



**The Secretary of Energy**  
Washington, DC 20585

February 24, 1995

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

Dear Mr. Conway:

In follow-up to the Department of Energy acceptance of the Defense Nuclear Facilities Safety Board Recommendation 94-4, we are forwarding the Department's Implementation Plan for correcting deficiencies in Criticality Safety at the Y-12 Plant.

The Implementation Plan was developed by a working group, in close liaison with your staff. Oversight for the Plan's development was provided by a Senior Steering Committee comprised of senior managers within the Department. The Plan presents an aggressive program of tiered assessment and corrective action that responds to the specific subrecommendations. Several deliverables in the Plan are included as an enclosure.

The Department appreciates your staff's dedication and support during the development of this Plan. The Department has formulated a comprehensive plan to address criticality safety issues at the Y-12 Plant.

Sincerely,

  
Hazel R. O'Leary

Enclosure

**DEPARTMENT OF ENERGY**

**IMPLEMENTATION PLAN**

**FOR**

**DEFENSE NUCLEAR FACILITIES SAFETY BOARD**

**RECOMMENDATION 94-4**

**DEFICIENCIES IN CRITICALITY SAFETY  
AT THE OAK RIDGE Y-12 PLANT**

**FEBRUARY 1995**

## **EXECUTIVE SUMMARY**

Defense Nuclear Facilities Safety Board (DNFSB) Recommendation 94-4, regarding Deficiencies in Criticality Safety at the Oak Ridge Y-12 Plant, was issued September 27, 1994, and subsequently accepted by the Secretary of Energy on November 18, 1994.

The Recommendation discusses weaknesses in operator discipline, criticality safety programs including procedures, and adequacy of Department of Energy (DOE) and contractor experience, training, and performance. The Recommendation further refers to a September 22, 1994, event in which DOE and contractor staff failed to take adequate corrective actions to an identified violation of nuclear criticality safety limits. Following that event, the operating contractor, Martin Marietta Energy Systems, Inc., (MMES) curtailed a number of nuclear operations at the Y-12 Plant.

The contractor and DOE have engaged in a number of initiatives to ready the Y-12 facilities for resumption of operations, in accordance with DOE Order 5480.31, "Startup and Restart of Nuclear Facilities." The purpose of this 94-4 Implementation Plan (Plan) is to recognize the deficiencies that exist in the criticality safety program at the Y-12 Plant, present an aggressive schedule of near-term actions which provide a foundation to support the resumption effort, and layout a path of programmatic improvements which will assure an adequate level of safety over the long-term.

The Department's intended course of action is to take immediate actions to correct safety deficiencies and validate those actions through a formal DOE Order 5480.31 restart process. The Department will then pursue a program of independent expert review to ensure that needed program improvements and culture changes are institutionalized.

The urgency of the criticality safety issues have focused immediate attention on near-term initiatives to address the most pressing needs, in support of the resumption effort. Martin Marietta Energy Systems, Inc., and Defense Programs (DP) are earnestly pursuing many actions which demonstrate a clear understanding of the issues and a willingness to correct the root causes.

To that end, MMES has issued and DP has approved a plan for phased resumption of activities at the Y-12 Plant. The near-term initiatives in this Plan capture the key elements of the resumption effort.

This Plan's longer-term tasks build on successful initiatives in the areas of Conduct of Operations and Training and Qualification by importing resources and activities borne out of the implementation efforts for Board Recommendations 92-5 and 93-3, such as the Training Assistance Team concept.

To facilitate the Plan integration, DP has designated the Deputy Assistant Secretary for Military Application and Stockpile Support (DP-20) to provide the central leadership for the development and execution of the Plan.

The Plan's activities are organized into the following tasks:

Organization

Criticality Safety Approval (CSA)/Operational Safety

Requirement (OSR) Implementation

Criticality Safety Program

Conduct of Operations

Technical Competence

Corrective Actions

Reporting Requirements

Change Control

**Task 1, Organization**, establishes clear-cut internal leadership for the development of the Plan. The task establishes a Senior Steering Committee composed of senior (Deputy Assistant Secretary level) management to include representatives from the Offices of DP, Environment, Safety and Health (EH), Human Resources (HR), Field Management (FM), and Oak Ridge Operations Office (OR) to oversee Plan development and execution.

**Task 2, CSA/OSRs**, is a review of CSA/OSR adequacy and compliance using a tiered approach. The task first requires MMES to review and evaluate root causes and propose corrective actions. The task then calls for an independent DP Headquarters review to determine root causes and evaluate the adequacy of contractor corrective actions.

**Task 3, Criticality Safety**, requires a comprehensive contractor review of the criticality safety program. Results of this review will build into a comprehensive review by an independent expert team. The focus of this task is to identify and correct deficiencies and ensure that a strong criticality safety program is established for the long-term.

**Task 4, Conduct of Operations**, relies on two independent teams to evaluate the full Conduct of Operations Program (COOP) against DOE Order 5480.19, utilizing the model established during the Pantex COOP Enhancement Program and also the broader Recommendation 92-5 concepts. The two assessment reports will lead to one COOP Action Program to implement COOP enhancements.

**Task 5, Technical Competence**, draws upon a formal assistance program, established as a result of the implementation of Recommendation 93-3, using a Training Assistance Team to evaluate and assist in improving the performance of both contractor and DOE in the areas of training, experience, and performance.

**Task 6, Corrective Actions**, provides for the integration and tracking of findings from Tasks 2 through 5 and near-term initiatives.

**Task 7, Reporting Requirements**, keeps appropriate DOE, Board members, and staff aware of progress and activities regarding the issues addressed in the Plan.

**Task 8, Change Control**, provides a process to handle implementation course corrections or process changes.

Appendix A provides a detailed mapping of the Board's Subrecommendations against Plan Commitments and Deliverables. Appendix B provides a Flow Diagram for Task deliverables. A glossary and list of acronyms and abbreviations are provided as Appendices C and D, respectively.

## INTRODUCTION

On September 27, 1994, the Board issued Recommendation 94-4 dealing with Deficiencies in Criticality Safety at the Oak Ridge Y-12 Plant. The Secretary of Energy accepted the Recommendation on November 18, 1994.

The Y-12 Plant is one of three installations at Oak Ridge managed by MMES; the other two being K-25 Site and Oak Ridge National Laboratory (ORNL). For four decades, the Y-12 Plant has been and remains the national center for the handling, processing, storage, and disassembly of all DOE controlled enriched uranium materials and components, as well as depleted uranium and other special material components.

Department of Energy DP missions at Y-12 include the dismantling of nuclear weapons components, storing special nuclear materials, maintaining nuclear weapons components production capability, and stockpile support.

Implementation Plan 94-4 is based on the premise that a very aggressive program of self-review, independent expert review, and corrective actions are needed to bring about a substantial improvement in nuclear safety and performance so that nuclear operations can: 1) be resumed in the near-term to support national security initiatives; and 2) be maintained at a permanent level of safety performance commensurate with standards and models established at Savannah River Tritium Facilities, Pantex, and TA-55 at Los Alamos National Laboratory (LANL).

The Plan presents a comprehensive program of Near-Term Initiatives addressing the concerns expressed in Subrecommendation (1). Longer-term programmatic improvements addressing Subrecommendations (2) through (4) are captured in Task Areas 2 through 6. Task Area 1 establishes the management structure necessary for developing the Plan. Task Areas 7 and 8 provide reporting requirements and a change control process, respectively.

A critical assumption in the Plan is the ability of MMES and the Y-12 Site Office (YSO) to proceed with a rigorous and orderly DOE Order 5480.31 resumption effort. Many activities and milestones in the Plan are linked directly to resumption and the resumption schedule.

The following is an overview which summarizes the actions taken or planned in relationship to each Subrecommendation:

**Subrecommendation (1)** tasks DOE to determine the immediate actions necessary to resolve the criticality safety deficiencies at the Y-12 Plant, including the restoration of operations and the associated evaluation and corrective actions to resolve the causes for the cessation of operations.

The Department and MMES have taken prompt action to address the above issues. The MMES conducted an investigation, determined root causes, and documented their results in a Type C Investigation of the Y-12 Plant Criticality Safety Infraction Event, Y/AD-622, October 14, 1994; MMES then issued their Plan for Continuing and Resuming Operations, Y/AD-623, October, 1994; DP ammended and approved that Plan in a letter to the OR dated November 8, 1994, and formally provided both documents to the Board in a November 8, 1994, letter from Dr. Reis to Chairman Conway letter.

Those documents provide the high-level framework for the design and scope of the resumption effort. Their essential elements have been incorporated into the Readiness Assessment (RA) Plans of Action and RA Implementation Plans. A listing of their associated Deliverables is provided in the Near-Term Initiatives section below.

**Subrecommendation (2) part (a)** recommends an evaluation of compliance with OSRs and CSAs, including root cause analysis and corrective actions. Similar reviews at the Pantex Plant and LANL are mentioned as guides. The Plan's activities addressing subrecommendation (2a) are presented as near-term initiatives N1.1 through N.1.5 and Task 2.

**Subrecommendation (2) part (b)** recommends a comprehensive review of the nuclear criticality safety program at the Y-12 Plant. A two-level programmatic evaluation will be conducted and appropriate corrective actions defined and executed as discussed in Task 3 of this Plan. Additionally, programmatic issues germane to resumption will be identified as part of Near-Term Initiatives N.1.1 through N.1.3 and progress will be reflected in the Quarterly Reports.

**Subrecommendation (2) part (c)** recommends a comparison of the current status of COOP to the level identified in Recommendation 92-5. Task 4 describes the process to conduct a complete evaluation of the COOP implementation status in a manner which has proven successful at the Pantex Plant. Plan activities are presented as Near-Term Initiatives N3 and Task 4.

**Subrecommendation (2) part (d)** recommends development of plans, including schedules, to address deficiencies identified in the above analyses. Each Task in the Implementation Plan results in assessment reports and corrective action plans. Task 6 draws together the various findings and corrective actions from those documents. Task 7 will provide for the summation and reporting of corrective action progress on a quarterly basis.

**Subrecommendation (3)** recommends that DOE evaluate the experience, training, and performance of key DOE and contractor personnel. The actions in response to this portion of Recommendation 94-4 include a Training Assistance Team evaluation of the technical adequacy of the MMES and DOE personnel in accordance with the methodology developed as part of the response to Board Recommendation 93-3.

Part of the Team's review will include an evaluation of the progress and results of the larger DP staffing review, which is currently in progress. The Training Assistance Team assessment is described in Task 5. A near-term performance baseline is discussed in N.3.1.

**Subrecommendation (4)** recommends that DOE take whatever actions are necessary to correct deficiencies identified in subrecommendation (3) above. Task 5 requires corrective action plans for the deficiencies identified by the Training Assistance Team assessments. Task 6 describes the overall management of corrective actions for identified deficiencies.



## **NEAR-TERM INITIATIVES**

The Department recognizes the importance and magnitude of the level of effort discussed in the Implementation Plan. Aggressive efforts have been initiated to complete Near-Term Initiatives which can quickly achieve momentum and demonstrate success in implementing this Plan.

Because of the urgency of issues raised in Subrecommendation (1), which requires DOE to determine the immediate actions necessary to resolve nuclear criticality safety deficiencies, the Plan provides comprehensive, Near-Term Initiatives which are intended to address the concerns raised in the Subrecommendation and thereby support facility resumption.

The November 8, 1994, letter from Dr. Reis to Chairman Conway broadly summarized the Department's actions for addressing Subrecommendation (1) in support of resumption. The documents required by DOE Order 5480.31 for initial resumption are the deliverables for Subrecommendation (1); they are listed in Paragraph N.4.2.

Additionally, there are some aspects of Subrecommendations (2a), (2b), (2c), and (3) that should be addressed in the near term. As such, a number of reports, activities, and actions mentioned in Near-Term Initiatives are stand-alone deliverables to be completed in conjunction with resumption, to provide content and structure beyond the products of the RA process.

### **1 Nuclear Criticality Safety**

(Note: Deliverable dates for deliverables N.1.1 through N.1.5 are tied to first resumption schedule and are therefore depicted as target dates.)

**N.1.1** The MMES shall conduct an evaluation of the nuclear criticality safety program and CSA/OSRs supporting the first resumption area and Special Operations to date. This evaluation will identify specific deficiencies, including their potential application to other areas, root cause(s), training deficiencies, and lessons learned.

Deliverable: Report  
Action: MMES  
Target: April 1995

**N.1.2** The MMES shall address the corrective action for deficiencies identified in N.1.1 in a Corrective Action Plan (CAP). The CAP will include the requirement to continue the implementation of the upgrade program discussed above through the resumption process.

Deliverable: CAP  
Action: MMES  
Target: May 1995

**N.1.3** The MMES will provide a closure report to the Restart Authority validating and summarizing the closure of deficiencies in the CAP associated with the first resumption area. As a minimum, MMES will confirm that all safety significant procedures, CSAs, and OSRs identified to support the first resumption for use within the next 12 months have been reviewed, revised as necessary, and validated. Procedures and CSA/OSRs which fall outside of the 12-month window will be controlled such that they are subject to the upgrade program prior to their use.

Deliverable: Report  
Action: MMES  
Target: With Line Management Certification Letter (see N.1.5 below)

**N.1.4** The MMES will revise their criticality safety approval process such that the resulting criticality safety documents clearly state all criticality safety requirements for a specific proposed activity. The MMES will report that this process has been developed, including any necessary training on the process, and deliver the revised procedure(s).

Deliverable: Report/Procedure  
Action: MMES  
Target: March 1995

**N.1.5** The MMES shall document, within the MMES Line Management Certification Letter, the use of compensatory measures related to CSA/OSR implementation. The documentation will discuss the nature of the compensatory measure and the conditions necessary for its removal. Other descriptive requirements for compensatory measures include the identification of roles and responsibilities, training and qualification requirements, a monitoring process for effectiveness, and a long-term needs assessment for all personnel-related compensatory measures.

Deliverable: MMES Line Management Certification Letter  
Action: MMES  
Due: As necessary to support resumption

Longer-term/programmatic improvements to criticality safety are discussed in Task Areas 2 and 3.

## **2 Line Management and Oversight**

**N.2.1** The DOE Y-12 Site Office shall provide a plan to DOE/OR to oversee the resumption of nuclear operations and to assess programmatic improvements at the Y-12 Plant.

Deliverable: Plan  
Action: Y-12  
Due: Completed November 18, 1994 (attached)

**N.2.2** The DOE/OR shall deliver a report which provides a review of the MMES Investigation Report, assesses MMES and DOE actions, and addresses the OR oversight role in the Y-12 incident involving criticality safety deficiencies. Recommend corrective actions.

Deliverable: Report  
Action: OR  
Due: Complete Oct 13, 1994 (attached)  
Deliverable: Corrective Actions  
Due: April 1995

**N.2.3** DP line organization shall provide a report documenting its continued participation in the resumption process; discuss the line organization review activities onsite; the scope and method of assessment; the results as determined with DP-30 technical assistance; the use of independent experts; and RA support.

Deliverable: Report  
Action: DP-24  
Due: Prior to First Resumption

**N.2.4** Defense Programs shall evaluate DP-20 line management and its role in Y-12 safety issues. This evaluation shall be conducted by a team of facility operations experts outside of the DP-20 line organization. Defense Programs will provide a report which identifies line management weaknesses and recommends corrective actions. Defense Programs line organization will develop a CAP.

Deliverable: Report  
Action: DP  
Due: April 1995  
Deliverable: CAP  
Action: DP-20  
Due: June 1995

**N.2.5** Office of Environment, Safety, & Health (EH) shall assess its role in oversight of Y-12 safety issues.

Deliverable: Report  
Action: EH  
Due: April 1995  
Deliverable: CAP  
Due: May 1995

### **3 Conduct of Operations/Performance**

**N.3.1** The MMES will prepare an assessment of the current COOP posture including proposed near-term corrective and/or compensatory actions. Identified actions will include those which are necessary to insure satisfactory formality of operations in both facilities undergoing upgrade for near-term resumption, as well as those facilities which continue to carry on a limited degree of activity, such as Special Operations. The review should consider the following: 1) investigations and action plans prepared as a result of the September 22, 1994, event; 2) lessons learned from Special Operations; 3) feedback and observations from mentors; and 4) implications of occurrences and other events illustrating COOP weaknesses.

Deliverable: Report/CAP  
Action: MMES  
Target: May 1995 (based on First Resumption)

**N.3.2** The use of mentors as compensatory measures for COOP requirements shall be documented in the MMES Line-Management Certification Letter. Qualifications, experience, and responsibilities for mentors shall be established. Minimum requirements necessary for mentor removal shall be defined.

Deliverable: Line-Management Certification Letter  
Action: MMES  
Due: As necessary to support resumption

Longer-term/programmatic improvements to Conduct of Operations are discussed in Task Area 4.

#### **4 Readiness Assessments**

**N.4.1** The MMES/Y-12/OR shall complete the development of implementing procedures for DOE Order 5480.31.

**Deliverable:** Procedures  
**Action:** MMES/Y-12/OR  
**Target:** March 1995 (Based upon resumption schedule for first resumption area)

**N.4.2** The MMES/OR shall demonstrate the successful planning and execution of Readiness Assessments per DOE Order 5480.31 and the above procedures.

**Deliverables:** For the First Resumption Area:

MMES/DOE Plans of Action and Implementation Plan  
MMES Line-Management Certification of Readiness to  
Commence the MMES Readiness Assessment  
MMES Readiness to Proceed Memorandum w/Endorsements  
MMES/DOE Readiness Assessment Reports  
MMES/DOE Closure Validation Reports

**Action:** MMES/OR  
**Due:** As required during resumption

**Deliverables:** For Follow-on Resumption Areas:

MMES Readiness to Proceed Memorandum w/Endorsements  
Readiness Assessment Reports (for Readiness Assessments  
performed)  
MMES/DOE Closure Validation Reports

**Task 1: ORGANIZATION**

Establish clear-cut internal leadership and management structure for the development of the Plan.

**Purpose:**

To assemble the management structure necessary to oversee the development of the Plan. This task recognizes that DOE wide participation is a key element in effecting a Plan responsive to all elements of the Recommendation.

**Discussion:**

The DOE has recognized that an integrated, systems approach is needed in addressing some of the complex and far-reaching issues it faces.

Employing this approach, while building on lessons learned from prior Board Recommendations, notably 93-3, the Department will first establish a senior management level committee (referred to as the Senior Steering Committee) tasked with achieving DOE-wide consensus on the concepts and methodologies called for in the Plan. The Committee will provide clear-cut internal leadership and ensure effective, coordinated execution of initiatives at the Department-wide level.

The next level of management structure is a Senior Working Group, with the responsibility to oversee the daily activities in assembling the Plan. This Group will meet frequently to ensure that the Plan stays focused on the Recommendation and also captures the needed elements reflected in ongoing Department initiatives, such as Training and Qualification.

The Senior Working Group will also charter working groups for independent assessments as defined in the remaining task initiatives.

Together with the Senior Steering Committee, the Senior Working Group will establish the vision for the Plan, to include the desired state of operations at the Y-12 Plant following execution of the Plan.

Finally, the Plan will rely on a cadre of Task Area Leaders who will manage their respective sections under the guidance of the Senior Working Group. Task leaders will also be responsible for implementing the task and the shepherding of deliverables through the Working Group, Steering Committee, and ultimately to the Board.

**Commitment 1.1** Defense Programs shall issue a memorandum to affected Cognizant Secretarial Officers (CSOs) which proposes overall strategy for Plan, management structure, draft Implementation Plan, and schedule. Formally establish DP Chair of the Committee to manage the Plan.

Deliverable: DP-1 memorandum  
Action: DP-1  
Due: Completed December 2, 1994 (attached)

**Commitment 1.2** Establish Senior Steering Committee composed of senior management (DAS level or equivalent) and Senior Working Group to include representatives from DP, EH, HR, FM, OR. The Committee shall oversee the development of the Plan and execution of its commitments. The Group will manage the daily activities of assembling the Plan.

Deliverable: List of Action Officers  
Action: Senior Steering Committee  
Due: Completed January 1995 (attached)

## **Task 2: CSA/OSR IMPLEMENTATION**

Specifically formulate and execute independent assessments of Operational Safety Requirements (OSRs), Criticality Safety Approvals (CSAs), and safety significant procedures of Y-12 nuclear operations. Proven experts in criticality safety will evaluate completed actions and the long-term posture of MMES and DOE related to the adequacy of upgraded CSA/OSR procedures and their execution. This task and the near-term initiatives on Nuclear Criticality Safety (N.1) fully address Subrecommendation 2a of Board Recommendation 94-4.

### **Purpose:**

To complement the resumption activities defined by the Readiness Assessment process and Near-Term Initiatives related to CSA/OSR implementation. More specifically, Task 2 will take a long-term or post-resumption perspective in the assessment of Y-12 nuclear operations. In performing this assessment, both a review of MMES and Y-12 findings and post-resumption actions from the N.1.2 CAP and a limited scope independent assessment will be conducted to: (1) evaluate compliance with OSR/CSAs; (2) determine root cause of identified violations; and (3) evaluate the application of experience gained during review at the Pantex Plant and TA-55 at LANL.

### **Discussion:**

The Board's Recommendation, their trip reports, and the contractor's own self-assessment all highlight the weaknesses in the implementation of CSA/OSRs in the plant. Operator understanding, together with proper and strict implementation of these requirements, is essential in ensuring that the plant can be safely operated and maintained as defined and expected in the plant's safety analysis. This task provides the rigorous review and corrective actions necessary to assure satisfactory implementation of CSA/OSRs.

A tiered assessment approach will be developed to address both the short-term (resumption oriented) issues and the long-term management of CSA/OSR implementation. The completion of resumption oriented actions and longer-term corrective actions associated with Subrecommendation (2a) are the responsibility of MMES and OR as discussed in Near-Term Initiatives N.1. The third assessment tier will be an independent DOE Headquarters assessment of MMES and DOE OR as described below.



The assessment will provide a high-level evaluation of whether resumption oriented commitments are being fulfilled and that long-term plans are consistent with Recommendation 94-4; an assessment program (AP) and a final report will be prepared.

**Commitment 2.1** Prepare an Assessment Program. The AP shall consider the items listed below as minimum scope:

- o Applicable portions of completed Readiness Assessments as a broad scope application to Y-12;
- o Evaluation of completed actions in Near-Term Initiatives for Nuclear Criticality Safety;
- o Evaluation of corrective actions related to probable causes documented in the Type C Investigation (Y/AD-622);
- o Evaluation of corrective actions related to causal factors in the report, "Evaluation of Criticality Safety Discrepancy Data, "(MMES internal correspondence of October 12, 1994);
- o An assessment of progress by MMES in Phase III & IV activities involving criticality safety as defined in "Plan for Continuing and Resuming Operations, "(Y/AD-623), or subsequent plans as revised; and
- o Lessons learned from resumption activities at the Pantex Plant and TA-55 facility at LANL will be developed and applied.

Deliverable: Assessment Program  
Action: Assessment Team  
Target Date: July 1995 (Based upon the completion of the first resumption area)

**Commitment 2.2** Conduct an independent assessment as defined above and prepare a final report.

Action: Assessment Team  
Deliverable: Final Report.  
Due Date: December 1995, or within 60 days of the second resumption; whichever is earlier.

**Commitment 2.3** The DOE final report will have a CAP developed by MMES/Y-12/OR.

Action: MMES/Y-12/OR  
Deliverable: Corrective Action Plan.  
Due Date: Within 60 days of the date of the final report in 2.2 above.

**Task 3: CRITICALITY SAFETY PROGRAM**

*Conducts a complete comprehensive review of the Y-12 Criticality Safety Program, including the adequacy of procedural controls, the utility of the criticality safety approvals, and a root cause analysis of noncompliances found in preresumption reviews.*

**Purpose:**

*Verify that the criticality safety program is established at the Y-12 site and ensure that DOE Order 5480.24, "Criticality Safety," is comprehensively addressed and that the tools provided for administrative controls are appropriate to the users. The review will further determine whether the Criticality Safety Program meets the following objectives:*

- o MMES organization responsible for criticality safety programs is in place and staffed (training aspects will be addressed in Task 5);*
- o Maintenance programs supporting criticality safety equipment together with the appropriate change control procedures are in place;*
- o A program for performing nuclear criticality safety evaluations has been developed and implemented;*
- o The appropriate administrative controls and implementing procedures are in place; and*
- o The facility has incorporated the requirements of DOE Order 5480.24 and implemented applicable portions of DOE Orders 5480.3 and 5480.4 and American Nuclear Society (ANS) Standards 8.1, 8.3, 8.5, 8.7, 8.15, and 8.19.*

**Discussion:**

*During reviews of existing criticality safety approvals for the facilities at the Y-12 site, a large number of discrepancies were identified. Martin Marietta Energy Systems, Inc., will fully evaluate the Criticality Safety Program for the facilities at the Y-12 site, determine the root cause of deficiencies, and develop corrective action plans. The objective is to develop a formal, documented program of criticality safety in accordance with the requirements addressed above.*

*Additionally, programmatic issues germane to resumption will be identified as part of Near-Term Initiatives N.1.1 through N.1.3 and progress will be reflected in the Quarterly Reports.*

*After the MMES review, the independent DOE team used in Task 2 will evaluate the full criticality safety program at the Y-12 Plant. The Task 3 review is intended to be conducted concurrently and with criteria that complement the review discussed in Task 2. This coordinated assessment will ensure that all applicable topics are reviewed while at the same time eliminating redundancy.*

ch.4

***Commitment 3.1 The MMES shall develop criteria based upon industry standards and DOE Order 5480.24. This activity should be worked in conjunction with criteria development for independent review, discussed in 3.4.***

***Deliverable: Criteria***  
***Action: MMES***  
***Target: July 1995 (Based on first restart)***

***Commitment 3.2 The MMES will evaluate the criticality safety and integrate the results of CSA evaluations and the results of the previous 12 months of internal or external criticality safety assessments into the final report. The conduct of a systems engineering evaluation of the MMES standards program and examination of operating procedures (i.e., CSAs, OSRs, Class 1 Procedures) can be more efficient, consistent with the Y-12 complex, and more useable.***

***Deliverable: Report***  
***Action: MMES***  
***Due: December 1995 or within 60 days of second resumption, whichever is earlier***

***Commitment 3.3 Develop a corrective action plan for deficiencies identified above, including Root Cause Determination.***

***Deliverable: CAP***  
***Action: MMES***  
***Due: 60 days after completion of report in***  
***Commitment 3.2 above***

***Commitment 3.4 Develop a criticality safety review program to assess the performance objectives discussed in the above Purpose section. Specific assessment criteria will be generated for each objective.***

***Deliverable: Assessment Program***  
***Action: DOE Team***  
***Target: July 1995 (Based on first resumption)***

***Commitment 3.5 Conduct an assessment of the MMES/Y-12 criticality safety performance objectives per the program developed in Commitment 3.4. Evaluate the corrective action program.***

***Assess a smart sample of criticality safety analyses and their independent review.***

- o Sample the analyses that form the bases of the criticality safety program; and***
- o Develop essential criteria for configuration management, independent review, independent analysis methodology, sample basis and sample expansion, and technical content.***

***Deliverable: Report***  
***Action: DOE Team***  
***Due: September 1996***

***Commitment 3.6 MMES and OR/Y-12 develop respective Corrective Action Plans***

***Deliverable: CAPs***  
***Action: MMES/Y-12/OR***  
***Due: Within 60 days of the report in Commitment 3.5***

**Task 4: CONDUCT OF OPERATIONS**

Establishes the baseline for COOP implementation with independent assessment teams, comprised of proven experts in COOP.

**Purpose:**

To establish the implementation level of COOP activities at MMES and at Y-12 with separate MMES and DOE assessments. From these assessment baselines, prepare a combined COOP Action Program (AP) of tasks that will enhance COOP performance. Within the COOP AP, specifically address the lack of rigor in COOP that has permitted less than strict compliance with procedures.

**Discussion:**

Recommendation 94-4 and the December 21, 1994, Board letter identified one causal factor regarding Y-12 Site safety deficiencies to be a lack of rigor in COOP that permitted less than strict compliance with procedures. The intent of this task is to examine the level of COOP discipline and problems with safety culture in the Y-12 Facilities and compare that level to the essential standards and benchmarks established in the Recommendation 92-5 effort, as well as at the Pantex Plant.

Following the two assessments, a combined AP will be prepared which will improve organizational performance and provide greater assurance in the safety management process of daily operations.

Although it is recognized that the resumption RAs will evaluate some elements of DOE Order 5480.19, "Conduct of Operations Requirements For DOE Facilities," the scope of this COOP assessment will include all chapters in DOE Order 5480.19. This is necessary to ensure that the performance and programmatic status of the existing and planned COOP program is fully evaluated and documented.

**COOP Assessment Teams**

Appointing the Assessment Team Leaders will be done by mutual agreement of DP, OR, and Y-12. The Assessment Team Leaders will appoint task team members.

#### **Commitment 4.1 Assessment Plan**

Each Assessment Team will create an Assessment Program that identifies successful, current COOP elements. The Assessment Programs will address appropriate past COOP improvement items and reasons for lack of success in COOP implementation.

Deliverable: Assessment Programs  
Action: Team Leaders  
Due Date: 30 days following second resumption or  
November 1995, whichever is earlier

#### **Commitment 4.2 Assessments**

During the assessments, management positions associated with COOP activities will be identified at MMES/Y-12. The desired qualifications will be examined for these positions. The COOP experience that is available to support MMES/Y-12 will be analyzed. The approved MMES/Y-12 DOE Order 5480.19 Implementation Plan will be examined for commitments. These commitments will be compared to the actual COOP status. The DOE Order 5480.19 Implementation Plan effectiveness will be evaluated. These evaluations will consider results of the readiness assessments performed to date. Successful methods used at other DOE sites will be evaluated for application at Y-12/MMES to enhance implementation of COOP at the floor level. Both the DOE COOP program and the contractor COOP program will be independently assessed against successful DOE benchmarks (Rocky Flats/Savannah River/Pantex/LANL).

Deliverable: Assessment Reports  
Responsibility: Assessment Teams  
Due Date: 60 days following second resumption or  
December 1995 whichever is earlier

#### **Commitment 4.3 COOP AP**

The integrated COOP AP tasks will be based upon the recommendations of the Assessment Teams. The COOP AP provides long-term programs necessary to upgrade COOP activities, as well as near-term projects necessary to resolve immediate COOP issues. Each of the COOP AP tasks will have a due date and an estimated completion date. Responsible organizations will be identified for each task.

Deliverable: COOP AP  
Responsibility: Y-12/MMES  
Due Date: 60 days after Assessment Report

**TASK 5: TECHNICAL COMPETENCE REVIEW**

*Evaluates the experience, training and performance of key Department and M&O contractor personnel involved in safety-related activities at defense nuclear facilities within the Y-12 Plant. The scope of the review for Federal personnel includes all technical personnel that provide management direction or oversight impacting the safe operation of the Y-12 Plant. This review will include those appropriate DP personnel at Y-12, OR, the Office of Site Operations (DP-24) line management of Y-12, and EH oversight personnel. EH personnel will be evaluated by a separate team chartered by EH.*

**Purpose:**

*To ensure that key Department and contractor personnel possess the proper training and experience and can perform their required tasks in a formal, deliberate fashion in accordance with reviewed and approved procedures. These personnel and their associated training and qualification programs will be supplemented, as appropriate, with the lessons learned from the complex in areas of training and qualification.*

**Discussion:**

*The Department has developed a Training Assistance Team concept in response to the Board's Recommendation 93-3. Commitment 5.8 of the Department's 93-3 Implementation Plan developed this concept into a formal assistance program that will be called upon to conduct the required assessments. This program, along with the lessons learned from the 93-3 Implementation Plan training and qualification initiatives, will be used to conduct the required evaluations and subsequent corrective actions.*

*In addition, the Critical Safety Elements (CSEs) developed in response to the Board's 93-1 Recommendation will be used as input for developing the assessment plan.*

*The evaluations will be conducted for both key Federal and contractor personnel associated with safety-related activities at the Department's Y-12 Plant. These evaluations and actions will be coordinated and integrated with other related activities in the 94-4 Plan and will also consider the results of readiness assessments to date. The DOE review will consider the results of the ongoing DP staffing review, as a guide in determining where to focus the greatest attention.*

**DOE Evaluation Team Leaders will be selected to conduct the evaluations. The Team Leaders are responsible for developing the Training Assistance Team programs and assembling the specific team members necessary to conduct the evaluations. A Training Assistance Team program may include reviewing the following items:**

- o Training plans and resource allocations;*
- o Training, qualification and experience records;*
- o Infrastructure and relationship to the OR;*
- o Results of DP staffing review;*
- o Personnel performing activities;*
- o Criteria for evaluation of performance;*
- o Individual development plans;*
- o Training and qualification activities;*
- o Comparison of staffing to similar sites;*
- o Impact of revised Order implementing Federal training requirements; and*
- o Oversight of contractor activities.*

**Commitment 5.1 The Training Assistance Teams (Two teams, one will review EH personnel and the other will review remaining Federal personnel) will develop a program to implement the evaluation of key Federal personnel involved with safety-related activities at defense nuclear facilities at the Y-12 Plant.**

**Deliverable: Training Assistance Team programs**  
**Due Date: June 1995**  
**Responsibility: Team Leaders**

**Commitment 5.2 The Training Assistance Teams will conduct an assessment using the criteria and performance objectives established in each Training Assistance Team program. The results of the evaluation will be summarized in a report by each Team outlining both observations and recommendations.**

**Deliverable: Team Reports**  
**Date: October 1995**  
**Responsibility: Team Leaders**

**Commitment 5.3 The DOE will review and respond to each Team Report indicating any resulting actions that will be taken.**

**Deliverable: DOE Response**  
**Due Date: December 1995**  
**Responsibility: Appropriate DOE management**



**Contractor Evaluation** A Team Leader will be selected to conduct the evaluation. The Team Leader is responsible for developing the Training Assistance Team program and assembling the specific team members necessary to conduct the evaluation.

The Training Assistance Team program may include reviewing the following items:

- o Training plans and resource allocations;*
- o Criteria for evaluation for performance;*
- o Qualification criteria;*
- o Training program content and structure;*
- o Training, qualification and experience records;*
- o Evaluation of personnel performing activities;*
- o Training and qualification activities;*
- o Comparison of staffing, training, and qualification to similar sites; and*
- o The contractor program will be reviewed to the applicable requirements including DOE Order 5480.20 and their approved or proposed Training Implementation Matrix (TIM) and other appropriate standards.*

**Commitment 5.4** The Training Assistance Team will develop a Program to implement the evaluation of key contractor personnel involved with safety related activities at defense nuclear facilities at Y-12 Plant.

**Deliverable:** Training Assistance Team program  
**Due Date:** September 1995  
**Responsibility:** Team Leader

**Commitment 5.5** The Training Assistance Team will conduct an assessment using the criteria and performance objectives established in the Training Assistance Team program. The results of the evaluation will be summarized by the Team in a report outlining both observations and recommendations.

**Deliverable:** Team Report  
**Due Date:** May 1996  
**Responsibility:** Team Leader

**Commitment 5.6** The MMES will review and respond to the Team Report indicating any resulting actions that will be taken.

**Deliverable:** Contractor Response  
**Due Date:** July 1996  
**Responsibility:** MMES

**Task 6      CORRECTIVE ACTIONS**

Provides for the management and tracking of issues and corrective actions and periodic status reports to Board.

**Purpose:**

To establish an effective approach for managing the issues and corrective actions which will be generated in Near-Term Initiatives and Tasks 2 through 5.

**Discussion:**

This Task Area recognizes the importance of management attention to corrective action programs and issue tracking systems. This will ensure that deficiencies are identified and corrected in a responsible fashion. This task requires Senior Working Group to oversee both contractor issue management systems and the subsequent corrective action programs.

The Senior Working Group will integrate findings from previous Task Areas and oversee development of corrective action plans, including schedules of performance based on reports from the various action teams specified above.

**Commitment 6.1** The Senior Working Group will monitor utilization of issue management and commitment tracking systems within MMES, Y-12/OR and Headquarters to track each item to satisfactory closure. It will ensure that RA findings germane to the issues in Recommendation 94-4 are tracked; review progress and evaluate if commitment/schedule changes are necessary; forward revisions to corrective action plans if needed; and provide tracking report on status of deliverables.

Action:                    Senior Working Group  
Deliverable:            Tracking report  
Due:                        With quarterly reports in Task 7

**TASK 7: REPORTING REQUIREMENTS**

Requires the Department prepare quarterly reports updating significant accomplishments made in implementing the 94-4 Implementation Plan initiatives.

**Purpose:**

To keep the appropriate Department staff and Board members and staff aware of progress and activities related to the operations at Y-12 and the safety-related concerns addressed in the Plan.

**Discussion:**

The quarterly reports will provide progress updates on the various initiatives. The report will highlight ongoing efforts, review completion dates and upcoming milestones, discuss the upcoming quarter's activities, and note any concerns. It is intended that a progress meeting will be convened 1 month prior to the quarterly report, so that issues and concerns can be surfaced and addressed early.

A phasing diagram which shows the flow of all deliverables is provided as Appendix B.

**Commitment 7.1** Quarterly progress reports will be issued within 30 days of the end of every calendar quarter. The first quarterly report will be issued by July 1995.

Initially, an interim report will be issued containing an update of all activities occurring between the issuance of the Implementation Plan and the quarter ending in March 1995. The interim report will contain a suggested format and schedule for future reports and will be issued by April 1995.

Deliverable:	Interim Report issued to the Board
Due Date:	April 1995
Deliverable:	Quarterly Report issued to the Board
Due Date:	First report by July 1995
Action:	DP-24

**TASK 8: CHANGE CONTROL**

Establishes a process for managing changes and unanticipated events. The 94-4 Implementation Plan is a complex and long-range plan. Flexibility is needed to address changes in commitments, actions, or completion dates where modifications are necessary due to additional information, project refinements, or changes in the Department's baseline assumptions.

**Purpose:**

To provide a change control process to handle implementation course corrections or process changes.

**Discussion:**

The 94-4 Implementation Plan is based on certain assumptions. These assumptions were used to develop commitment dates. If outyear funding, personnel resource levels, or mission changes occur, the original date for commitments may require modification. In addition, any slippage or changes in the Y-12 Resumption schedule may impact Plan dates or Resumption requirements.

Any anticipated significant changes in deliverable due dates will be promptly brought to the attention of the Board prior to the passing of the completion date; formally discussed in the quarterly progress reports, including appropriate corrective actions; and, where appropriate, submitted to the Board as a revision to the Implementation Plan.

Changes to target dates may be made at the discretion of the Deputy Assistant Secretary for Military Application and Stockpile Support (DP-20) and will be formally addressed in the quarterly progress reports as required, but will not require a revision to this Plan.

**Commitment 8.1** Substantive changes in a Department Commitment content or Commitment due date will be formally submitted. The Implementation Plan will be revised and resubmitted as appropriate.

Deliverable: Revised Implementation Plan  
Due Date: As required

**Appendix A** Matrix of Deliverables vs Subrecommendations

	SubRec 1	SubRec 2A	SubRec 2B	SubRec 2C	SubRec 2D	SubRec 3	SubRec 4
N.1.1	XX	XX	XX				
N.1.2	XX	XX	XX				
N.1.3	XX	XX	XX				
N.1.4	XX	XX					
N.1.5	XX	XX					
N.2.1	XX						
N.2.2	XX						
N.2.3	XX						
N.2.4	XX						
N.2.5	XX						
N.3.1	XX			XX			
N.3.2	XX			XX		XX	
N.4.1	XX						
N.4.2	XX						
2.1		XX					
2.2		XX					
2.3					XX		
3.1			XX				
3.2			XX				
3.3					XX		
3.4			XX				
3.5			XX				
3.6					XX		
4.1				XX			
4.2				XX			
4.3					XX		
5.1						XX	
5.2						XX	
5.3							XX
5.4						XX	
5.5						XX	
5.6							XX
6.1					XX		XX
7.1					XX		XX



## Appendix C

### Glossary Recommendation 94-4 Implementation Plan

Criticality Safety Approval (CSA)	A two-part form which contains the request for criticality safety evaluation and the authorized approval of a fissionable material operation.
Cognizant Secretarial Officer (CSO)	The Departmental official, at the Assistant Secretary level, who is responsible for the assignment of work, the institutional overview of a facility, or both.
Facility Representative (FR)	For each major facility or group of lesser facilities, an individual assigned responsibility by the Head of the Field Element for monitoring the performance of the facility and its operations. This individual is the primary point of contact with the contractor and is responsible to the appropriate DOE Program Office and Field Elements.
Line Management Certification Letter	The contractor's certification that the Readiness Assessment pre-requisites have been completed and that the facilities are in a satisfactory level of readiness to support resumption.
Mentoring	A process through which experienced, senior professionals provide knowledge and guidance to less experienced employees to assist them in their development, both within their field of expertise and within the organization.
Operational Safety Requirement (OSR)	Those requirements that define the conditions, safe boundaries, and bases thereof, and management of administrative controls required to ensure the safe operation of a facility.
Performance Based Training (PBT)	A systematic approach to training that is based on tasks and the related knowledge and skills required for competent job performance. PBT is also known as Instructional System Design, Systematic Approach to Training, Training System Design, Criterion Referenced Instruction, or Competency Based Training.
Restart Authority	The DOE official designated to provide permission to resume nuclear operations per DOE Order 5480.31.

Assumption	For each of the six mission areas, the date that authorization is given by the DOE Restart Authority without pre-start requirements, or the date that DOE approves closure of pre-start requirements.
Self-Assessment	An on-going, multifaceted process that is conducted at all levels of a line organization including contractors, Operations Offices/Area Offices, and Headquarters. This is an integral component of a quality management program.
Special Operations	Special nuclear operations required to support National Security Commitments and other Secretarial initiatives.
Training Implementation Matrix (TIM)	A matrix prepared by the operating organization which defines and describes the application of the selection, qualification, and training requirements of DOE Order 5480.20. This matrix includes any exceptions taken for requirements which are not implemented.
Type C Investigation	A detailed systematic search by the contractor to uncover "who, what, where, ...etc." of the occurrence and determine the actions needed to prevent recurrence.
Technical Qualification	The process that is used to objectively determine that individuals performing activities related to the technical management, oversight, or operation of DOE nuclear facilities possess the necessary knowledge, skills, and abilities, as determined by a functional analysis of position requirements, to effectively perform their specific duties and responsibilities.
Technical Qualification Standard	The document that describes the process and requirements to objectively determine that individuals can effectively perform specific activities related to technical management, oversight, or operation of DOE nuclear facilities. The document typically describes the selection criteria, initial training requirements (in terms of knowledge, skills, and abilities), continuing training requirements, and performance evaluation criteria.



## Appendix D Acronyms & Abbreviations

AP	Assessment or Action Program
ASDP	Assistant Secretary for Defense Programs
Board	Defense Nuclear Facilities Safety Board
CAP	Corrective Action Plan
COOP	Conduct of Operations
CSA	Criticality Safety Approval
CSE	Critical Safety Elements
CSO	Cognizant Secretarial Officer
DAS	Deputy Assistant Secretary
DASMASS	Deputy Assistant Secretary for Military Applications and Stockpile Support (DP-20)
DP	Defense Programs
DP-1	Assistant Secretary for Defense Programs
DP-20	Deputy Assistant Secretary for Military Applications and Stockpile Support
DP-24	Office of Site Operations
EH	Office of the Assistant Secretary for Environment, Safety and Health
EH-1	Assistant Secretary for Environment, Safety and Health
EHSR	EH Site Representative
EM	Environmental Management
FM	Field Management
HQ	U.S. Department of Energy Headquarters
HR	Office of the Assistant Secretary for Human Resources and Administration

IP	Implementation Plan
K-25	K-25 Site at Oak Ridge, TN
LANL	Los Alamos National Laboratory, Los Alamos, NM
M&O	Management and Operations
MMES	Martin-Marietta Energy Systems
ORNL	Oak Ridge National Laboratory at Oak Ridge, TN
OR	Oak Ridge Operations Office
OSR	Operational Safety Requirement
PLAN	94-4 Implementation Plan
POA	Plan of Action
RA	Readiness Assessment
RF	Rocky Flats, CO
RFA	Request for Approval
RTP	Readiness To Proceed
S-1	Secretary of Energy
SR	Savannah River, Aiken, SC
SSC	Senior Steering Committee
SWG	Senior Working Group
T&Q	Training and Qualification
TAT	Training Assistance Team
TIM	Training Implementation Matrix
Y-12/YSO	Y-12 Plant / Y-12 Site Office