93-0004410

The Secretary of Energy
Washington, DC 20585

August 10, 1993

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

Dear Mr. Chairman:

By letter of May 12, 1993, the Department accepted the Defense Nuclear Facilities Safety Board Recommendation 93-2, dated March 23, 1993, regarding the nuclear criticality experiments program. Enclosed is the Department's plan for implementing this recommendation.

Sincerely,

Hazel R. O'Leary

Enclosure

IMPLEMENTATION PLAN FOR DEFENSE NUCLEAR FACILITIES SAFETY BOARD RECOMMENDATION 93-2

NUCLEAR CRITICALITY EXPERIMENTS PROGRAM

Introduction

It is the policy of the Department of Energy to reduce all identifiable nuclear criticality safety risks to acceptably low levels and to protect the public, workers, Government property, and essential operations from the effects of a criticality accident. As a necessary condition to meet these policy requirements, the Department of Energy recognizes that a special purpose experiments program operating within a general purpose criticality facility(ies) is an ingredient of an effective criticality safety program. The criticality experiments program includes subcritical measurements and experiments, as appropriate, to determine the potential for and the effect of criticality accidents. The Department of Energy also recognizes the importance of an effective criticality predictability program.

Background

A criticality needs assessment is being performed to determine the scope of current and future requirements for criticality experiments, predictability, and training. Preliminary results of the needs assessment, entitled FORECAST OF CRITICALITY EXPERIMENTS NEEDED TO SUPPORT OPERATIONS IN THE UNITED STATES OF AMERICA: 1993-1998 (Draft), dated April 23, 1993, were used in the development of this Implementation Plan. The final assessment results will be evaluated by the Department as part of the effort to identify and prioritize those experiments necessary for continued safety in processing, handling, and storing fissionable material.

Goals

The Department recognizes that improvement is needed in coordinating the needs and requirements of the various users of the criticality program. As a result, the Department is forming the Nuclear Criticality Experiments Steering Committee. The Nuclear Criticality Experiments Steering Committee will ensure the adequacy of the Department's criticality functional capability and experiments program including the commitment of resources to support these endeavors. A long-term goal of this committee is to provide a set of well documented critical experiments to confirm the adequacy of criticality computer codes and data. Another long-term goal is to maintain the Department's core competency with the performance of criticality experiments. A third long-term goal is to improve nuclear criticality predictability.

Nuclear Criticality Experiments Steering Committee

A standing committee, reporting to the Assistant Secretary for Defense Programs and jointly chaired by Defense Programs, Office of Research, Development, and Testing Facilities, and by Defense Programs, Office of Research and Advanced Technology, will oversee the Department's criticality functional capability and experiments program. The Nuclear Criticality

Experiments Steering Committee will provide technical decisions and programmatic recommendations in the areas affecting the Department's criticality functional capability and experiments program. The Nuclear Criticality Experiments Steering Committee will consist of representatives from the Department's Coordinating Secretarial Officers with criticality programmatic responsibilities and representatives from offices with policy and with oversight functions. Field activities will participate in the steering committee via a representative from the Office of Field Management, in keeping with the Departmental reorganization. The Nuclear Criticality Experiments Steering Committee will be supported by two standing technical subcommittees, the Methodology and Experiments and the Training subcommittees. Specific duties include:

1. Administer the 93-2 Implementation Plan including modification of the schedule and completion of any assigned task.

2. Conduct an annual program review and issue a program status report. The program review will cover the Department's criticality capability, identification, and prioritization of those critical experiments required to be undertaken and issues to be resolved to support current and future departmental criticality needs. Funding sources for these experiments will also be examined during the review. The review will be conducted prior to the annual unified field budget call.

3. Pursue program improvement recommendations from the subcommittees.

4. Set the qualification requirements for the members of the subcommittees. Approve personnel for membership in the two technical subcommittees.

5. Coordinate the actions and plans of this committee with those of other organizations involved with nuclear criticality and provide recommendations as appropriate.

6. Review recommendations regarding the safety of nuclear criticality experiments.

Annual Committee Activities

The Nuclear Criticality Experiments Steering Committee annually shall identify the criticality capability needed to support current and expected future Department of Energy operations. Specific activities include:

1. Determine the minimum resources needed to:

   (a) Document and enhance the experimental benchmark database for validation of codes and methods for various criticality safety applications such as chemical processing, storage, and transportation.

   (b) Support other mandatory experimental requirements (e.g., criticality alarm system and dosimeter experiments).

(c) Support criticality research and development, as well as other Department criticality requirements (e.g., Advanced Neutron Source, waste management technology, spent fuel cask evaluation).

2. Evaluate the criticality information to be gained from the criticality experimental program against the results obtainable from the current calculational methods or codes. Determine any changes needed to improve criticality predictability.

3. Determine the required resources needed to maintain core competency in the area of criticality experiments.

4. Determine what type of hands-on criticality training is needed and who is required to have criticality training. Determine the required resources with regard to personnel and facilities to support criticality training.

5. Evaluate all criticality facility options internal to the Department for performing experiments and training determined to be necessary.

6. Incorporate the improvements to the criticality experiments program determined to be necessary and concurred with by the cognizant Coordinating Secretarial Officers.

Technical Subcommittees

Membership of these two committees will consist of the Coordinating Secretarial Officers and Operations Office personnel, criticality experts from within the Department of Energy complex, and representatives from other appropriate organizations (e.g., Nuclear Criticality Technology and Safety Project).

Methodology and Experiments Subcommittee

This subcommittee will provide the technical and nuclear safety support to the Nuclear Criticality Experiments Steering Committee in the areas of critical and subcritical experiment methodology, codes, experimental requirements, experimental resource requirements, and nuclear databases. This subcommittee will assess the experiments program to ensure adequate quality assurance measures are being taken as part of experiment performance. Additionally, the Methodology and Experiments subcommittee will analyze developments in criticality technology and science and make recommendations for improvements to the Department of Energy program.

Training Subcommittee

This subcommittee will provide technical support to the Nuclear Criticality Experiments Steering Committee in the area of required hands-on training for criticality personnel and training resource requirements. The Training subcommittee will review criticality safety curricula in the area of hands-on criticality control training. The Training subcommittee will review

criticality training as required by the Implementation Plan for Defense Nuclear Facilities Safety Board Recommendation 93-3 and ensure changes are appropriately integrated.

Responses to Individual Recommendations Contained in Defense Nuclear Facilities Safety Board Recommendation 93-2

Recommendation 1

The Department of Energy should retain its program of general purpose critical experiments.

Department of Energy Response

The Department of Energy will continue special purpose critical experiments within a general purpose critical experiment facility(ies). This Implementation Plan is an integral part of the Department's effort to retain an effective program. In this Implementation Plan, the Department is addressing two key program elements: program leadership and program resources. The Nuclear Criticality Experiments Steering Committee, established by this Implementation Plan, will provide the critical experiments program with leadership and guidance. The steering committee will be able to coordinate all the various Department needs and desires and provide unified program guidance recommendations. Additionally, the Implementation Plan focuses on the determination of resources required to maintain the critical experiments program and the associated facility(ies).

Recommendation 2

This program should normally be directed along lines satisfying the objectives of improving the information base underlying prediction of criticality and serving in education of the community of criticality engineers.

Department of Energy Response

This recommendation is implemented via the two subcommittees supporting the Nuclear Criticality Experiments Steering Committee. The Methodology and Experiments and the Training subcommittees are responsible for assessing the program to ensure continuous improvement in predictability and the continued proper education of criticality professionals.

The Training subcommittee will review Departmental criticality safety curricula for adequate hands-on training requirements.

At least annually, both subcommittees will report to the steering committee on the status of the program and will make recommendations for improvements.

Recommendation 3

The results and resources of the criticality program should be used in ongoing Departmental programs where nuclear criticality would be an important concern.

Department of Energy Response

The Department, through the leadership of the Nuclear Criticality Experiments Steering Committee, will focus the efforts of the criticality functional capability and experiments program to address the needs of ongoing Departmental programs. The participation of all stakeholders in this coordination process ensures that the results will be readily available to all Departmental programs.

ATTACHMENT

COMMITMENTS AND MILESTONE DATES FOR DEFENSE NUCLEAR FACILITIES SAFETY BOARD RECOMMENDATION 93-2 IMPLEMENTATION PLAN

	Commitment	Milestone
1.	Establish Nuclear Criticality Experiments Steering Committee (NCESC).	
	a. First meeting of the NCESC.	9/1/93
	b. Develop the charter for the NCESC.	10/15/93
	c. Develop the charters for the technical subcommittees.	11/30/93
	d. First meeting of the subcommittees.	12/15/93
2.	Complete Experimental Needs Assessment Review.	11/1/93
3.	The NCESC shall incorporate the improvements to the criticality experiments program, as appropriate, resulting from the preliminary performance of the Experimental Needs Assessment Review and concurred on by the cognizant Coordinating Secretarial Officers (CSOs). (See Item 4.)	2/1/94
4.	The NCESC shall identify the criticality capability needed to support current and expected future DOE operations as detailed under Annual Committee Activities.	6/1/94*
5.	The NCESC shall incorporate the improvements to the criticality experiments program resulting from the final performance of the Experimental Needs Assessment Review and concurred on by the cognizant CSOs. (See Item 4.)	6/1/94*
6.	Implementation Plan status report to Defense Programs and DNFSB.	Quarterly

* Due dates are established to match the budget cycle. Improvements will be reflected in the Fiscal Year 1996 budget.

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

625 Indiana Avenue, NW, Suite 700, Washington, D.C. 20004
(202) 208-6400

August 6, 1993

The Honorable Hazel R. O'Leary
Secretary of Energy
Washington, DC 20585

Dear Secretary O'Leary:

On May 28, 1992, the Defense Nuclear Facilities Safety Board (DNFSB) issued Recommendation 92-2 on the need to strengthen the DOE's Facility Representative (FR) Program. The Board recommended that the Secretary of Energy carry out a comprehensive analysis of the existing FR programs, and use the results of the analysis to establish a formal program to select, train, and assign DOE Facility Representatives for the defense nuclear facilities. The Secretary accepted this Recommendation in a letter dated July 20, 1992.

An Implementation Plan was forwarded on November 5, 1992, which committed the Department to deliver three documents: an analysis of existing Facility Representative (FR) programs, an Action Plan to effect improvements in DOE FR programs, and a DOE FR standard. On January 15, 1993, the Board accepted the Implementation Plan provided that (1) the Action Plan identifies how and when DOE improvements will be implemented, (2) the DOE FR improvements focus on what is needed for success rather than what can be accomplished using existing personnel, and (3) the DOE quarterly status reports include results of DOE-HQ ongoing assessments of the FR program (Criteria 9&10, DOE Order 5700.6C).

On April 26, 1993, DOE forwarded (1) the *Action Plan to Strengthen the Facility Representative Program at DOE Defense Nuclear Facilities (Action Plan)*, (2) the *Guidelines for Establishing and Maintaining a Facility Representative Program at DOE Nuclear Facilities (Guidelines)*, and (3) the *Analysis of Existing Facility Representative Programs at DOE Nuclear Facilities (Analysis)*. The Board has reviewed the above documents and considers that the DOE Analysis, Guidelines and Action Plan require significant improvements before they can be accepted by the Board.

1. The *Action Plan* should identify the individual or office that will provide centralized direction to the Facility Representative Program as stated in the Recommendation. The Board is pleased to note that since the original Action Plan was submitted, the Associate Deputy Secretary for Facility Management has been tasked to provide centralized direction for this program, and expects that this decision will be reflected in the revised submission of the *Action Plan*.

2. The Action Plan implies that development and implementation of the FR program will be constrained by existing resources and policies. This was stated in the Implementation Plan, and addressed as the second point of the Board's response to the Implementation Plan. The Board stated, "This DOE expectation [that the majority of the FR program will be implemented using existing Field Office resources that are restructured] includes an implicit limitation that restricts unduly the manpower pool from which facility representatives will be drawn. At this formative stage, imposing such a barrier could conceivably prevent the establishment of an effective DOE Facility Representative program. The Board expects that personnel selection for the program will be based upon identifiable qualities and attributes that indicate an ability to successfully complete qualification and perform effectively on the job, regardless of whether such persons are in the field, at Headquarters, or drawn from the outside."

3. DOE should develop a Facility Representative standard with specific requirements and references to industry standards. The *Guidelines* do not clearly explain all requirements that will be imposed upon a Facility Representative, and only briefly mention DOE Orders 5480.20 (Training), 5480.18A (Accreditation), and 5700.6C (Quality Assurance). The *Guidelines* provide a checklist for consideration by the Operations Offices as opposed to a formal, centralized program as stated in the Recommendation.

4. The *Analysis* submitted by DOE states in the section titled **Purpose of the Analysis** that it "...focused on the positive aspects of each of the existing FR programs, and did not attempt to identify specific deficiencies in individual programs, nor to assess the adequacy of each program." Additionally, Action Item 1 in the *Action Plan* requires the Field Organizations instead of DOE Headquarters to review existing FR programs for compliance with the *Guidelines for Establishing and Maintaining a FR Program*. Neither analysis meets the intent of the Board's Recommendation for an analysis "...conducted under the direction of a senior individual who has demonstrated high technical and managerial capability..." which "...should emphasize the identification of those aspects of the existing programs that either support or impede the achievement of DOE objectives."

In summary, aside from the development of the DOE draft standard, the Action Plan represents little substantial difference from the FR program in its current form. I have directed members of my staff to be available for discussions with your staff as necessary. I look forward to your continued efforts on this important matter, and the incorporation of the tenets of this Recommendation into your Implementation Plan for Recommendation 93-3.

Sincerely,

John T. Conway
Chairman

c:
E. C. Brolin, Acting NE-1
M. Whitaker, Acting DR-1
F. Cole, NE-10

93-0004560

Department of Energy
Washington, DC 20585

August 10, 1993

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

Dear Mr. Conway:

Enclosed is the Monthly Progress Report Number 32 for Implementation of the Defense Nuclear Facilities Safety Board Recommendation 90-6. The report covers activities during the period of June 16, 1993 to July 15, 1993.

This document is Unclassified and suitable for placement in the public reading rooms.

Sincerely,

Victor Stello, Jr.
Principal Deputy Assistant
Secretary for Facilities
Defense Programs

Enclosure

cc w/attachment:
M. Whitaker, DR-1

STATUS OF ACTIONS FOR THE DEFENSE NUCLEAR FACILITIES SAFETY BOARD RECOMMENDATION 90-6

Report Number 32
June 16, 1993 - July 15, 1993

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1.0 INTRODUCTION

This report provides the status of the Department of Energy (DOE) and EG&G Rocky Flats, Inc. program to address the accumulation of fissile and other materials in ventilation ducts and related systems in response to the Defense Nuclear Facilities Safety Board Recommendation 90-6.

2.0 TASK STATUS

2.1 TASK 1: DETERMINATION OF FISSILE MATERIAL ACCUMULATION

The purpose of this task is to determine the quantity and distribution of fissile material accumulation in ventilation ducts through Non-Destructive Assay measurements. The original objective of this task was to identify ducts requiring the removal of fissile material.

2.1.1 Activities Performed During This Reporting Period

- Completed bar coding of the FU-1 glovebox exhaust system Zone 8 on the first floor of Building 771.
- Continued annual Limiting Conditions for Operations (LCO) surveillances of holdup in glovebox exhaust ductwork in Building 707.
- Continued annual review of procedures.

2.1.2 Activities Planned For the Next Reporting Period

- Continue to support plenum/demister measurements as required.
- Continue annual LCO surveillance measurements of glovebox exhaust ductwork in Building 707.
- Continue to support Building 771 and Building 776 exhaust duct measurements as required.
- Continue annual review of procedures.

2.2 TASK 2: EVALUATION OF NUCLEAR CRITICALITY SAFETY RISK

The purpose of Task 2 is to assess the potential for a nuclear criticality accident due to the accumulation of fissile material in ducts and related systems.

2.2.1 Activities Performed During This Reporting Period

- Work continued on Criticality Safety Operating Limits in support of the Plenum 102 Demister remediation.

- Routine Criticality Engineering support to the Duct Remediation effort continued. This support included as-needed Document Modification Request review, procedure review, and development and modification of Criticality Safety Operating Limits.

2.2.2 Activities Planned For the Next Reporting Period.

- Continue routine Criticality Engineering support on an as-needed basis.

2.3 TASK 3: EVALUATION OF POTENTIAL WORKER RADIATION EXPOSURES

The purpose of Task 3 is to evaluate personnel exposure levels resulting from the presence of fissile materials in ventilation ducts and related systems. Actions will be developed and implemented to ensure that personnel radiation exposures do not exceed established limits and are maintained As Low as Reasonable Achievable in accordance with DOE Order 5480.11, Radiation Protection for Occupational Workers.

2.3.1 Activities Performed During This Reporting Period

- Radiological Engineering supported the Duct Remediation Program on an as-needed basis.

2.3.2 Activities Planned For the Next Reporting Period

- Continue to offer Radiological Engineering technical support to the Duct Remediation Program as required.

2.4 TASK 4: REVIEW OF RISK ASSESSMENTS AND SAFETY ANALYSES

The purpose of this task is to review existing safety analyses in view of the plutonium accumulations in the glovebox exhaust ducts, update safety analyses, and implement corrective actions.

2.4.1 Activities Performed During This Reporting Period

- Facilities Safety Engineering continues to support the Duct Remediation Program on an as-needed basis.

2.4.2 Activities Planned For the Next Reporting Period

- Continue to support the Duct Remediation Program Task 6 work.

2.5 TASK 5: PREVENTION OF FISSILE MATERIAL ACCUMULATION

The purpose of this task is to develop and implement corrective actions to increase criticality safety margins, prevent excessive accumulation of material, and ensure continued operability of duct ventilation and associated systems.

2.5.1 Activities Performed During This Reporting Period

- Nothing significant to report.

2.5.2 Activities Planned For the Next Reporting Period

- Continue to offer engineering support for the Duct Remediation Program.

2.6 TASK 6: REMOVAL OF MATERIAL FROM VENTILATION SYSTEMS

The purpose of this task is to remove accumulated materials from identified ventilation ducts and associated systems.

2.6.1 Activities Performed During This Reporting Period

- Final closeout of the demolition work packages for Locations 1, 3, 5, 6A, 7, 8, and 10 is in progress.
- The scaffolding and soft sided containment for the Plenum 102 Demister clean-out have been constructed. Installation of the air movers is also complete.

2.6.2 Activities Planned For the Next Reporting Period

- Proceed with glovebag assembly, testing, and installation for the Plenum 102 Demister. Initiate and complete bulk material removal operations.
- Begin preparations for Plenum 102 first stage chamber remediation.

3.0 OTHER INFORMATION

3.1 DUCT REMEDIATION PROGRAM PLAN

No revisions to the Duct Remediation Program Plan are in progress at this time.

3.2 RECOMMENDATION 90-6 IMPLEMENTATION PLAN REVISION

EG&G and DOE,RFO are currently finalizing the Implementation Plan revision. RFO will coordinate DOE Headquarters reviews and briefings.

4.0 MAJOR ACCOMPLISHMENTS

Nothing significant to report.

5.0 SCHEDULED COMPLETION DATES

5.1 BUILDING 707

The DOE will be notified as changes to the Building 707 Remediation Schedule are incorporated and impacts assessed.

6.0 DNFSB STAFF COMMENTS AND RESPONSES

No DNFSB Staff comments on any task are open at this time.