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DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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93-0005537



September 24, 1993

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

Dear Secretary O'Leary:

Included in the U.S. Senate Report that accompanied the legislation that established the Board is the instruction "The Board is expected to raise the technical expertise of the Department substantially ...".

In the interval since its inception, the Board and its staff have conducted numerous visits to DOE defense nuclear facilities. A primary focus of these visits was to assess the technical competence of personnel, both federal and contractor. Observations during these visits have led the Board to focus considerable attention on DOE's need to improve the selection, training, and qualification of personnel associated with the defense nuclear facilities, especially the weapons complex, on the premise that properly trained and qualified personnel are essential for the protection of public health and safety. The Board has made eight sets of Recommendations since 1989 which address selection, training, and qualification problems, and transmitted a number of staff trip reports on the subject; three of the most recent trip reports are enclosed.

DOE initiated improvements to policies and standards governing selection, training, and qualification of defense nuclear facilities personnel in 1990 and 1991. Some of these upgrades were covered in DOE's Implementation Plan for Recommendation 90-1 and DOE Order 5480.20, *Personnel Selection, Qualification, Training, and Staffing at DOE Reactor and Non-Reactor Nuclear Facilities*. These improvements and others placing greater emphasis upon safety objectives and formalized conduct of operations constituted a major change in the framework by which DOE facilities are to be operated. However, bringing about changes of this magnitude is difficult and requires consistent, strong leadership at the senior levels.

Some successful facility training and qualification programs have been developed. For example, significant safety improvements and pre-operational testing were completed at the K-Reactor at the Savannah River Site and at the laboratory facility (Building 559) at the Rocky Flats Plant before resumption of operation; both of these restarts followed successful upgrades to training and qualification practices. More recently, the Board staff has found that the management of the RTF facility at Savannah River has also put in place an effective personnel qualification and training program. However, recent trips to certain other areas including the Savannah River Site F-Area, the Defense Waste Processing Facility, and the Oak Ridge Y-12 Plant reveal continuing, systemic problems in implementing Departmental Orders for selection, training, and qualification. Moreover, key planning and implementation documents for training have not been approved for most facilities more than two years after submission was required.

The Board is concerned over what appears to be considerable disparity among sites and facilities in the importance and priority accorded this aspect of safety assurance. Where line managers have taken strong initiatives, definite improvements have resulted. Unfortunately, there is also evidence that some line managers, both DOE and contractor, appear to be willing to accept a lower level of knowledge, understanding, and competency of operating staff than that which would result from more fully complying with DOE Orders.

It appears that Board pressures on restart of existing facilities and start-ups of new facilities provide more impetus for qualification and training programs than is generated by field office and contractor management. The Board much prefers that progress in this area come from the actions of senior DOE and contractor managers who have embraced the requirements and practices defined in DOE Orders and committed themselves to effecting sound training and qualification programs commensurate with the risk of nuclear facility operation.

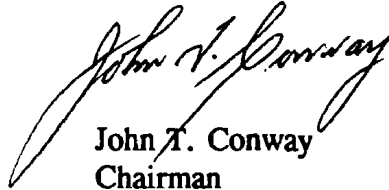
The Board cannot stress too much the important role that well-qualified and trained personnel play in providing both the public and workers with reasonable assurance of no undue risk to health and safety.

The Board believes that your continued direct interest and leadership are required to ensure:

- 1 the commitment of your managers, supervisors, and operators to the concept that the selection, training, and qualification requirements delineated in DOE orders and standards are essential to the assurance of safe operation of the DOE defense nuclear weapons complex and
- 2 the structuring and implementation of timely, effective programs for bringing to fulfillment the objective for upgrading of capabilities of personnel in the complex.

Board recommendations 92-2, 92-7 and 93-3 all relate to the issue of upgrades in the qualification and training of personnel with safety-related responsibilities within the DOE defense nuclear facility complex. The Board will look to the implementation plans responsive to these recommendations for results of your consideration of the observations made herein.

Sincerely,



John T. Conway
Chairman

3 Enclosures - See Below

c: M. Whitaker, Acting EH-6

Enclosures and copy of out going letter scanned into appropriate site specific database:

1. DNFSB memorandum, R. Arcaro to G.W. Cunningham, dated 8/17/93, "Savannah River Site, Defense Waste Processing Facility (DWPF), Training and Qualification Review" 93:5537
2. DNFSB memorandum, R. Arcaro to G.W. Cunningham, dated 8/26/93, "Rocky Flats, Training and Qualification Review, July 26-28, 1993," Trip Report 93:5538
3. DNFSB memorandum, J.J. McConnell to G.W. Cunningham, dated 9/14/93, "Training and Qualification at Oak Ridge," Trip Report for August 11-13, 1993 93:5539

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

August 17, 1993

MEMORANDUM FOR: G. W. Cunningham, Technical Director**COPIES:** Board Members**FROM:** Ralph Arcaro**SUBJECT:** Savannah River Site, Defense Waste Processing Facility,
Training and Qualification Review

1. **Purpose:** This memorandum describes and provides comment on the training and qualification of Department of Energy (DOE) and contractor personnel at the Savannah River Site (SRS) Defense Waste Processing Facility (DWPF).
2. **Summary:** The training and qualification programs of both the Department of Energy - Savannah River (DOE-SR) and Westinghouse Savannah River Company (WSRC) organizations were reviewed. The following summarizes the major findings of each of these reviews:
 - a. **DOE-SR:** DOE technical personnel responsible for the DWPF do not participate in a formal training and qualification program. The exception to this is the DOE Facility Representative. Of the five Facility Representatives assigned to DWPF, three are provisionally qualified. All are scheduled for final qualification prior to radioactive operations. Other technical personnel have assigned to them a Training Requirements Matrix which specifies training suggested for their individual needs. The following comments resulted from the review:
 1. The Facility Representatives' operational responsibilities do not change once full qualification is achieved. This situation limits the effectiveness of the qualification process and provides no incentive for the individuals to qualify.
 2. The Training Requirements Matrices are developed based on an individual's needs rather than the generic needs of the position. This technique requires additional work each time an individual is replaced or a new hiree arrives. A formal qualification process does not result from the Training Requirements Matrix.
 3. The Training Requirements Matrices are not required to be completed as a condition for employment. Emphasis on completion is dependent on the individual's supervisor.

b. **WSRC:** The contractor training and qualification programs at DWPF have improved since the DNFSB staff visit to the facility in July 1992. Improvements were noted in supervisor level of knowledge, training development, and records maintenance. Despite these noteworthy strides, additional effort is needed to fully comply with DOE Order 5480.20, *Personnel Selection, Qualification, Training, and Staffing Requirements at DOE Reactor and Non-Reactor Nuclear Facilities* and the DOE Guidelines and Standards regarding training and qualification. Much of this work is realized and scheduled by facility management. A notable exception to this statement is the fact that an operations supervisor training program distinct from and of greater depth than the operator program will not be fully developed and implemented prior to radioactive operations. The following additional observations were made:

1. The operations training shift ("fifth shift") has frequently been under-utilized as a training shift. Facility management has identified this problem and has committed to effectively using the fifth shift strictly for training.
2. Process emergency drill training is not mature enough to provide a significant contribution to the readiness of the facility to conduct radioactive operations.
3. Formal training and qualification programs for the various technical support personnel at the DWPF have not yet been fully developed in accordance with DOE Order 5480.20 and DOE-STD-1008-92 *Guide to Good Practices for Training of Technical Staff and Managers*.
4. Facility management has identified the need to conduct some training during shift operation to extend the qualification of individuals and develop mature shift operating crews.
5. Facility management assessments of training and qualification program quality require improvement. This situation has been identified by facility management.

3. **Background:** DNFSB Technical Staff member Ralph Arcaro and Outside Expert Richard L. Thompson visited the SRS DWPF July 6-8, 1993. At the time of the visit, the DWPF was preparing for Cold Chemical Runs as pre-operational tests for radiological waste operations currently scheduled for December 1994. The DNFSB staff had last reviewed training and qualification at DWPF during a visit to the facility in July 1992. Significant deficiencies included an incomplete operator qualification process, poor level of knowledge of DWPF operators and supervisors, and the maintenance of training and qualification records. An incident at DWPF in which the melter was flooded occurred in April 1993 which further identified deficiencies in training and qualification programs.

4. **Discussion:**

a. DOE-SR Technical Training

1. Facility Representatives: Facility Representatives (FRs) are the only DOE technical position at DWPF required to complete a formal training and qualification program. The FR training and qualification program has been developed by the DOE-SR Office of Training and the DOE line management for DWPF. The Office of Training has developed the procedures for training and qualification and has performed a needs analysis to determine required training. Line management has developed the qualification card for DWPF FRs and is responsible for developing and administering final qualification written and oral exams. Of the five FRs assigned to DWPF, three have completed their qualification process with the exception of a final oral qualification board. In this status, the FRs are considered "interim qualified". The duties and responsibilities of the FR will not change once full qualification has been achieved. It has been noted following other reviews of FR programs at SRS that this situation limits the significance of the oral board and final qualification.

2. Technical Staff: DOE technical staff assigned to DOE-SR do not participate in a formal training and qualification program. Although a formal needs analysis for these personnel is underway to determine training requirements, this analysis will not be used to develop a formal qualification program. The analysis results in a training requirements matrix (TRM) tailored for the individual incumbent rather than the specific job position. Although similar, this analysis is not equivalent to an analysis based on the needs of the job.

Completion of the TRM is not a requirement for the job. The emphasis placed on completing all training in the TRM is dependent on the supervisor. This loose training structure does not assure personnel are trained and qualified to perform the duties of their position as required by DOE Order 5700.6C Criterion 2.

b. Westinghouse Savannah River Company

1. Operator Training: Currently, the operators are following a "progressive" qualification program which requires successive levels of qualification prior to reaching the following distinct facility milestones:
 - (a) Cold Chemical Runs
 - (b) Waste Quals (operation with simulated waste)
 - (c) Radioactive Operations

Operators termed "qualified" today have completed the qualification process including all classroom and OJT training determined necessary for the first facility

milestone, Cold Chemical Runs. Additional training will be required for qualification for Waste Quals. All operators are scheduled to complete the full qualification process, including written, performance, and oral exams prior to radioactive operations.

DWPF management intends that the additional classroom training, OJT, etc. required for progressive qualification be administered during the facility's training or "fifth" shift. However, the effectiveness of the fifth shift training has recently been questioned by DWPF line management. Frequently, individuals have been removed from training to participate in other facility activities. Additionally, it has been noted that the shift is not fully scheduled with training evolutions, resulting in dead time or self-study. These problems were identified by the recently placed DWPF Operations Manager. DWPF management has since committed to effectively utilizing the fifth shift strictly for training and qualification.

Process emergency drill training is not mature enough to provide a significant contribution to the readiness of the facility to conduct radioactive operations. Some drill scenarios have been written and are currently conducted in the following three phase approach including discussion of the drill, a table-top walkthrough, and a facility walkthrough. Unannounced, real-time, simulated emergency drills have not yet been conducted. DWPF management has indicated that these types of drills will be added to the on-shift training program within approximately three months.

2. Supervisor Training: First line supervisors for DWPF were selected to be supervisors based on their seniority and maturity. To date, the supervisors have received no additional training over that of the operators they supervise, contrary to requirements of DOE Order 5480.20 and the guidance issued by DOE in DOE-STD-1061-93 - *Guide to Good Practices for the Selection, Training, and Qualification of Shift Supervisors*. Additionally, supervisors are not necessarily qualified on all positions they supervise. This situation is recognized by DWPF management as non-compliant with DOE Order 5480.20 which requires training supervisors to a higher standard than that of operators. An advanced training and qualification program for supervisors in accordance with DOE Order 5480.20 will not be fully implemented prior to radioactive operations. Similarly, supervisors will not be required, nor expected, to qualify on all positions they supervise before radioactive operations. Compensatory measures, including the use of Shift Technical Advisors and Shift Technical Engineers, are implemented, and these positions are permanent. However, this does not eliminate the need to expeditiously develop and implement a fully compliant supervisor training and qualification program.
4. Technical Support Personnel Training: Formal training and qualification programs for the various technical support personnel at the DWPF have not yet been fully developed in accordance with DOE Order 5480.20 and DOE-STD-1008-92 *Guide*

to Good Practices for Training of Technical Staff and Managers. Currently, training for technical support personnel is task-oriented. Personnel receive training and performance evaluations appropriate for a specific task such as USQ Evaluation. Facility-specific training has been provided on a periodic basis concurrent with operator training. This ad hoc method of providing facility specific training to the Shift Technical Engineers may limit their effectiveness while functioning as compensatory measures during radioactive operations.

5. **Personnel Interviews:** The DNFSB review team conducted interviews of four DWPF operators, two supervisors, a shift manager, and a shift technical engineer. Although it is realized this group represents only a small sample of the total number of personnel at DWPF, in general, the interviews indicated an improved effectiveness of training. Supervisors exhibited an improved level of knowledge over that observed in July 1992. Operators' level of knowledge, although also improved over July 1992, was not as strong or well articulated as that of the supervisors. One operator evidenced little process fundamentals knowledge and seemed to rely almost completely on procedures for requisite operational information. The shift manager and shift technical engineer interviewed exhibited strong knowledge, enthusiasm, and feeling of ownership.
6. **Records Maintenance:** Training and qualification records for DWPF personnel are generally maintained in accordance with DOE Order 5480.20. This is noted as an improvement since the last DNFSB training and qualification review in July 1992. The following deficiencies were noted:
 - (a) Shift Technical Engineer (STE) qualification is not documented. Two individuals were listed as qualified STEs, but their training jackets did not contain documentation of the qualification. Qualification standards (cards) are not used for STEs.
 - (b) Oral examinations are not documented in accordance with DOE STD-1011-92 - *DOE Guide to Good Practices for the Design, Development, and Implementation of Examinations*. Examiner questions and examinee responses are not recorded to provide objective evidence of the degree of success achieved by the examinee.
 - (c) An attendance sheet documenting an operators completion of remedial training was filed in the wrong training jacket.
7. **Quality Assurance of Training:** The methods used at DWPF to ensure personnel are qualified to perform the duties of their position include periodic meeting of the Training Review Committee and periodic surveillances conducted by WSRC QA and the Training Integration organization. A periodic surveillance of DWPF

maintenance OJT, conducted by the Training Integration Department was reviewed. The following deficiencies were noted:

- (a) Although the review discussion indicated three of the eighteen review criteria were not met, no findings were generated. In this way, corrective action can not be tracked or verified.**
- (b) In several instances, the review question or criterion did not provide a standard required to demonstrate compliance. This omission leaves the review unnecessarily subjective.**

Discussions with the DWPF Operations Manager indicated that he has identified needed improvement in the periodic management assessment of training and qualification programs.

CONCURRENCE/RECORD NOTE PAGE

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