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Department of Energy
Germantown, MD 20874-1290

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DNF SAFETY BOARD

Dr. George W. Cunningham
Defense Nuclear Facilities Safety Board
625 Indiana Avenue, N.W., Suite 700
Washington, D.C. 20004

Dear Dr. Cunningham:

In response to the Recommendation 94-4 of the Defense Nuclear Facilities Safety Board (DNFSB), the Department of Energy (DOE) had prepared and submitted an Implementation Plan requiring initiatives by various DOE organizations. Task N.2.5 of the Implementation Plan required the Office of Environment, Safety and Health (EH) to assess its role in the oversight of criticality safety issues at Oak Ridge's Y-12 Plant. On July 12, 1995, Dr. Tara O'Toole, Assistant Secretary for Environment, Safety and Health, sent EH's response to the Board. The enclosed supplemental response from the Office of Oversight provides a corrective action plan with milestones and due dates for completion of Task N.2.5. My staff has been working with the DNFSB staff in development of this supplemental response. If you have any questions, please contact me on (301) 903-3777 or contact Frank Russo of my staff on (301) 903-1845.

Sincerely,

Glenn S. Podonsky
Deputy Assistant Secretary
Office of Oversight
Environment, Safety and Health

Enclosure

cc:
M. Whitaker, EH-9

OFFICE OF ENVIRONMENT, SAFETY AND HEALTH SUPPLEMENTAL RESPONSE TO DEFENSE NUCLEAR FACILITIES SAFETY BOARD RECOMMENDATION 94-4

INTRODUCTION

In response to the Recommendation 94-4 of the Defense Nuclear Facilities Safety Board (DNFSB), the Department of Energy (DOE) has prepared and submitted an Implementation Plan requiring initiatives by various DOE organizations. The Implementation Plan required the Office of Environment, Safety and Health (EH) to assess its role in the oversight of Y-12 Plant safety issues. On July 12, 1995, Dr. Tara O'Toole, Assistant Secretary for Environment, Safety and Health sent EH's response to the Board. This supplemental response from the Office of Oversight provides additional information and also satisfies Task N.2.5 requirements for developing a corrective action plan. This response was prepared by review of EH assessment and surveillance reports and interviewing EH Residents assigned at the Oak Ridge Operations Office.

CHRONOLOGY OF OVERSIGHT ACTIVITIES RELATED TO Y-12 PLANT

Recommendation 94-4 noted a number of violations of Operational Safety Requirements and other safety limits at the Y-12 Plant. The Board specifically identified deficiencies in the execution of the Y-12 Criticality Safety Program.

The Office of Oversight has reviewed EH oversight activities dating back to 1986 at the Y-12 Plant to determine weaknesses. Findings of EH appraisals in the area of nuclear criticality safety are summarized below:

Technical Safety Appraisal of Buildings 9206 and 9212 of the Y-12 Plant (DOE/EH-0022, September 1986)

Criticality Safety Approvals (CSAs) were overdue for periodic review or re-issue;

Process equipment with non-favorable geometry were identified and recommended for removal or replacement; and

Review process for operating procedures that could impact nuclear criticality safety needed to be revised to incorporate review and approval by the Criticality Safety Department.

Technical Safety Appraisal of Buildings 9206 and 9212 of the Y-12 Plant (DOE/EH-0076, March 1989)

Corrective actions for the three recommendations of the 1986 Technical Safety Appraisal have not been completed (very little progress had been made in correcting out-of-date CSAs and removing non-favorable geometry equipment); and

The Criticality Safety Group had not kept pace with all of its program responsibilities.

Environment Safety and Health Progress Assessment of the Oak Ridge Y-12 Plant (DOE/EH-0256, February 1992)

Upgrading of CSAs and Removal and/or replacement of non-favorable geometry process equipment and upgrading of criticality safety approvals (CSAs) observed in the 1986 and 1989 Technical Safety Appraisals were still open items;

The Nuclear Criticality Safety Department and Operations Surveillance program lacked the requisite formality in conduct and coverage; and The criticality incident reports were not effectively being utilized for lessons-learned and incident prevention due to lack of formal assignment of causal factors and failure to conduct root cause analysis.

These EH appraisals found similar deficiencies in the nuclear criticality safety which were communicated to the line management. However, even though the line management prepared corrective action plans for each of these appraisals, the problems in the criticality safety program identified in 1986 were still uncorrected in 1992.

Additionally, the EH residents at Oak Ridge have conducted surveillance at the Y-12 Plant. A summary of the surveillance documenting the deficiencies in criticality safety, conduct of operations and radiological protection is provided below:

- Surveillance on March 13, 1994, of the Enhanced Uranium Handling Facility, Building 9212, showed conduct of operations problems. In C-1 wing small safe geometry containers were on floors to catch roof leakage. Also in C-1 wing, an alarm, triggered by high conductivity in the evaporator steam, was neither responded to nor logged. The alarm's purpose is to warn the operators of possible uranium buildup in the steam condensate from the evaporator. Even though the Building 9212 administrative procedure, "Responding to Alarms," requires a written procedure for each alarm panel, there is no procedure for this alarm. The line management was informed of these weaknesses.

- Surveillance on October 16, 1993, Building 9212 involved review of event reporting adequacy for criticality safety infraction. The report was not prepared in accordance with the DOE Order 5000.3B. It failed to list, as contributing causes, several facility operating training and supervision problems identified during the investigation. As a result of this surveillance, the ten-day report was rejected by the OR Facility Representative.

- Surveillance on October 26, 1993, involved a review of chemical operator and support personnel in the area of radiological control practices in Building 9212. The surveillance showed that the operator training program did not include recent events, job specific contamination control, and continuing training. Actions had not been initiated to

reduce high surface (transferrable) contamination in C-1 wing. These areas were essentially the same as a year ago when the EH resident toured the areas.

- Surveillance on August 23, 1993, involved an off-normal event at Building 9998 where three contractor construction workers were contaminated during a baghouse cleaning operation. Operator and contractor management actions to control spill in accordance with the Radcon Manual were incomplete. No contamination surveys had ever been taken where the event had occurred. The procedure to empty the baghouse hopper was still incomplete.

- Surveillance of August 23, 1993, involved an airborne radioactivity concern in Building 9204-4 which was first reported in January 1993. The surveillance showed several improvements to reduce airborne release of uranium due to grit blasting operations. However, there was no input from the engineering department to fully resolve this problem and the technical problems associated with the equipment had not been reported to DOE in accordance with DOE Order 5000.3B.

- Surveillance of February 5, 1993, was a limited review of the internal dosimetry at the Y-12 Plant. To better understand the program, a documented positive urinalysis result and resultant dose estimate for an employee was walked through. The contractor had developed and was using a unique "Q" class lung clearance for estimating dose that had not been formally submitted to DOE for approval. This event that resulted in an internal dose of an employee by injection had not been formally reported to DOE.

- Surveillance of January 22, 1993, involved observing a facility operation in Building 9204-4. The operation involved heat treating and pressing of U-238 6% Niobium metal (called the "binary"). As binary was removed from the heating furnace uranium oxide was permitted to flake off the red-hot ingots and drip on the concrete floor. One of the ingots was dropped and crashed to the floor, dispersing oxide. Floor cleaning left more than a million dpm bet and alpha contamination in the cracks and cervices of the concrete floor. The facility operations log showed at least two recent occurrences had not been reported to DOE. It was learned on a followup that results of air quality samples are routinely delayed eight days to two weeks.

- Surveillance of December 18, 1992, was a followup on the discovery of a radiological contamination during drilling activities performed by a subcontractor at West Tank Farm at the Y-12 Plant. The surveillance revealed that the exposure of construction personnel to contamination is due to inadequate site hazard categorization.

The above review demonstrates that the residents had identified and reported deficiencies in criticality safety, conduct of operations and radiological protection program to the Oak Ridge Operations Office, the DOE Y-12 Site Office and the operating contractor. In accordance with EH residents' surveillance procedures then in existence, the contractor and DOE line managements were provided written notification of deficiencies and requested to correct the deficiencies.

We believe that the following weaknesses existed in the EH oversight :

1. The oversight was fragmented. After creation of the Office of Nuclear Safety (NS) in September 1989, the responsibility for nuclear safety oversight was given to NS until its merger with EH in December 1995. EH had nuclear safety oversight prior to September 1989 and then again from December 1994. The oversight for nonnuclear safety has remained in EH since 1986. EH oversight was conducted by different offices for environment, safety, and health. The various oversight activities by EH and NS were not properly coordinated.

2. EH oversight was mainly compliance oriented and did not focus on DOE line management accountability for correcting the identified deficiencies.

3. The surveillances were not conducted on basis of trending or analysis of data generated by previous surveillances and appraisals. The surveillances were primarily conducted in response to an inquiry from the management or reported to the residents by external sources or found in the Occurrence Reporting and Processing System (ORPS). The residents' surveillance findings were not analyzed and rolled up into programmatic or management issues.

4. The EH follow-up on issues identified by these oversight activities was very weak and not well focused.

CORRECTIVE ACTION PLAN

1.0 Weakness: EH oversight for ES&H was fragmented and uncoordinated.

Response: The Secretary's October 21, 1994, response to the Board provided a comprehensive exposition of the functions that the Department deemed necessary for an effective nuclear safety management program. An effective independent oversight system was identified as a principle element of that safety management program. This was accomplished by consolidating all independent oversight responsibilities for environment, safety, and health (ES&H) and safeguards and security (S&S) in a newly created Office of Oversight.

Milestone: 1.1 Office of Oversight created on December 17, 1994 (Action Completed)

2.0 Weakness: EH oversight was compliance oriented and did not hold DOE

line management accountable for failure to correct identified deficiencies.

Response: The primary focus of independent oversight is now on evaluation of DOE line management's accountability in managing safety. The Performance Objectives and Criteria, Inspection Guide, and the EH Residents Surveillance Procedures emphasize the line of inquiry in inspections, reviews, and surveillances must be on DOE line management's performance. Safety management systems are evaluated in accordance with three guiding principles: (a) line managers are responsible for safety; (b) comprehensive requirements exist, are appropriate and executed; (c) competence is commensurate with responsibilities. This approach also verifies how the systems are being implemented at the worker level by assessing selected implementing programs and technical disciplines at selected facilities.

This approach was followed in the recently completed comprehensive ES&H inspections of the Rocky Flats Environmental Management Project, the Idaho National Engineering National Laboratory, and the Savannah River Site.

Milestone:
- 2.0 Develop and issue EH Resident Surveillance Procedures
  Due Date: June 14, 1995 (Action Completed)
- 2.1 Develop and issue Performance Objectives and Criteria
  Due Date: March 31, 1996
- 2.2 Develop and issue Inspection Process Guide
  Due Date: May 31, 1996
- 2.4 Conduct Inspections, reviews and surveillances using the updated documents specified in 2.0 through 2.4
  Due Date: Ongoing

3.0 Weakness: EH Resident surveillance was not conducted on the basis of careful analysis of performance data.

Response: The Office of Oversight is preparing site profiles for the major DOE sites. The site profiles are prepared by analyzing data obtained from the Office of Oversight inspections, reviews, and special studies; EH resident surveillances; other internal and external reviews; and ORPS data. The profiles describe the key facilities, key ES&H issues, and summary of effectiveness at the sites. The site profiles will be maintained through the performance of periodic inspections, reviews, special studies and surveillance by the EH residents. The site profiles will provide a mechanism for targeting oversight on the basis of carefully analyzed performance data.

Milestone: 3.0 Prepare, validate and distribute site profiles for 11 major DOE sites.
Due Date: March 31, 1996.

4.0 Weakness: EH followup on identified deficiencies was weak.

Response: EH followup of the identified deficiencies would be conducted by the EH Resident Surveillances. Overdue line management responses will be addressed using EH Resident Procedure Controlling Surveillance Reporting.

Milestone: 3.1 Revise EH Resident Procedure Controlling Surveillance Reporting.
Due Date: February 1, 1996.

Milestone: 3.2 Evaluate the Y-12 Restart Process by conducting a surveillance of the Unreviewed Safety Question Determination (USQD) Process.
Due Date: January 31, 1996