DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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July 5, 1995

Mr. Mark Whitaker, EH-9
Department of Energy
1000 Independence Avenue, SW
Washington, D.C. 20585

Dear Mr. Whitaker:

Enclosed for your information and distribution are 20 Defense Nuclear Facilities Safety Board staff reports. The reports have been placed in our Public Reading Room.

Sincerely,

George W. Cunningham
Technical Director

Enclosures (20)

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

May 4, 1995

MEMORANDUM FOR: G. W. Cunningham, Technical Director

COPIES: Board Members

FROM: Robert F. Warther

SUBJECT: Report of Facility Representatives at Rocky Flats

1. **Purpose:** This report documents the findings of a trip to the Rocky Flats Environmental Technology Site (RFETS) to review the Department of Energy's (DOE) Facility Representative (FR) program.

2. **Summary:** This trip, planned as a review of the FR program revealed more significant concerns with the safety management programs in Buildings 371 and 771 at RFETS. A combination of changes to the system design, poor maintenance, deficient training and qualification, and inferior or nonexistent procedures have resulted in several ventilation system malfunctions. During a ventilation system flow reversal in Building 371, observed pressure and differential pressure parameters were inconsistent with the operating basis contained in the Safety Analysis Report (SAR), but allegedly did not violate the Limiting Condition for Operation (LCO). The SAR does not clearly define LCOs and associated surveillance requirements. Continued degradation of the ventilation system is evidenced by an increase in the average number of Data Acquisition System (DAS) alarms to about 2000 per day. As a result of the nearly continuous alarm condition, this system is not used by the operators. Additionally, qualified control room operators could not explain their indications on the utilities control room panel in Building 371.

   The FR Program has declined substantially since startup of Buildings 559 and 707. Only in the past couple of months has DOE Rocky Flats Field Office (DOE-RFFO) recognized the magnitude of this program's deterioration, and tasked two newly-hired managers to overhaul the FR program. These two individuals have developed a simple program of improvement and already completed several elements. The program has been in place less than one month, therefore, it is premature to judge the results of their efforts.

3. **Background:** The Defense Nuclear Facilities Safety Board (Board) Recommendation 92-2 was issued on May 28, 1992 to recommend improvements to DOE's Facility Representative Programs. Robert Warther of the Board's staff and David Boyd of System Planning Corporation (SPC) reviewed DOE-RFFO implementation of the FR Program. The review took place from April 17, 1995 through April 21, 1995.

4. **Discussion:** DOE-RFFO has established three FR programs. This review was limited to a review of the FRs assigned to the Operations Division in the Office of the Assistant Manager for Waste Management. FRs are also assigned to the Environmental Program Division in the Office of the Environmental Restoration (ER) Manager and Site Support Division in the Office of Site Support and Security.

a. FR Program at RFETS. The FR Programs in Buildings 559 and 707 at RFFO were evaluated as successful programs during startup of those facilities. According to RFFO management, many successful FRs were promoted to positions with increased responsibility, a desired goal of Recommendation 92-2. However, those personnel who left the FR Program to assume more important responsibilities were not replaced with junior personnel and a rigorous qualification program. As a result, RFFO now has only four FRs qualified in Buildings 559 and 707, and no FRs who completed qualification in Buildings 371 and 771. Some deficiencies noted which accelerated this program's degradation over the past three years include:

1. Senior management did not provide FRs clear direction and performance goals.

2. It is not clear that senior RFFO management has relied upon FR input in the recent past. This appears to be on the verge of change based on some preliminary indications. Paragraph 4.e discusses this comment in more detail.

3. FR performance at RFFO was brought to a head in September 1994 following criticality procedure violations in Building 771. A report issued by EH and personnel interviewed during this trip stated that the FR intentions to observe the pre-evolution brief were circumvented by EG&G personnel. Questions repeatedly asked by the FR were ignored by EG&G personnel. DOE-RFFO initiated an investigation into the occurrence, but specific follow-up action by senior RFFO management to strengthen the FR program was not taken for over five months following this unusual occurrence.

b. Corrective Actions for FR Program. Over time, RFFO senior management recognized the magnitude of these issues, and hired outside experts to assist with their resolution. One of the first actions initiated was to assign two new managers to the FR program. The Deputy Assistant Manager for Operations and Waste Management and the Division Director for Operations were both hired within the past month. These managers have taken a proactive approach to upgrade the FR program, meet the guidance of DOE-STD-1063-93 *Establishing and Maintaining a Facility Representative Program at DOE Nuclear Facilities* and restore the FR program. Following their arrival, the following improvements were immediately implemented:

1. The Deputy AM developed a detailed program plan for improvement. One of his first tasks was to relieve all nonqualified FRs of their FR duties pending qualification. This is consistent with a rigorous qualification program and the Nuclear Regulatory Commission's (NRC) Resident Inspector Program requirements.

2. Specific qualification deadlines were established for all FRs in training.

3. FR candidates have been relieved of all non-qualification duties. The two new managers observed that the FRs in training were distracted by numerous administrative and nonfacility tasks. This and the lack of specified qualification dates resulted in retarded qualification progress by the FR candidates.

4. All FRs, regardless of qualification status participate in weekly training seminars. These are conducted by the Deputy Assistant Manager for Operations and Waste Management and the Division Director for Operations and Waste Management. The Assistant Manager for Operations and Waste Management occasionally participates.

c. Qualification Requirements for FRs. RFFO requires written and oral boards prior to qualification. The Board's staff and outside experts reviewed the written examination bank, qualification training records, and reviewed the oral examination board process.

1. The written examination consists of approximately 160 unique questions. Most of the questions are related to generic, nuclear safety issues, and as written are not challenging to a capable FR candidate. However, most of these questions could be made appropriate for FR qualification by addition of facility-specific parameters. For example, a current question in the written question bank asks to explain the purpose of Limiting Conditions for Operations (LCOs). This question could be modified to explain the purpose of LCOs, and list all (or most) of the LCOs for the facility. As a second example, the question asking to list the locations of major components of a system could be revised to ask the candidate to draw and explain the system.

2. Several building specific questions are included in the written examination bank for Buildings 559, 707, and a limited number of building specific questions are available for Building 771. No facility-specific questions have been developed for Building 371. It is not clear that RFFO will develop Building 371-specific questions in time for qualification of personnel currently in training. Approximately 10 of the 160 questions are of limited value, and could be deleted.

3. The new managers have instituted a program of "dry-runs" or practice oral qualification boards. Three question types are posed in the dry runs and the final oral boards. First, direct question and direct answer questions are posed. Second, scenario type questions are posed. Third, "role-playing" questions are posed where the oral examiner can role-play an RFFO manager, building supervisor, recalcitrant operator, or other role.

4. No oral examination bank at RFFO exists. RFFO forms a qualification board of three individuals, some of whom have qualified previously on the facility. Additionally, the Deputy Manager or Manager of RFFO either sits the board, or administers questions prior to final candidate qualification. The Board's staff will observe an oral qualification board in the future.

5. Six FR qualification training records were reviewed and contents compared with requirements set forth in procedure ODP 5480.20. Relatively minor deficiencies were noted, including absence of final qualification letter, training course completion record not current as of the qualification date, missing oral board sheets, and lack of justification for waivers.

Based on these proposed improvements and their embryonic state, a complete assessment of the new management team's effect on the FR Program is premature.

d. FR Performance. This report previously stated that no FRs have qualified in Buildings 771 or 371. RFFO personnel determined that FR coverage was required for these buildings, and transferred two relatively senior FRs qualified on Buildings 559 and 707 to Buildings 771 and 371, without first requiring them to complete a building-specific qualification program. The Board's staff observed the FR performance for these two individuals. The FR for Building 371 was qualified in Building 707, and was assigned to 371 the week before the staff's visit. As a result, his knowledge of the site was very good, but his knowledge of Building 371 was, by his own admission, limited. The following paragraphs document observations in Building 371.

1. The FR was originally temporarily assigned to the building, and was not provided specific direction or tasking by senior management. As a result, he did not aggressively pursue training on systems in the building and his effectiveness was limited. He is now assigned to the facility for an indefinite period of time, and intends to initiate a more aggressive training program to understand systems and components of the facility.

2. During the staff's review of Building 371 with the FR, a ventilation system flow reversal occurred. Following the casualty, the FR discussed the significance of the occurrence with the Shift Manager in some detail. The FR was reasonably familiar with the LCOs and bases from the Safety Analysis Report (SAR). The Board's staff observed that the FR's diligence resulted in the appropriate classification of this occurrence. However, during these discussions, the Board's staff and outside expert (OE) noted other potentially more serious deficiencies.

   (a) The operators did not use alarm response procedures to respond to the upset. When the staff inquired as to why, a mixed response was provided. The control room operator stated that no procedures existed. The utility shift manager stated that procedures existed, but they were "no good" because they were in the wrong format. As a result, the utility shift manager drafted a short shift order to address future loss of recirculation fans.

   (b) Many Building 371 operations are governed by shift orders. The shift orders are not rigorously reviewed by engineering, and their use has not reduced the rate of occurrences for flow reversals. Shift orders were used in Building 707 prior to the Operational Readiness Review (ORR), and this violation of DOE Order 5480.19 was corrected. However, this lesson-learned was not transferred to Building 371. This area will be reviewed in the future in more detail.

   (c) The SAR does not clearly define conditions to satisfy the LCO for ventilation flows. Operational Safety Requirement (OSR) 7.3.2 Secondary Confinement System, states that to maintain the desire pressure differentials between Zone II, and Zone I and III, the Zone II systems are operated at "approximately" 0.3 inch e.g. vacuum relative to the outdoor atmosphere. Actual alarm points vary from room to room. The LCO states that a pressure-sensing device shall be operable and monitor pressure differential between each Zone II space and the outdoor atmosphere, and shall alarm in the utilities control room. The OSR does not

include a surveillance requirement for this LCO. As a result of this wording, the flow reversal from Zone II to Zone III is inconsistent with the safety basis, but does not violate the LCO.

(d) A combination of changes to the design of the control system, poor maintenance, deficient training and qualification, and inferior or no procedures have caused ventilation system malfunctions which have led to LCO violations and increased concerns for worker safety. Continued degradation of these Vital Safety Systems (VSS) is evidenced by Data Acquisition System (DAS) alarms which averaged about 500 per day for a number of years, then began increasing in 1993 to the present level of about 2000 per day. As a result of the nearly continuous alarm condition, this system's utility has become extremely limited, and is not used by the operators. A DOE-RFFO memorandum to EG&G dated April 20, 1995 identified concerns and requested immediate action to assure worker safety.

(e) The Building 371 Engineering Operability Evaluation (EOE) program is intended to identify and correct material deficiencies, but it does not address training and qualification or operating procedure problems which contribute to ventilation system unreliability. Following the flow reversal, the Board's staff and OE discussed control room indications with qualified watchstanders. The qualified watchstanders could not readily explain the readings and meanings of pressure and differential pressure meters and gages in the control room. In response to the same questions, the utilities shift manager provided a second response, and the qualified facility Shift Manager provided yet a third response.

The FR for Building 771 was also observed. He also qualified on Building 707 and transferred his qualifications to Building 771. He was more knowledgeable of facility-specific systems because he has been assigned to this building for over eight months.

e. FR Effectiveness. FRs for both buildings reviewed stated that the authorization bases are in a highly transient state. Many of the LCOs are subject to the reader's interpretation, and therefore, it is difficult to ensure adherence to the LCOs. Both FRs have reported their concerns to the Deputy Manager for the Field Office, who showed a priority list showing safety or authorization basis as his number one concern. Specific actions were not discussed as part of this review.

5. **Future Actions:** EG&G is addressing safety envelope issues using several processes in Buildings 371 and 771. These processes require further review by the DOE and the Board staff, because the analyses from these programs will be used to develop building LCOs and procedures. As stated previously, the Deputy Manager for RFFO has this as his number one item to reconcile.