

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

May 3, 1994

MEMORANDUM FOR: G. W. Cunningham, Technical Director

COPIES: Board Members

FROM: J. T. Arcano, Jr.

SUBJECT: Staff Review of Corrective Action Processes at Oak Ridge
Pertinent to the Y-12 Plant

- 1. Purpose:** This memorandum describes the observations of Defense Nuclear Facilities Safety Board (DNFSB) staff while evaluating the corrective action processes used at Oak Ridge which pertain to the Y-12 Plant. Organizations reviewed included the Department of Energy (DOE) Oak Ridge Operations Office (ORO), DOE Y-12 Site Office (YSO), Martin Marietta Energy Systems (MMES), and MK-Ferguson of Oak Ridge Company (MKF). The review was conducted by staff member J. T. Arcano, Jr., and outside expert D. J. Cleaves from March 1-4, 1994, to evaluate the status of corrective actions resulting from a DOE NE-80 Quality Assurance Assessment conducted in July 1993.
- 2. Summary:** The DOE and Y-12 contractor infrastructure lacks a systematic corrective action program which effectively addresses the root causes of deficiencies with potential safety and health significance. Although numerous independent deficiency tracking systems exist at various levels within this infrastructure, no formal or coordinated effort for corrective action exists at Oak Ridge to ensure that important safety-related issues and deficiencies are properly reported, tracked and corrected in accordance with DOE Order 5700.6C, *Quality Assurance*, Criterion 3, and DOE Order 5480.19, *Conduct of Operations for DOE Facilities*, Chapters I and VI.

The enclosed Attachment provides a DNFSB staff assessment of a sampling of corrective actions resulting from an DOE NE-80 Quality Assurance Assessment conducted in July 1993.

3. Background:

In February 1992, a DOE Environment, Safety and Health (ES&H) Progress Assessment of the Y-12 Plant was conducted. This assessment determined that YSO and MMES oversight activities did not have the desired levels of rigor and formality required to ensure that deficiencies and their root causes are properly documented, and that subsequent corrective actions are tracked, implemented and verified. DOE ES&H determined that: (1) YSO lacked formal procedures or guidance on surveillances and tracking, resolving, and trending deficiencies identified by YSO, (2) roles and responsibilities were not clearly

defined, and (3) neither line nor oversight organizations were effectively tracking identified deficiencies to closure.

In July 1993, the DOE Office of Nuclear Energy Self-Assessment (NE-80) conducted a Quality Assurance Assessment (QAA) of Oak Ridge Operations. This requirements-based assessment identified significant weaknesses in the quality assurance programs at ORO, YSO, MMES, and MKF. Among numerous other concerns, the NE-80 team determined that there was no ORO system for ensuring that important issues and deficiencies are properly reported, tracked, and corrected in accordance with DOE Order 5700.6C, Criterion 3. DNFSB staff observed the final week of the NE-80 Quality Assurance Assessment.

4. Discussion:

DOE-ORO and DOE-YSO

Some efforts have been undertaken at the Y-12 Site Office to proceduralize actions and responsibilities for corrective actions. In general, however, DNFSB staff found little, if any, progress by ORO or YSO in implementing a corrective action program. Key issues identified by the DNFSB review team include:

- a. ORO and YSO lack clear lines of responsibility and management attention for the completion of corrective actions.
 - There is a lack of adequate procedures for corrective action thereby resulting in the absence of a formal method of corrective action management. DOE Order 5480.19 calls for clear lines of responsibility for normal and emergency conditions at operating facilities. However, neither ORO nor YSO have created clear lines of responsibility or accountability for the completion of corrective actions by either themselves or by their contractors.

ORO does not have procedures which specifically address a corrective action process.

YSO Procedure 18.1.1, *Verification Inspection*, provides procedures for YSO verification inspections of completed MMES corrective actions. This procedure, though formally in effect, is not being followed. YSO Procedure 3.2, *Verification of Findings and Corrective Action*, has been drafted to replace YSO Procedure 18.1.1, but has not yet been approved. It is, however, partially implemented. Neither procedure assigns responsibility or describes a methodology for managing the correction of either YSO or contractor deficient conditions.

- Management attention given to the development and completion of corrective actions is often inadequate.

DOE Order 4330.4A, *Maintenance Management Program*, calls for deficiencies to be monitored in order to identify recurring or generic problems and states that action taken to resolve these problems should include a root-cause analysis, not merely a correction of symptoms. However, management does not appear to be identifying and correcting the root causes of safety significant problems. The lack of adequate root cause analysis became apparent while sampling the NE-80 QAA corrective actions, where in numerous instances, the corrective actions did not adequately address the root cause of the NE-80 concerns. (A DNFSB staff assessment of the sampling appears as an attachment.) The DOE ORO person responsible for tracking the QAA corrective actions indicated that prior to the DNFSB staff visit, he had never been queried by anyone on the status of these corrective actions.

- b. DOE ORO does not appear to hold MMES accountable to complete their corrective actions in accordance with published schedules. DNFSB staff sampling of the QAA corrective actions revealed that in several cases, the status of overdue actions was unknown.

MMES

Martin Marietta Energy Systems has implemented a fairly thorough corrective action system which includes: deficiency identification and categorization, risk prioritization, root cause analysis, determination of corrective actions, individual accountability, status tracking mechanisms, verification of actions taken, and closure of the deficiency.

The Energy Systems Action Management System (ESAMS) is MMES' central tracking and trending system. The system is used to track reportable occurrences as defined by DOE Order 5000.3B, *Occurrence Reporting and Processing of Operations Information*; corrective actions associated with externally derived deficiencies; independent site inspection deficiencies; and line organization self-assessment findings that are determined to be "key deficiencies." Key issues identified by the DNFSB review team include:

- a. Line management attention to the development and validation of correction action plans resulting from deficiencies is often inadequate.

A review of corrective actions resulting from the NE-80 Quality Assurance Assessment revealed several instances where the validated corrective actions failed to fully address the deficiency identified in the assessment. For example, the NE-80 assessment determined that MMES "is not systematically providing satisfactory training, including qualification records, to ensure that personnel are capable of performing their assigned work in compliance with DOE Order 5700.6C, Criterion 2." The corrective action plan deals with the training of one *quality assurance* coordinator, whereas the concern is addressed towards the more global issue of training *all* personnel. Sending one

individual to training addresses one symptom of the problem, but the corrective actions address neither the root cause of the systemic problem (lack of training), nor the specific findings identified in the assessment. (Further detail is provided in the Attachment.)

- b. Line management attention to the verification of corrective actions and the subsequent close-out of deficiencies is often inadequate.

The DNFSB staff reviewed corrective actions resulting from the Type B Investigation of the Hydrogen Fluoride spill at Building 9212 in January 1992. This review revealed instances where the corrective actions leading to the close-out of the deficiency were insufficient and/or inappropriate to correct the root cause of the deficiency. For example, one finding of the HF investigation was that the management self-assessment process failed to detect procedure compliance problems. A nine point corrective action plan was developed to maximize the effectiveness of self-assessment activities relative to procedure compliance. The deficiency was closed out on December 13, 1993, even though the only corrective action taken was to draft a re-write of a management assessment standard of which only one line item (of many) addressed the need to examine procedure compliance. The corrective action for this deficiency should have addressed the proper implementation of the self-assessment standard, and should have included a clear articulation of what senior management considers to be the objectives and acceptable performance of the management self-assessment function.

MK-Ferguson

MKF is the construction contractor for the Y-12 site. A review of their corrective action system indicated a strong reliance on informal mechanisms and communications for implementation of the program. For external assessments, a Management Control System Database is used to track the status of the collective corporate response to the assessment. Individual deficiencies are distributed to the responsible organizations, which manage and track the items through to completion using their own methods. Feedback to senior management of the status of corrective actions is by inclusion in weekly staff meetings if the department manager considers an item to be of importance. For deficiencies identified as a result of internal independent assessments, the MKF Quality Department uses its tracking system to monitor progress.

5. Future Staff Action: In October 1994, re-evaluate ORO, YSO, MMES, and MKF progress on the corrective actions which resulted from the DOE NE-80 July 1993 Quality Assurance Assessment.

DNFSB Staff Assessment of a Sampling of Corrective Actions
Resulting from an
NE-80 Quality Assurance Assessment

Purpose: This attachment provides DNFSB staff assessment of a sampling of corrective actions which resulted from a DOE NE-80 Quality Assurance Assessment (QAA) conducted in July 1993. This sampling was conducted on March 2, 1994.

Summary: The NE-80 Quality Assurance Assessment identified numerous substantial deficiencies in the quality assurance programs at Oak Ridge. However, the corrective actions appear to have been given little, if any, senior management attention since their identification.

The majority of the corrective actions sampled were inadequate because they failed to effectively address the root causes of the deficiencies identified by the QAA Team. This inadequacy is indicative of a lack of effective review of the corrective actions by line management (DOE and MMES). A summary of the results of the DNFSB sampling of corrective actions is listed below:

ORO

1. NE-80

Concern: Documented and approved Quality Assurance Plans conforming to the requirements of DOE Order 5700.6C are not implemented for all Oak Ridge Operations site facilities and programs.

Status: Guidance to individuals to develop these plans was due on January 13, 1994, however, 6 guidance documents are still needed. June 30, 1994 has been established as the new date for managers to complete plans and procedures, however, this date is not firm.

DNFSB Staff

Assessment: ORO has been very slow in establishing quality assurance plans which establish the important central framework for the quality assurance program. DOE Order 5700.6C has been in effect since August, 1991, however, these plans, or even guidance to develop the plans, are not yet in place.

2. NE-80
Concern: Roles and responsibilities of the Oak Ridge Operations Nuclear Safety Branch of Assistant Manager for Environment, Safety, and Quality have not been properly defined and reflected in plans and procedures.
- Status: ORO personnel were not aware of the status of corrective actions though the majority of them were due 12/30/93.

3. NE-80
Concern: Implementation of the 1991 DOE Order 5700.6C is progressing slowly at the Oak Ridge Office.
- Status: Same as item number 1 above.

DNFSB Staff

Assessment: No quality assurance program exists which governs the work of the Field Office as required by paragraph 9 of DOE Order 5700.6C. As well, no implementation plan (nor a date for implementation of the Order) appears to exist at ORO.

The corrective action plan is inadequate. Although it identifies the development of plans and procedures, it fails to address the requisite training and management attention required to institute such changes.

4. NE-80
Concern: There is no ORO system for assuring that important issues and deficiencies are properly reported, tracked, and corrected in accordance with DOE Order 5700.6C, Criterion 3.
- Status: Action to develop an ORO system for reporting, tracking, and correcting important deficiencies is due to complete on June 30, 1994.

DNFSB Staff

Assessment: Although the above-listed action to develop an ORO system is due for completion in June, no substantive evidence was presented to show that any progress had been made or even attempted. The corrective action plan is deficient in that it lacks an ORO assessment of the effectiveness of their current "process" of dealing with corrective actions. As well, it lacks an assessment of ORO's needs.

5. NE-80
Concern: There is no requirement that line personnel selected to support the Oak Ridge Office of Self-Assessment be trained in the areas of DOE Order 5700.6C that are assessed.
- Status: ORO personnel were unaware of the status.

YSO

1. NE-80
Concern: The Department of Energy Y-12 Site Office has not established a Quality Assurance Program as required by DOE Order 5700.6C, paragraph 9.a(1).
- Status: The only action item which addresses this concern was for the Y-12 Site Office to issue a Quality Assurance Plan. This action has been completed.

DNFSB Staff

- Assessment: The corrective action plan is inadequate in addressing the concern. Although a plan has been issued, it has not been implemented. Y-12 Site Office personnel responsible for quality assurance did not have a firm date for when DOE Order 5700.6C would be implemented. An implementation plan for this Order is still being developed.
2. NE-80
Concern: The Department of Energy Y-12 Site Office has not fully implemented a program that ensures that all personnel are trained and qualified as required by DOE Order 5700.6C.
- Status: YSO is developing Position Standards for technical personnel and, as a result, generating Individual Development Plans. YSO intends to train personnel in accordance with the needs of the Position Standards, but will only *qualify* Facility Representatives; no dates have been established for this qualification.

MMES

1. NE-80

Concern: Martin Marietta Energy Systems Y-12 Waste Management Quality Assurance Program has not been implemented in accordance with DOE Order 5700.6C, Criterion 1.

Status: The corrective action plan did not call for any action, but rather, stated that an action plan for implementation of QAP-Y-92-WMD-001 was written on March 12, 1993 and that no further action is required.

DNFSB Staff

Assessment: The action plan is inadequate and fails to address the concern. The concern can only be alleviated by *implementing* the Waste Management quality assurance program.

3. NE-80

Concern: A procurement system has not been established and operated by Martin Marietta Systems Y-12 to ensure that procured items and services meet established requirements and perform as specified as required by DOE Order 5700.6C, Criterion 7, and by the Martin Marietta Energy Systems Quality Assurance Program.

Status: The only corrective action is to "Update Procurement Quality action plan." This action is due to complete March 31, 1994.

DNFSB Staff

Assessment: The corrective action plan is inadequate and fails to address the deficiency. Merely updating a plan falls short of *establishing* a procurement system.

4. NE-80

Concern: Martin Marietta Energy Systems Y-12 is not systematically providing satisfactory training, including qualification records to ensure that personnel are capable of performing their assigned work in compliance with DOE Order 5700.6C, Criterion 2.

DNFSB Staff

Assessment: The corrective action plan is inadequate in that it fails to address the concern. The specific assessment findings supporting this concern included: supervisors performing OJT and other training without being formally qualified; workers performing B28 disassembly without completing all training specified on the qualification card; personnel performing B28 disassembly without being

qualified; and training records not ensuring that personnel are qualified according to the latest revision of procedures. The corrective action plan developed and approved by line management for this deficiency only addressed training for one quality assurance coordinator (relative to training records only). Sending one individual to training addresses one symptom of the problem, but the corrective actions address neither the root cause of the systemic problem (lack of training), nor the specific findings identified in the assessment.

5. NE-80

Concern: Martin Marietta Energy Systems Y-12 is not ensuring that correct procedures are used to enable work to be performed under controlled conditions and to established technical standards and administrative controls as required by DOE Order 5700.6C.

DNFSB Staff

Assessment: The corrective action plan is inadequate in that it only addresses the specific symptoms identified by NE-80 (e.g., deficient welder's qualification card, incorrect Enriched Uranium Operations qualification card, and incomplete iridium part cleaning procedure) rather than addressing the more global issue that MMES Y-12 is not ensuring that correct procedures are being used.

6. NE-80

Concern: On-shift operator training, qualification, and documentation at Y-12 is not completed as required by DOE Order 5480.19, Attachment 1, Chapter V.

DNFSB Staff

Assessment: The NE-80 Concern deals with important issues such as: no qualification requirements for operators in the Waste Management Organization, no prescribed on-the-job training for a control room operator, operators with little or no experience being placed in given job positions due to seniority rights resulting from Y-12 site downsizing, etc. However, the corrective action plan only addresses consolidation of records and development of a Qualification Card function in the Training Management System.

This action had been reported closed on the Energy Systems Action Management System (ESAMS). When questioned about this, Martin Marietta personnel indicated that they realized this action plan was inadequate and that this action had been mistakenly closed, and that they were taking action to correct the mishap. However, no other organizations at the Y-12 Plant had identified this problem.