified during the review, the following rose to the level of management concern.

- NA-10, has not implemented DOE O 226.1A, *Implementation of Department of Energy Oversight Policy*, nor has NNSA as a whole. NNSA senior management has already recognized this issue, and a number of ongoing efforts are addressing it, including the Line Oversight Contractor Assurance System (LOCAS) project and a Federal oversight project initiated by the NNSA Administrator. However, there is no current implementation plan for NA-10 or for NNSA Headquarters that would bring NNSA into compliance with this Order, and the ongoing initiatives have not yet identified specific actions and deliverables that would result in compliance with the Order.
- Several NA-10 Senior Technical Safety Managers, including the most senior NA-10 managers, are overdue for initial qualification or requalification. The Federal Training and Qualification Program (TQP) is not institutionalized within NA-10, and a number of important aspects are not implemented. Senior managers do not consistently demand and demonstrate effective maintenance of TQP qualifications.
- NA-10 does not have a comprehensive issues management system available for its use. As a result, some issues, including Headquarters-responsible issues from site biennial reviews, have not been addressed. An effective issues management system must be available to track and ensure adequate closure of corrective actions resulting from self-assessments, operational awareness activities, independent reviews, or external reviews.
- Although some ISM Core Functions and Guiding Principles have been implemented, NA-10 has not comprehensively and systematically developed an ISM System Description, as required for Secretarial Offices by DOE M 450.4-1, *Integrated Safety Management System Manual*.
- NA-10 has not developed a Functions, Responsibilities, and Authorities document as required for Secretarial Offices by Chapter 8 of DOE M 411.1-1C. There is no documented, systematic analysis of NA-10 responsibilities, particularly those that are executed by other offices. As a result, some NA-10 responsibilities are not being performed.
- NA-10 management has not conducted a detailed analysis to determine the staffing levels and skills mix needed to execute the full range of the organization's functions,

responsibilities, and authorities. NA-10 nuclear safety review responsibilities are predominantly carried out by a single, highly-qualified individual. A staff of several similarly qualified individuals would actually be required to systematically perform, document, and use the results from the full scope of nuclear safety reviews. The Team concluded that NA-10 is not adequately staffed in the safety basis, quality assurance, startup and restart, directives, training and qualification, and line management oversight functional areas, and may not be adequately staffed for other functions.

- NA-10 has not developed written procedures for executing its many and diverse nuclear safety functions. Individuals who routinely perform these functions clearly understand, in most cases, the processes they follow, due to their experience. However, several situations were identified in which well-defined procedural requirements could have helped to ensure a more systematic review, thorough coordination, and better documentation of staff analyses.

Several of the issues listed above could be addressed by the development and maintenance of an integrated management system description that would systematically address all of the responsibilities that are assigned to NA-10 and identify the office within NA-10 that is responsible for executing those responsibilities. Such a document could simultaneously serve as the NA-10 ISM System Description, the Functions, Responsibilities, and Authorities document, the Quality Assurance Plan, and the Program Management Manual. Its development would provide a means for identifying and resolving unrealistic expectations in light of current resource levels. Office procedures could be developed to implement this integrated document and could ensure that interfaces, reviews, and documentation expectations were appropriately defined.

As a general comment on the review process, it is worth noting that some of the reviewers are themselves senior managers from field organizations that fall under NA-10 line management authority. Each of these individuals has extensive experience in interacting with NA-10 from the field perspective, and their input into this review greatly enhanced the review.

The Team recommends that NA-10 develop and implement a Corrective Action Plan to address the management concerns and submit the Plan to the Administrator through the Principal Deputy Administrator for approval.

1.0 INTRODUCTION

The Office of the Chief of Defense Nuclear Safety (CDNS), NA-2.1, is the primary source of staff support for assisting the Principal Deputy Administrator of the National Nuclear Security Administration (NNSA) in executing the functions and responsibilities as the NNSA Central Technical Authority (CTA).

A major responsibility of the CDNS is to provide confidence to NNSA management that its nuclear operations are being conducted safely. In order to provide that confidence, the CDNS must have assurance that the requirements of Title 10 of the Code of Federal Regulations (CFR), Part 830, the Nuclear Safety Management Rule, are being effectively implemented for NNSA nuclear facilities. The CDNS determines the extent of nuclear safety requirement implementation by conducting a biennial review of nuclear safety performance at NNSA sites and Headquarters.

To conduct its reviews, the CDNS has unfettered access to all NNSA nuclear safety¹-related activities and facilities (consistent with training and security requirements) in order to provide expert analysis and advice to the Administrator, Principal Deputy Administrator, Site Office Managers (SOMs), and other senior NNSA officials on nuclear safety-related topics. The CDNS assists the NNSA field and program elements in identifying and resolving nuclear safety issues as requested.

1.1 Objectives

The objective of the biennial review was to provide credible, objective, value-added information to NNSA line managers related to nuclear safety oversight and requirements implementation. The review also served as a catalyst to promote behavioral change to facilitate continuous improvement in:

- the implementation and maintenance of the nuclear safety requirements specified in 10 CFR 830;
- the establishment and institutionalization of Integrated Safety Management Systems that affect the implementation and maintenance of nuclear safety requirements;
- the Federal oversight processes for the protection of workers, the public, and the environment; and
- Federal training and qualification essential for NNSA technical competence and capacity.

1.2 Functional Areas

¹ Nuclear safety is defined broadly to include NNSA tritium facilities and activities, nuclear explosives safety, and all facilities, activities, and programs that can contribute to, or are depended upon to prevent or mitigate, a nuclear accident. The facilities, activities, and programs are usually covered under 10 CFR 830.

The review was conducted using the Criteria and Review Approach Documents (CRADs) contained in Appendix II of the Review Plan. The functional areas under review were as follows:

- Directives (DIR)
- Engineering and Project Management (E&PM)
- Emergency Management (EM)
- Feedback and Improvement (F&I)
- Integrated Safety Management System (ISMS) Implementation
- Line Oversight (LO)
- Nuclear Explosives Safety (NES)
- Quality Assurance (QA)
- Safety Basis (SB)
- Startup and Restart of Nuclear Facilities (SNF)
- Federal Training and Qualification (T&Q)

The review of the individual functional areas as defined in the CRADs enabled the Review Team to determine the effectiveness of the implementing and integrating mechanisms that result in work being done safely and in accordance with the NNSA policies, principles, and functions. The criteria and objectives were evaluated by attending presentations, reviewing implementing documents, manuals of practice, and reports from previous reviews and assessments, interviewing personnel, and observing related activities.

1.3 Team Composition and Functional Area Assignments

The Review Team was organized into functional areas. Each Team Member was responsible for ensuring that all criteria were fully evaluated and that the appropriate documentation was prepared. The biographies for the Team Members are in Appendix I of the Review Plan and will be retained with the records of the review.

MEMBERS

Richard Crowe, NA-2.1
Christopher Chisholm, Sonalysts, Inc.
Elaine Merchant, Parallax, Inc.
Don Nichols, NA-2.1

Steve Erhart, PXS0

Jim Poppiti, NA-2.1
Pete Kozak, SRSO

R.T. Brock, NSO
Ike White, NA-2.1
Dave Chaney, SC

FUNCTIONAL AREA

Team Leader
Senior Advisor
Technical Editor
Directives, Startup and Restart of Nuclear
Facilities
Emergency Management, Nuclear
Explosives Safety
Engineering and Project Management
Feedback and Improvement, Quality
Assurance
ISM Implementation, Safety Basis
Line Oversight
Federal Training and Qualification

2.0 OVERALL APPROACH

2.1 Scope

The scope of this review included:

- NA-10 processes to ensure that the requirements of the Nuclear Safety Management Rule are effectively implemented and maintained for nuclear activities;
- NA-10 performance of nuclear safety responsibilities, including the administration of delegated responsibilities and verifying the effectiveness of Site Office appraisals of the contractors, as necessary;
- Status of implementing ISMS within NA-10, with emphasis on nuclear safety requirements and responsibilities;
- The flowdown of requirements in the NNSA Functions, Responsibilities, and Authorities Manual (FRAM) related to nuclear safety into implementing processes and programs;
- Integration of the NNSA FRAM, Quality Assurance Program (QAP), and ISM System Description as they pertain to nuclear safety;
- Providing assistance and expertise to NNSA line managers in the administration of nuclear safety management programs;
- Evaluating conformance with DOE and NNSA policy regarding all aspects of nuclear safety; and
- Monitoring NA-10 assessments of implementation and maintenance of the requirements of the Nuclear Safety Management Rule.

2.2 Grading

Review Team members documented the results of their review on Assessment Forms to demonstrate that each criterion of the stated objective was evaluated and to indicate whether the criteria were met, or, if not met, what aspects of the criteria were found to be deficient. The purpose of the documentation was to provide information concerning details of the review to individuals who did not witness the review.

Notable conditions, both positive and deficient, are identified as follows:

ISSUE: A condition or situation that has led to, or could lead to, degradation in nuclear safety performance.

- **Finding**—a violation of an identified requirement.
- **Weakness**—a situation that, while not a direct violation of an identified requirement, may, if not resolved, lead to degradation in nuclear safety performance. Management attention is recommended to evaluate the situation and take action as deemed appropriate.

OPPORTUNITY FOR IMPROVEMENT (OFI): A best practice or process improvement that, if applied to a particular activity, may result in improved efficiency or improved performance.

MANAGEMENT CONCERN: A significant issue or collection of similar issues that indicates a systemic problem. Management concerns are highlighted in the Executive Summary.

NOTEWORTHY PRACTICE (NP): A condition, practice, or situation identified that is highlighted for possible expanded implementation or communication to other NNSA offices.

GRADES:

A grade was assigned to each functional area based on the following guidelines and recorded on the Assessment Form.

- **Exceeds Expectations**: All criteria are met, the objective is met, and few or no issues are identified. Some noteworthy practices are identified.
- **Meets Expectations**: Most criteria are met and the objective is met. Some issues may be identified.
- **Needs Improvement**: Objective is not met, but the office has the capability to resolve the issues associated with the functional area.
- **Does Not Meet Expectations**: Objective not met. Identified management concerns associated with the functional area reflect failure to meet nuclear safety performance expectations. External support or oversight is appropriate to resolve the issues associated with the functional area.

3.0 ASSESSMENT RESULTS

3.1 *Directives (DIR)*

Grade: Needs Improvement

NA-10 has not implemented its responsibilities relative to the Departmental Directives and Technical Standards Programs. There are at least eight specific responsibilities that are assigned to Secretarial Officers that have not been implemented within NA-10. One of these is to establish a fully functional DPC [Directives Point of Contact] who would normally serve as a focal point for many of these responsibilities. Although NA-10 relies heavily upon the NA-1 DPC, there is no documented division of responsibilities between the NA-1 DPC and the NA-10 staff member who is primarily responsible for actions related to directives. Some responsibilities are simply not being accomplished. The NA-10 staff member who is primarily responsible for actions related to directives has other responsibilities; resource reallocation would need to be considered if NA-10 was to establish a fully functional DPC. The relationship between NA-1 and NA-10 is unique as compared to other Secretarial Officers in that these are both designated as Secretarial Officers, but NA-10 works for NA-1. The generic assignment of responsibilities in the Directives and Technical Standards Programs may need to be revised to reflect the NA-1/NA-10 organizational relationship while preserving appropriate responsibility within NA-10 for subordinate inputs into the Directives Systems.

Issues:

Findings:

DIR.1-1/F: NA-10 processes associated with the Directives Systems are not consistent with the requirements assigned to Secretarial Officers in the Departmental Directives Systems.

DIR.1-2/F: Division of responsibilities between the NA-1 DPC and points of contact in NA-10 is not documented or formally approved as required by Section 8 of the DOE FRAM, and no written procedures govern the delegation and execution of the Secretarial Officer's directives responsibilities.

DIR.1-3/F: NA-10 has not currently allocated sufficient resources to fulfill its assigned responsibilities under the Directives Systems.

Opportunities for Improvement:

DIR.1-1/OFI: Consideration should be given to initiating a revision to the Directives Order and Manual and the Technical Standards Orders to reflect the unique relationship between NA-1 and NA-10 while preserving NA-10 responsibility for positions taken on Directives issues by subordinate organizations.

DIR.1-2/OFI: Consideration should be given to developing a more standardized and documented review and concurrence approach for exemption packages.

3.2 Engineering and Project Management (E&PM)

Grade: Needs Improvement

NA-10 has a process for performing Technical Independent Project Reviews that relies on assistance from NA-54 and that does not reflect NA-10's proper role and responsibilities. There are no formal procedures or processes to ensure that safety is integrated into design and construction, as required by the DOE O 413.3A. NA-10 processes comply with the NNSA ESAAB [Energy Systems Acquisition Advisory Board] Equivalent Process; however, some project information required by the process is not verified. NA-10 has a process for collecting information on ongoing and planned NSR&D [Nuclear Safety Research and Development] and a mechanism for raising NSR&D issues to the CTA. There are no procedures currently in place that are consistent with commitments made to the DNFSB regarding NSR&D. NA-10 personnel have not been assigned to ensure the integration of nuclear safety in design and construction for many NA-10 projects.

Issues:

Finding:

E&PM.1-1/F: No formal processes or procedures are in place within NA-10 to ensure that safety is integrated into design and construction, as required by the Order.

Weaknesses:

E&PM.1-1/W: The process used by NA-17 for performing Technical Independent Project Reviews does not reflect its proper role as the PSO point of contact for conducting these reviews.

E&PM.1-2/W: NA-17 does not verify that the required information is being provided by the projects as documented in Attachment 3 of the ESAAB Equivalent Process.

E&PM.1-3/W: No process or procedure exists that is consistent with the DNFSB 2004-1 Implementation Plan for identification and integration of NSR&D needs of the Department and NNSA.

E&PM.1-4/W: NA-10 personnel have not been assigned to ensure the integration of nuclear safety in design and construction for many NA-10 projects.

3.3 Emergency Management (EM)

Grade: Meets Expectations

The Headquarters Emergency Management Team Plan is a comprehensive description of the Headquarters emergency support in accordance with the provisions of DOE O 151.1C. This Plan, issued and maintained by NA-40, clearly defines the structure into which NA-10 support is

provided. NA-10 participates in a support role on the EMT [Emergency Management Team]. The draft Implementation Plan for NA-10's participation in the EMT needs to be finalized. Also, the arrangement for NA-43 fulfilling the NA-10 PSO roles specified in DOE O 151.1C should be formally documented.

There is a reasonable level of assurance that in the event of an emergency actuation, the EMT would be adequately manned by NA-10 support personnel and the appropriate notifications would be made.

Finding:

EM.1-1/F: The NA-10 Implementation Procedure for the HQ EMT Plan has not been formally issued and the NA-43/NA-10 agreement on PSO responsibilities in DOE O 151.1C is not documented.

Weaknesses:

EM.1-1/W: The NA-10 Implementation Procedure for Headquarters EMT Plan (draft) and the NA-10 HQ EMT responder roster lists the NA-10 Executive Assistant as an EMT team leader. The intent is for the Executive Assistant to be the first notified, who will then contact an EMT team leader to staff the EOC.

EM.1-2/W: NA-10 EMT personnel have not received specific training on the performance of their duties within the EMT.

3.4 Feedback and Improvement (F&I)

Grade: Needs Improvement

In order to drive continuous improvement in any organization, the organization must know how it is performing against established criteria. An effective way to establish a baseline is to perform a critical self-assessment against known requirements and performance criteria. NA-10 has not yet identified its baseline performance, as a self-assessment has yet to be performed. Additionally, an effective issues management system must be available to maintain the status of corrective actions resulting from self-assessments, independent reviews, or external reviews. NA-10 does not have a comprehensive issue management system available for its use.

Issues:

Findings:

F&I.1-1/F: An NA-10 self-assessment was not completed as required by the NNSA QAP or the *Initial Headquarters Line Management Oversight Plan for ES&H and Emergency Operations*, as approved by NA-1.

F&I.1-2/F: There is no evidence that a functional structured issues management process exists in NA-10.

F&I.1-3/F: NA-10 has not developed implementing procedures that clearly define the Program Manager's responsibilities and activities with respect to occurrence reporting.

Opportunities for Improvement:

F&I.1-1/OFI: It is recommended that the NA-10 Operating Experience Coordinator be formally designated, that the duties of this individual be documented, and that implementing procedures that clearly define the lessons-learned responsibilities be developed.

F&I.1-2/OFI: It is recommended that the NNSA FRAM be revised to eliminate the conflicting verbiage and assign the Lessons Learned Program to a specific organization.

3.5 Integrated Safety Management System Implementation (ISMS)

Grade: Needs Improvement

NA-10 has used the processes and procedures established within NNSA for delegation of safety authorities. NA-10 has executed the delegation of safety authorities consistent with requirements established by the NNSA procedures. NA-10 has worked with the Site Offices to ensure ES&H objectives, measures, and commitments are incorporated into the annual PEP for the M&O contractors.

NA-10 has not developed an ISM System Description, as required for Secretarial Offices by DOE M 450.4-1. NA-10 does not have an integrated collection of documents and procedures that systematically implement the functions, responsibilities, and authorities defined in the NNSA FRAM and NA-10 does not have a document defining configuration management requirements. Current NA-10 documents reflect the use of different attributes and approaches for configuration management, resulting in inconsistencies between key documents and organizational functions, responsibilities, and authorities.

Similarly, NA-10 does not have procedures that define the necessary staff and skills to implement the NNSA FRAM requirements. Staffing issues were noted during the review in several functional areas, including safety basis, quality assurance, startup and restart, directives, line management oversight, and training and qualification.

Issues:

Findings:

ISMS.1-1/F: NA-10 does not have an integrated collection of documents and procedures that systematically implement the functions, responsibilities, and authorities defined in the NNSA FRAM.

ISMS.1-2/F: NA-10 does not have a document defining configuration management requirements to ensure documents and procedures used to implement FRAM functions, responsibilities, and authorities are controlled and maintained.

ISMS.1-3/F: NA-10 does not have procedures that define the required staff and skills necessary to implement the NNSA FRAM requirements.

ISMS.1-4/F: NA-10 has not completed development, approval, and implementation of an ISMS description, as required by DOE M 450.4-1.

Weaknesses:

ISMS.1-1/W: The NA-10 PMM [Program Management Manual] is inconsistent with the current NA-10 organizational structure because it does not reflect the establishment and responsibilities of the Office of the Assistant Deputy Administrator for Facility and Infrastructure Acquisition and Operations (NA-17).

ISMS.1-2/W: There is no specific commitment in the draft ISM System Description, Appendix B that clearly correlates to the annual ISM declaration to the CTA required by DOE M 450.4-1.

ISMS.1-3/W: The objectives, measures, and commitments incorporated into the annual evaluation plans have not been consolidated and provided to the NNSA Central Technical Authority, and NA-10 has no procedural process to satisfy this aspect of the DOE M 450.4-1 requirements.

Opportunity for Improvement:

ISMS.1-1/OFI: It is recommended that NNSA senior management review the current approach for compliance with the DOE M 450.4-1 requirement for each Secretarial Office to develop and implement an ISM System Description.

3.6 Line Oversight (LO)

Grade: Needs Improvement

DOE O 226.1A, *Implementation of Department of Energy Oversight Policy*, identifies the DOE and NNSA expectations and requirements for nuclear safety oversight. This Order identifies four levels of oversight: contractor oversight, Site Office oversight, Headquarters oversight, and independent oversight. The Order also defines expectations for an integrated, comprehensive approach between the various levels of oversight to ensure safe operations at DOE nuclear facilities. Some of the most significant Headquarters oversight functions addressed by the Order include operational awareness, comprehensive line oversight, oversight of Site Office and contractor assurance systems, and self-assessment processes.

A fundamental issue, already recognized by NNSA and being addressed through a number of ongoing efforts is that NNSA Headquarters, including NA-10, has not implemented DOE O 226.1A. Efforts that may address this issue include the Line Oversight Contractor Assurance System (LOCAS) project and a Federal oversight project initiated by the NNSA Administrator. However, there is no current implementation plan for NA-10 or for NNSA Headquarters that would bring NNSA into compliance with this Order, and the ongoing initiatives that could do so,

such as LOCAS and the Federal oversight project, have not yet identified the specific actions and deliverables that would result in compliance with the Order. In addition, to implement DOE O 226.1A, NA-10 would have to assign more personnel to a line oversight function than are currently assigned.

Issues:

Findings:

LO.1-1/F: NNSA Headquarters, including NA-10, has not implemented DOE O 226.1A.

LO.1-2/F: NA-10 has not approved contractor maintenance implementation plans as required by DOE O 433.1A and has not delegated the approval authorities in a manner consistent with NNSA and DOE policy on the delegation of nuclear safety authorities.

Weaknesses:

LO.1-1/W: With the exception of the processes and procedures in place for resource allocation, there are inadequate processes and procedures within NA-10 for administering the specific roles and responsibilities assigned to NA-10 in the DOE directives for nuclear safety.

LO.1-2/W: The existing resources currently assigned to implement the line oversight requirements of DOE O 226.1A are not sufficient to implement fully the line oversight requirements of that Order.

Opportunities for Improvement:

LO.1-1/OFI: NA-10 may wish to develop formal guidance on the expected involvement of the NNSA functional managers for nuclear safety and for ES&H in the corporate performance evaluation process.

LO.1-2/OFI: NA-10 may wish to consider establishing its own procedure for administering the DPO process within NA-10.

LO.1-3/OFI: NA-10 may wish to determine whether there are implied authorities in DOE directives that are not being executed.

3.7 Nuclear Explosives Safety (NES)

Grade: Meets Expectations

The processes in place for the training of NES Chairs and the planning, conduct, and approval of NES evaluations were satisfactory. The lack of Federal oversight of contractor NESSG member certification processes and the lack of required performance objectives as part of that certification is of concern. In some cases, the Federal roles and responsibilities (particularly as they pertain to the NEWS [Nuclear Explosives and Weapons Surety] program) are not well defined or are not being performed. This situation needs to be resolved. When closing the

findings associated with this review, NA-12 may want to consider the basis of each requirement and eliminate or modify some of the requirements instead of expending additional resources to meet those that add no value.

The NES evaluation processes, which contribute the most to assessing the safety of nuclear weapons operations, are well defined and are consistently executed. It is evident that the Approval Authority, NA-12, is carefully considering all information (including minority opinions) provided in these reports prior to accepting the findings and recommendations.

Findings:

NES.1-1/F: Several NEWS-related DOE Order requirements are not being performed. Consideration should be given to the need for better definition of the requirements themselves as part of the corrective action to this finding.

NES.1-2/F: Ownership, oversight, and approval of NES change control processes are not in accordance with DOE Order requirements.

NES.1-3/F: NNSA roles and responsibilities of Federal personnel related to NES/NEWS are not well defined in DOE Orders or the NNSA FRAM and are not understood and executed by NA-10 personnel. This does not meet the intent of DOE O 226.1A 5.b (7).

NES.1-4/F: There is no Federal oversight of the NESSG member training/certification processes used by the nuclear weapon production sites or design agencies which is inconsistent with DOE O 226.1A.

Weaknesses:

NES.1-1/W: While the processes and procedures to ensure that adequate resources exist for the conduct of NES evaluations, it does not appear that adequate resources exist at the Site Office and contractor to meet all Order and Standard requirements related to day-to-day oversight of NES-related activities.

NES.1-2/W: While DOE-STD-1185 makes the under-instruction performance requirements for Chairs and members in training a requirement, DOE-STD-3015 Appendix A does not.

Opportunities for Improvement:

NES.1-1/OFI: The quarterly status report of open NESSG findings could be strengthened if the following were added:

- the name and contact information of the person actually assigned to work the issue;
- the names of other individuals or organizations that have key roles in the corrective action;
- plan and schedule for corrective actions;
- differences from previous report (e.g., progress, revisions to plan or schedule, complications or obstacles to closure); and

- date of the most recent update.

NES.1-2/OFI: NA-121 should consider elaborating on the contents of a remediation plan submitted to justify an OSR [Operational Safety Review] extension (see DOE-STD-3015, section 9.2).

Noteworthy Practices:

NES.1-1/NP: The NESSG minority opinion process requires that the NESSG majority respond to the minority position in the NES evaluation report for NA-12's consideration. This practice ensures that both sides of a technical issue clearly understand the opposing viewpoint and that a complete picture is presented to the Approval Authority.

NES.1-2/NP: The NESD practice of developing in-house training by more experienced peers in the organization versus relying exclusively on external training saves money and is better suited to the office's individual needs than external training organizations may be able to provide.

3.8 Quality Assurance (QA)

Grade: Needs Improvement

The implementation of quality assurance activities at NNSA sites appears to be adequate; however, several inconsistencies and omissions associated with NA-10 activities were identified and the formal administration of the programs at the Headquarters level needs improvement. Many of the NA-10 responsibilities are performed using an expert-based system in lieu of using formally documented processes and procedures. A comprehensive review and revision of upper-tier documents, such as the NNSA FRAM, the NNSA QAP [Quality Assurance Plan], and the NNSA QAPIP [Quality Assurance Program Implementation Plan] would help to ensure consistency among the documents and eliminate superfluous requirements. The subsequent full implementation of these documents would enhance the overall NNSA QA posture.

Issues:

Findings:

QA.1-1/F: The existing QAP is incomplete, out of date, and does not reflect the current NA-10 organization.

QA.1-2/F: The QAPIP is out of date, and the status of the actions included in the QAPIP is unknown.

QA.1-3/F: The NNSA FRAM requires that NA-10 approve Site Office QAPs; concurrence on a Site Office QAP by NA-17 does not meet approval requirements

QA.1-4/F: The revision to the review criteria provided in the 05/27/05 memorandum from the Deputy Administrator for Defense Programs to the Site Office Managers entitled *Quality Assurance Program Description Document Review Criteria for NA-10* has not yet occurred.

Weaknesses:

QA.1-1/W: The QAP concurrence process within NA-10 is inconsistent.

Opportunity for Improvement:

QA.1-1/OFI: For subsequent reviews of Site Office QAPs, it is recommended that individuals qualified to DOE-STD-1150-2002 be included on the review teams.

3.9 Safety Basis (SB)

Grade: Needs Improvement

Although not developed by NA-10, there are adequate processes implemented by NA-10 to ensure that the NNSA Site Offices and contractors have sufficient resources to meet the requirements of 10 CFR 830 Subpart B. NA-10 has developed an initial plan to satisfy the line management assessment and oversight requirements of DOE O 226.1A. However, the approach currently reflected in the NA-10 plan is inconsistent with DOE O 226.1A requirements. Execution in accordance with the initial plan has also not been enabled with supporting QA processes.

NA-10 has not established and implemented processes and procedures for review and approval of DSAs [Documented Safety Analyses] or responsibilities related to development, review, approval, and implementation of safety documents in general. Finally, NA-10 does not have sufficient numbers or types of personnel fully qualified to execute the full range of responsibilities for safety basis development, review, and implementation.

Issues:

Findings:

SB.1-1/F: NA-10 reliance on the CDNS (NA-2.1) biennial reviews as the primary formal oversight activities for safety basis is inconsistent with the requirements imposed on DOE Headquarters line management in DOE O 226.1A.

SB.1-2/F: NA-10 has not developed and implemented processes and procedures for review and approval of DSAs.

SB.1-3/F: NA-10 does not have sufficient numbers or types of technically qualified personnel to execute the full range of responsibilities for developing, reviewing, and implementing a DSA.

Opportunities for Improvement:

SB.1-1/OFI: NA-10 has an opportunity to improve the integration of the NNSA FRAM, the NA-10 ISM system description, and NA-10 QAP to better clarify organizational responsibilities

and mechanisms used for development, review, approval, and implementation of safety basis documents.

SB.1-2/OFI: It is recommended that NA-10 clarify expectations imposed upon the HQ organizational elements as opposed to the NNSA Site Offices to ensure there is a clear line of demarcation between the two. This would be especially relevant to the development and implementation of safety basis documents where the Site Offices should clearly be relied upon.

3.10 Startup and Restart of Nuclear Facilities (SNF)

Grade: Needs Improvement

NA-10 is executing its specific responsibilities with respect to readiness reviews. However, NA-10 has not developed and implemented written procedures to ensure the effective implementation of DOE and NNSA nuclear safety requirements for startup and restart of nuclear facilities. NA-10 has not devoted sufficient resources to ensure adequate oversight of the readiness process or documentation of value-added headquarters review of the products of the readiness process.

Issues:

Findings:

SNF.1-1/F: NA-10 has not established a clear understanding of the expected degree of direct Headquarters oversight of field readiness assessment and review; oversight has not been systematically planned and performed; and oversight products and their purpose are not defined.

SNF.1-2/F: Although personnel interviewed all stated that they were clear on management expectations, there is no mention in NA-10 operating processes or management descriptions of responsibilities assigned to Secretarial Officers in DOE O 425.1C, or of NA-10 expectations for their implementation as required by Section 8 of the DOE FRAM.

SNF.1-3/F: NA-10 has not currently allocated sufficient resources to adequately fulfill its assigned responsibilities under DOE O 425.1C.

Opportunities for Improvement:

SNF.1-1/OFI: NA-10 should consider capturing, analyzing, and documenting the results of current readiness incentives, and disseminating the resulting lessons learned so that future contract incentive activities would benefit.

SNF.1-2/OFI: NA-10 should consider developing formal project management direction that requires the explicit incorporation of plans to achieve the minimum core readiness requirements of DOE O 425.1C as part of NA-10 project plans, and to allow adequate time for planning and conducting ORRs [operational readiness reviews].

SNF.1-3/OFI: NA-10 should consider instituting processes and expectations for documenting staff analyses and recommendations on readiness-related actions to help ensure a systematic

evaluation and to provide a better record of the actions taken, the Headquarters analyses on which they were based, and the utility of Headquarters involvement.

3.11 Federal Training and Qualification (T&Q)

Grade: Needs Improvement

The NA-10 Federal Training and Qualification Program is not institutionalized or implemented in nearly all aspects. Workforce staffing analyses are not performed on an annual basis. PDs [Position Descriptions] generally do not indicate TQP [Technical Qualification Program] status. Personnel announcements/selections do not generally indicate TQP position requirements. TQP recordkeeping is inconsistent. TQP qualification status is not updated frequently, nor is TQP Participant qualification consistently maintained. Several senior NA-10 managers are overdue for STSM qualification or requalification. Although there are examples of senior managers strongly encouraging TQP qualification maintenance (e.g., NA-12 and the NA-10 Principal Deputy for Operations), this is the exception within NA-10 rather than the norm.

Issues:

Findings:

T&Q.1-1/F: NA-10 has not conducted a TQP workforce analysis or developed a staffing plan that identifies critical technical capabilities needed and positions that ensure safe operations at defense nuclear facilities.

T&Q.1-2/F: NA-10 PDs do not consistently designate TQP participation, and personnel announcements and selections do not generally indicate TQP position requirements.

T&Q.1-3/F: An NA-10 Training Plan was not developed in FY07 as required by DOE O 360.1B para 4.c, and DOE M 360.1-1B Chapter I, item 5. The associated annual training summary report, required by DOE M 360.1-1B Chapter I, item 3.b, which measures progress against the training plan, has not been completed.

T&Q.1-4/F: The NA-10 Federal Training Program does not include a provision for self-assessments of the program as a whole, as required by DOE O 360.1B, section 4.1. Self-assessments of the overall program have not been conducted.

T&Q.1-5/F: NA-10 has no process to determine office-specific technical competencies.

T&Q.1-6/F: Several of the most senior NA-10 managers have not met STSM qualification and requalification requirements.

T&Q.1-7/F: Although NA-10 senior managers discuss staffing gaps on a position-specific basis, NA-10 has not established quarterly staffing plan performance indicators as required by DOE M 426.1-1A.

Weaknesses:

T&Q.1-1/W: NA-10 TQP official recordkeeping is not consistently maintained.

T&Q.1-2/W: NA-10 has not assigned a Federal TQP and training program coordinator to meet the requirements of DOE M 426.1-1A.

4.0 CONCLUSIONS AND RECOMMENDATIONS

The review team concluded that NA-10 nuclear safety oversight and assessment processes met expectations in two of eleven functional areas: Emergency Management and Nuclear Explosive Safety. Review objectives were not met in the functional areas of Directives; Engineering and Project Management; Feedback and Improvement; Integrated Safety Management; Line Oversight; Quality Assurance; Safety Basis; Startup and Restart of Nuclear Facilities; and Training and Qualification.

Although determination of corrective actions is outside the scope of the review, the Team does not believe that a large, bureaucratic reorganization or infusion of personnel is necessary to address the issues raised. Rather, a more careful evaluation, documentation, and assignment of responsibilities, together with appropriate balancing of NA-10 resources, should be adequate to obtain the needed improvements. It should be noted that this review was a sampling of information. A more thorough analysis is needed to determine the full extent of the issues.

In several cases, it was clear that certain requirements were not written to reflect the NA-10 organizational structure and reporting relationships, which differ from those of other Secretarial Offices. However, in most cases, an adjustment to the requirements will not solve the underlying issues that are identified in this report. Most applicable requirements serve valid safety functions, and NA-10 action is needed to ensure that they are adequately met.

The team identified two noteworthy practices with respect to the Nuclear Explosives Safety functional area. The first is that the NESSG minority opinion process requires that the NESSG majority respond to the minority position in the NES evaluation report for NA-12's consideration. This practice ensures that both sides of a technical issue clearly understand the opposing viewpoint and that a complete picture is presented to the Approval Authority. Other review activities and decisionmakers would benefit from adopting a similar approach.

The second noteworthy practice was the NES Division practice of developing in-house training by more experienced peers in the organization. Reliance on in-house expertise is fiscally responsible and facilitates tailoring of training to individual needs.

Under the protocol for conducting biennial reviews, a management concern is defined as "a significant issue or several similar issues that indicate a systemic problem." Of the issues identified during the review, the following rose to the level of management concern.

- NA-10, has not implemented DOE O 226.1A, *Implementation of Department of Energy Oversight Policy*, nor has NNSA as a whole. NNSA senior management has already recognized this issue, and a number of ongoing efforts are addressing it, including the Line Oversight Contractor Assurance System (LOCAS) project and a Federal oversight project initiated by the NNSA Administrator. However, there is no current implementation plan for

NA-10 or for NNSA Headquarters that would bring NNSA into compliance with this Order, and the ongoing initiatives have not yet identified specific actions and deliverables that would result in compliance with the Order.

- Several NA-10 Senior Technical Safety Managers, including the most senior NA-10 managers, are overdue for initial qualification or requalification. The Federal Training and Qualification Program (TQP) is not institutionalized within NA-10, and a number of important aspects are not implemented. Senior managers do not consistently demand and demonstrate effective maintenance of TQP qualifications.
- NA-10 does not have a comprehensive issues management system available for its use. As a result, some issues, including Headquarters-responsible issues from site biennial reviews, have not been addressed. An effective issues management system must be available to track and ensure adequate closure of corrective actions resulting from self-assessments, operational awareness activities, independent reviews, or external reviews.
- Although some ISM Core Functions and Guiding Principles have been implemented, NA-10 has not comprehensively and systematically developed an ISM System Description, as required for Secretarial Offices by DOE M 450.4-1, *Integrated Safety Management System Manual*.
- NA-10 has not developed a Functions, Responsibilities, and Authorities document as required for Secretarial Offices by Chapter 8 of DOE M 411.1-1C. There is no documented, systematic analysis of NA-10 responsibilities, particularly those that are executed by other offices. As a result, some NA-10 responsibilities are not being performed.
- NA-10 management has not conducted a detailed analysis to determine the staffing levels and skills mix needed to execute the full range of the organization's functions, responsibilities, and authorities. NA-10 nuclear safety review responsibilities are predominantly carried out by a single, highly-qualified individual. A staff of several similarly qualified individuals would actually be required to systematically perform, document, and use the results from the full scope of nuclear safety reviews. The Team concluded that NA-10 is not adequately staffed in the safety basis, quality assurance, startup and restart, directives, training and qualification, and line management oversight functional areas, and may not be adequately staffed for other functions.
- NA-10 has not developed written procedures for executing its many and diverse nuclear safety functions. Individuals who routinely perform these functions clearly understand, in most cases, the processes they follow, due to their experience. However, several situations were identified in which well-defined procedural requirements could have helped to ensure a more systematic review, thorough coordination, and better documentation of staff analyses.

Several of the issues listed above could be addressed by the development and maintenance of an integrated management system description that would systematically address all of the responsibilities that are assigned to NA-10 and identify the office within NA-10 that is responsible for executing those responsibilities. Such a document could simultaneously serve as

the NA-10 ISM System Description, the Functions, Responsibilities, and Authorities document, the Quality Assurance Plan, and the Program Management Manual. Its development would provide a means for identifying and resolving unrealistic expectations in light of current resource levels. Office procedures could be developed to implement this integrated document and could ensure that interfaces, reviews, and documentation expectations were appropriately defined.

As a general comment on the review process, it is worth noting that some of the reviewers are themselves senior managers from field organizations that fall under NA-10 line management authority. Each of these individuals has extensive experience in interacting with NA-10 from the field perspective, and their input into this review greatly enhanced the review.

The Team recommends that NA-10 develop and implement a Corrective Action Plan to address the management concerns and submit the Plan to the Administrator through the Principal Deputy Administrator for approval.

ACRONYMS AND ABBREVIATIONS

CDNS	Office of the Chief of Defense Nuclear Safety
CFR	Code of Federal Regulations
CRAD	Criteria and Review Approach Document
CTA	Central Technical Authority
DIR	Directives
DNFSB	Defense Nuclear Facilities Safety Board
DOE	Department of Energy
DSA	Documented Safety Analysis
E&PM	Engineering and Project Management
EM	Emergency Management
EMT	Emergency Management Team
ES&H	Environment, Safety & Health
ESAAB	Energy Systems Acquisition Advisory Board
F&I	Feedback and Improvement
FRAM	Functions, Responsibilities, and Authorities Manual
FY	Fiscal year
ISM	Integrated Safety Management
ISMS	Integrated Safety Management System
LO	Line Oversight
LOCAS	Line Oversight Contractor Assurance System
NA-2.1	Office of the Chief of Defense Nuclear Safety
NA-10	Office of Defense Programs
NA-17	Office of Facility and Infrastructure Acquisition and Operations
NES	Nuclear Explosives Safety
NEWS	Nuclear Explosives and Weapons Surety
NNSA	National Nuclear Security Administration
NP	Noteworthy Practice
NSR&D	Nuclear Safety Research and Development
OFI	Opportunity for Improvement
ORR	Operational Readiness Review
OSR	Operational Safety Review
PMM	Program Management Manual
QA	Quality Assurance
QAP	Quality Assurance Plan
QAP	Quality Assurance Program
QAPIP	Quality Assurance Program Implementation Plan
RRW	Reliable Replacement Warhead
SB	Safety basis
SC	NNSA Service Center
SNF	Startup and Restart of Nuclear Facilities
SOM	Site Office Manager
SSP	Stockpile Stewardship Program
T&Q	(Federal) Training and Qualification
TQP	Technical Qualification Program

APPENDIX A: ASSESSMENT FORMS