



Department of Energy

Germantown, MD 20874-1290

August 23, 1995

Honorable John T. Conway
Chairman
Defense Nuclear Facilities Safety Board
625 Indiana Avenue, N.W., Suite 700
Washington, D.C. 20004

Dear Mr. Chairman:

In accordance with the Implementation Plan (IP) for Recommendation 93-1 Action 4 Report/Nuclear Explosive Safety Study Corrective Action Plan, the enclosed progress report describes program accomplishments from May 1 through July 31, 1995. As this is the last required progress report, the reporting period was extended to cover the transmittal of final deliverables to the Board.

During this period, activities were focused on completing revisions to Department of Energy (DOE) Orders 5610.10 and 5610.11, the draft technical standards, and the draft Implementation Guide (IG) for use with DOE Order 5610.11. Copies of the working drafts of these documents were provided to you on June 30, 1995. The final draft orders, standards, and IG were formally transmitted to you on July 31, 1995.

If you have questions, please call me or have your staff contact Dana Krupa of my staff at 202-586-3842.

Sincerely,

A handwritten signature in black ink that reads "Charles J. Beers, Jr." with a large, stylized flourish at the end.

Charles J. Beers, Jr.
Rear Admiral, U.S. Navy
Deputy Assistant Secretary
for Military Application and
Stockpile Support
Defense Programs

Enclosure

cc:
M. Whitaker, EH-9



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PROGRESS REPORT
DNFSB RECOMMENDATION 93-1
AND
NUCLEAR EXPLOSIVE SAFETY STUDY REVIEW

May-July, 1995

1. GENERAL

This report describes the Recommendation 93-1/NESSCAP Implementation Plan (IP) activities during the May 1 - July 31, 1995, period. During this period, activities focused on completing revisions to DOE Orders 5610.10 and 5610.11, the draft technical standards, and the draft Implementation Guide for use with DOE Order 5610.11. During this reporting period, the final drafts of the order revisions, the technical standards, and the IG were delivered to the Defense Nuclear Facilities Safety Board.

2. CURRENT PERIOD

A. Draft Supporting Documents Completed:

The Field Integration Teams (FIT) met throughout this last reporting period to finalize supporting technical standards and the IG. This was a resource-intensive effort; each FIT was staffed by representatives from field and national laboratory elements and heavily augmented with Headquarters subject matter experts and technical editor support.

Working drafts of all proposed documents were completed by June 29, 1995, and were revised in July by Headquarters reviews to ensure a complete and comprehensive product. In support of the two basic orders, one IG and four technical standards were developed:

- 1) G-5610.11, *Implementation Guide for Use with DOE Order 5610.11*
- 2) DOE-STD-BBBB-95, *Nuclear Explosive Surety Program Appraisals*
- 3) DOE-STD-XXXX-95, *Preparation Guide for US Department of Energy Hazard Analysis Reports for Nuclear Explosive Operations*
- 4) DOE-STD-YYYY-95, *Nuclear Explosive Safety Study Process*
- 5) DOE-STD-ZZZZ-95, *Personnel Assurance Program*

B. Policy Oversight Group (POG)

On June 9, 1995, the Deputy Assistant Secretary for Military Application and Stockpile Support (DASMASS) chaired the fourth and final meeting of the 93-1/NESSCAP POG. This meeting focused on: 1) close out of "Adopt by Reference" issues, 2) changes to the Nuclear Explosive Surety Standards (NESS), 3) hazard classification for nuclear explosive facilities, and 4) review of the program schedule and objectives.

"Adopt by Reference". The action to adopt by reference provisions of nuclear safety orders, primarily DOE 5480-Series Orders, developed in the Recommendation 93-1 Action 4 Report describes how these nuclear safety provisions would be incorporated into the nuclear explosives and weapons surety orders. All 16 Recommendation 93-1 Action 4 Report tasks are described in a copy of the briefing material handout, provided as Attachment 1. In each instance, the graphic presents the summary task statements relating to the Action 4 task statement area with the base DOE order, and provides amplifying instructions that will be contained in the IG for DOE Order 5610.11.

The proposed actions listed in the briefing slides were accepted by the POG as completing basic objectives of the 93-1/NESSCAP program IP.

Nuclear Explosive Surety Standards. The Office of Weapons Surety provided background information concerning the nuclear safety standards in DOE and DOD nuclear explosives and weapons safety activities. These standards generally parallel activities in both DOE and DOD. Recent adjustments in emphasis in both Departments have been a greater focus on "nuclear surety" as a more proactive statement concerning safety, security and use control matters. The most recent change in the safety (surety) standards occurred in 1990 with the addition of the standard to limit plutonium dispersal.

The rationale for modifying the DOE safety standards to surety standards, as recommended by the NESS Independent Review Team, was to provide clearer, more understandable terminology and cover a broader spectrum of nuclear explosive initiatives. The proposed standards have been reviewed by the DOE Nuclear Command and Control Steering Group and the DOE Use Control Effectiveness Committee. Both organizations provided independent advice and assistance to DASMASS in their areas of expertise.

Comparison of the existing nuclear safety standards and the proposed nuclear surety standards are provided as Attachment 2.

Various DOE Orders Implement the Surety Standards: DOE Order 5610.10, the surety program (all standards); DOE Order 5610.11, the safety program (standards 1 to 3); DOE Order 5610.15, use control (fifth standard). The physical security aspects of the program are covered in the DOE Order 5632 Series.

Hazard Classification for Nuclear Explosive Facilities. During the development of guidelines for the NESS process, the nuclear explosive hazards analysis, and the safety analysis reports, a significant issue was identified within the technical working community. At question is the policy governing the hazard category designation of the facilities where nuclear explosive operations are carried out. This designation establishes the level of detail and the types of analysis and methods required for nuclear explosive operations. The issue within the technical analysis community has been the ramifications of declaring the facilities as "non-reactor nuclear facilities" versus "nuclear explosive facilities".

Two options were presented for consideration by the POG:

- Declare the facilities to be nonreactor nuclear facilities with the appropriate hazard classification category, or
- Establish a definition for a "nuclear explosive facility (NEF)" which would assist the NESS evaluations. This would involve preparation of a special safety analysis report (SAR) guide for the NEF as an adjunct or addendum to the DOE STD-3009-94.

DOE/AL/NESD presented concerns for the development of the "nuclear explosive facility" definition, along with rationale for safety analysis requirements and guidance for nuclear explosive operations and associated activities.

After extensive discussions, the DOE agreed to use Hazard Category 2.

RADM Beers, DASMSS, directed that his staff ensure that submissions to the Board should clarify how DOE will use DOE STD-3009, and how configuration control will be maintained on the NESS documentation. This will be a point of continuing coordination with the DNFSB staff, operation offices, and national laboratories.

C. Orders Integration Group (OIG)

The OIG met twice during this reporting period. The first meeting at DOE Germantown on June 13-14, 1995, discussed the status and preparation schedules of the IG and technical standards, results of the POG meeting of June 9, 1995, and reviewed preliminary comments for the draft IG (G-5610.11A) and the Nuclear Explosive Safety Study Process and Personnel Assurance Program technical Standards (STD-YYYY-95 and STD-ZZZZ-95, respectively).

The second OIG meeting was held at DOE Germantown on July 11-13, 1995, for review, coordination, and comment resolution of the final draft documents. This review resulted in a major revision to the Orders. The resulting final draft documents were formally transmitted to the DNFSB on July 31, 1995.

D. Draft Orders, Standards, and Guide

In accordance with the previous bimonthly progress report, copies of the working draft documents were forwarded to the DNFSB on June 30, 1995. The final draft orders, guides, and standards, suitable for the Departmental coordination and approval process, were forwarded to the DNFSB on July 31.

3. FUTURE ACTIONS

Future actions include resolution of all formal comments received from both internal DOE sources and the DNFSB. A tentative schedule has been established as follows:

- | | |
|--|-----------------|
| A. Receive DNFSB comments | Early September |
| B. Resolve DNFSB issues/concerns | Mid-September |
| C. Headquarters/Field review | Late September |
| D. Brief DNFSB members | Early October |
| E. Begin formal coordination of Orders | Mid-October |

Defense Programs will continue to provide informal status information as the documents proceed through the coordination and review process.

93-1/NESSCAP Policy Oversight Group

**“Adopt by Reference”
Actions**

1. Audits and Assessments

Adopt DOE Orders 5482.1B and 5700.6C for appraisals of nuclear explosive operations and augment with unique nuclear explosive standards.

Draft DOE Order 5610.10 requires ES&H Appraisals of nuclear explosive operations in accordance with DOE Orders 5482.1B and 10 CFR 830.120. Draft DOE Order 5610.10 requires nuclear explosive safety appraisals in accordance with a new DOE standard. New DOE Standard will include training and qualification requirements for nuclear explosive safety appraisals. Draft DOE Order 5610.10 requires operations offices to specify training and qualification requirements for personnel who conduct ES&H appraisals of nuclear explosive operations.

2. Commitment Tracking System

Establish a commitment tracking system for nuclear explosive operations and associated facilities.

Draft DOE Order 5610.11 requires establishment of commitment tracking systems. Guidance will be included in implementation Guide G-5610.11-REV. 0.

Slide 2

3. Performance Indicators

Identify performance indicators that may help assess and improve nuclear explosive operations.

Draft DOE Order 5610.11 requires operations offices to establish requirements for PIs for nuclear explosive operations. Guidance will be included in G-5610.11-REV. 0.

4. Quality Assurance

Adopt DOE Order 5700.6C for nuclear explosive operations.

Draft DOE Order 5610.11 adopts the QA criteria of 10 CFR 830.120 (the rule that supersedes DOE Order 5700.6C) for nuclear explosive operations and associated activities and facilities.

Slide 3

5. Safety Committees

Evaluate scope of existing safety review groups and procedures; identify improvements; incorporate requirements into 5610 series Orders.

Draft DOE 5610.11 specifies the requirements that contractors must meet. Contractors will review their existing programs and must upgrade to the requirements of the Order.

6. Staffing and Personnel Training/Qualification.

Adopt DOE Order 5480.20 for nuclear explosive operations; augment with weapons-unique standards as necessary in 5610 series.

Draft DOE Order 5610.11 requires that training and qualification programs address the requirements of DOE Order 5480.20A, and specific requirements equivalent to those of Chapter IV of DOE Order 5480.20A be developed.

The revision of DOE Order 5480.18A (to 5480.18B) specifies the list for training programs requiring accreditation; the list does not include programs for nuclear explosive operations.

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7. Human Factors

Review applicability of existing guidance and technical standards; develop additional guidance for nuclear explosive operations, as needed.

Human factors requirements are included in draft DOE Order 5610.11. The guidance in DOE-STD-3009-94 was determined to be applicable; additional guidance will be provided in G-5610.11-REV. 0 and a new DOE standard on hazards analysis.

8. Criticality Safety

Adopt Order 8480.24 and the criticality safety provisions of 5480.23; augment 5610 series with unique nuclear explosive standards.

Draft DOE Order 5610.11 adopts DOE Orders 5480.23 and 5480.24, and augments with one unique nuclear explosive guideline for applying DOE Order 5480.23.

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9. Nuclear Explosive Safety

Integrate the requirements for explosive risk assessment with the hazard and accident analyses. Add qualification requirements to DOE Order 5610.11 for personnel assigned to the NESS group.

Draft DOE Order 5610.11 requires a hazards assessment of the nuclear explosive operation. Detailed requirements for the assessment will be provided in a new DOE standard.

Qualification requirements for NESS personnel will be provided in new DOE standard

10. Safety Analysis/TSRs

Adopt DOE Orders 5480.22 and .23 for nuclear explosive operations and facilities; augment with unique nuclear explosive standards in the 5610 series, as necessary.

Draft DOE Order 5610.11 adopts DOE Orders 5480.22 and 5480.23, augmented with unique requirements for nuclear explosive operations.

Draft DOE Order 5610.11 refers to DOE-STD-3009-94 for general guidance for safety analysis. Specific nuclear explosive hazards analysis guidance will be provided by a new DOE HA standard.

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11. USQ Process

Adopt DOE Order 5480.21 and augment the 5610 series with unique provisions of a US-like process for nuclear explosive operations.

Draft DOE Order 5610.11 adopts DOE Order 5480.21 for facilities in which nuclear explosive operations are conducted. Operations offices are required to develop equivalent processes for nuclear explosive operations, with more stringent approval requirements.

12. Configuration Management

Add CM requirements to the 5610 series for nuclear explosive facilities and operations.

Review the adequacy of existing guidance and applicable technical standards; augment as need. Adopt existing CM guidelines (STD-1073) as appropriate

Draft DOE Order 5610.11 requires development and implementation of a CM program.

The guidance in DOE-STD-1073-93 was determined to be adequate and is referenced by draft DOE Order 5610.11. Additional guidance will be included in G-5610.11-REV. 0.

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13. Design Criteria - Tooling and Special Equipment

Review applicability of existing guidance and technical standards; augment as needed. Add requirements to 5610 series for developing GDC for tooling and special equipment important to safety of nuclear explosive operations.

Draft DOE Order 5610.11 requires contractors to maintain design criteria documents for tooling and equipment. Additional guidance will be included in G-5610.11-REV. 0.

14. Maintenance

Adopt Chapter II of Order 4330.4B for maintenance of facilities and equipment associated with nuclear explosive operations; require DOE approval of MIP

Draft DOE Order 5610.11 adopts chapter II of DOE Order 4330.4B and the requirement for DOE to approve the Maintenance Implementation Plan.

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15. Onsite Packaging and Transportation

Review applicability of existing guidance and technical standards; augment to include specific requirements in 5610 series for onsite packaging and transport of nuclear components.

To be addressed in revised DOE Order 5610.12 (revision in progress at AL).

16. Readiness Reviews

Adopt Order 5480.31 for readiness reviews of nuclear explosive facilities; augment as necessary with unique requirements for nuclear explosive operations.

Draft DOE Order 5610.11 adopts DOE 5480.31 for readiness review of nuclear explosive operations and associated activities and facilities. Application of DOE Order 5480.31 will be tailored to the unique features of nuclear explosive operations. Additional guidance will be included in G-5610.11-REV. 0.

Slide 9

Have a nice day!

Slide 10

Standards Comparison

Current Safety Standards in DOE 5610

Proposed Surety Standards

<p>All DOE nuclear explosive operations, including transportation, shall be evaluated against the following qualitative standards. There shall be positive measures to:</p>	<p>All DOE nuclear explosive operations shall meet the following qualitative surety standards in order to prevent unintended nuclear detonation, fissile material dispersal, or loss of control. There shall be positive measures to:</p>
<ol style="list-style-type: none"> 1. prevent nuclear explosives involved in accidents or incidents from producing a nuclear yield 	<ol style="list-style-type: none"> 1. minimize the possibility of accidents, inadvertent acts, or authorized activities that could lead to fire, high explosive deflagration, or unintended high explosive detonation
<ol style="list-style-type: none"> 2. prevent deliberate prearming, arming, or firing of a nuclear explosive except when directed by competent authority 	<ol style="list-style-type: none"> 2. minimize the possibility of fire, high explosive deflagration, or high explosive detonation given accidents or inadvertent acts
<ol style="list-style-type: none"> 3. prevent the inadvertent prearming, arming, launching, firing, or releasing of a nuclear explosive in all normal and credible abnormal environments 	<ol style="list-style-type: none"> 3. minimize the possibility of deliberate unauthorized acts that could lead to high explosive deflagration or high explosive detonation
<ol style="list-style-type: none"> 4. ensure adequate security of nuclear explosives pursuant to the DOE safeguards and security requirements 	<ol style="list-style-type: none"> 4. ensure adequate security of nuclear explosives
<ol style="list-style-type: none"> 5. prevent accidental, inadvertent, or deliberate unauthorized dispersal of plutonium to the environment 	<ol style="list-style-type: none"> 5. allow authorized operations and prevent or delay unauthorized nuclear detonation, given authorized access