

John T. Conway, Chairman
A.J. Eggenberger, Vice Chairman
Edson G. Case
John W. Crawford, Jr.
Herbert John Cecil Kouts

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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February 21, 1992

Mr. Richard A. Claytor
Assistant Secretary, DP-1
U.S. Department of Energy
Forrestal Building, Room 4A-014
1000 Independence Avenue, S.W.
Washington, DC 20585

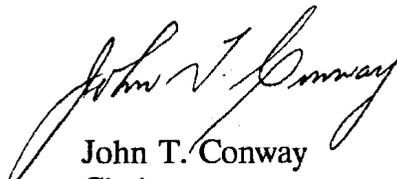
Dear Mr. Claytor:

Enclosed for your consideration and action, where appropriate, are a number of observations concerning the training and qualification of FB-line personnel at Savannah River Site (SRS). These observations were developed by Jay A. DeLoach of the Defense Nuclear Facilities Safety Board staff, and our outside experts, John F. Drain, Edward O. Dietrich, and Richard L. Thompson. These observations are based on a review of available documents, and discussions and interviews with Department of Energy (DOE) staff and contractor personnel at SRS from February 4-6, 1992.

Since this review, the Board has been briefed by DOE on February 11, 1992, concerning the status and plans for the FB-line. During that briefing, some of the Board representatives' observations were addressed and current status provided.

If you need further information, please let me know.

Sincerely,


John T. Conway
Chairman

Enclosure

cc:
All Board Members, w/enclosure
G.W. Cunningham, TD, w/enclosure
Mario Fiori, DOE
OS(2)

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

February 11, 1992

MEMORANDUM FOR: Board Members
G.W. Cunningham

FROM: Jay A. DeLoach 

SUBJECT: Trip Report - Savannah River Site FB-line, Operator Training and Qualification Review, February 4-6, 1992

A. SUMMARY:

During this trip, four Board representatives, comprised of a Board technical staff member, Mr. Jay A. DeLoach, and three outside experts, Messrs. John F. Drain, Edward O. Dietrich, and Richard L. Thompson, visited the Savannah River Site (SRS) Separations area, specifically the FB-line where ^{239}Pu is separated from scrap material. The FB-line is operated by the Westinghouse Savannah River Company (WSRC) for DOE. The purpose of the visit was to observe the status of the training and qualification programs related to FB-line. The Board's representatives received briefings from the DOE Savannah River (SR) Office and WSRC on the training and qualification given to their respective personnel that operate, or supervise the operations at FB-line. Training and qualification documentation, examinations, records, and program plans were reviewed. In addition, interviews were conducted with several WSRC training instructors, operators, and supervisors, as well as selected DOE-SR Facility Representatives and DOE-SR Separations Division personnel.

It was encouraging to listen to senior WSRC and DOE-SR management articulate the various elements of conduct of operations, training, operator qualification, and lessons learned programs, however, many of these "programs" were restricted to training of new personnel. Those already qualified were not covered by plans presented. In addition, we did not observe much substance in the way of scheduling, detailed plans, or tracking that demonstrated the implementation of these programs.

The Separations area, specifically the FB-line, has addressed several areas of concern in their proposed programs with regard to the public and worker health and safety. There is concern based on our observations that many of these programs have not matured to that expected to ensure safe operation of a plutonium facility. Most significantly, the knowledge level in fundamentals, safety limits, and radiological protection displayed by the WSRC operators and supervisors is significantly below that which one would expect, and below that observed for similar Rocky Flats personnel. Assuming these interviews to be a representative sample, Separations area is not up to the level that Rocky Flats, Building 559, had achieved over one year ago.

B. SPECIFICS:

1. Training and Qualification Programs: Minimal classroom training presently exists, except in areas such as General Employee Training and Radiation Worker Training. The full training and qualification programs have not matured to a point that was

expected for restart of other DP facilities. Specific observations concerning the training and qualification programs are:

- a. Fundamental knowledge training is not currently required for FB-line operators, production supervisors, shift managers, or operation managers. The WSRC Nuclear Materials Production Division (NMPD) training department is developing the first fundamental knowledge training course (called Basic Engineering Training (BET)) which is tentatively scheduled to commence on March 1, 1992, for Separations personnel. However, there is no definitive plan or schedule to train those Separations personnel assigned to all FB-line.

- b. Much credit is taken for the extensive Operational Safety Requirements (OSR) training of operators and supervisors which was recently completed. The DNFSB representatives examined the lesson plans for this training. The elements were comprehensive and ambitious, but the training time allowed for operators was only four hours. Questioning of the operators, instructors, and supervisors by the DNFSB representatives disclosed that the training had not "taken". Recognition and understanding of the term FSAR (Facility Safety Analysis Report) was lacking in operators.

- c. As an attempt to compensate for a lack of on-shift operator and supervisor

fundamental knowledge, WSRC has committed to DOE to have one or more Shift Technical Engineers (STE) on each shift. The STE would be a degreed engineer who is either a system engineer or a cognizant engineer. When WSRC has upgraded their operating shift personnel with a fundamental knowledge level of their systems then the STEs will be removed from the shift. We were unable to determine if the proposed STEs would be undergoing any training in the conduct of operations or other operational areas.

- d. It was reported that the FB-line operators had been trained on a limited number of the elements of DOE Order 5480.19, Conduct of Operations. However, as of this visit, the complete operator course on the Conduct of Operations is still in development and would not be ready until May or June 1992. There was no plan or schedule for the training of FB-line operators for this proposed course. Additionally, the Facility Manager (since October 1991) has not been formally trained in the Conduct of Operations philosophy. This fact appeared not to have been recognized by senior WSRC management and DOE personnel until questioned by DNFSB representatives.
- e. The FB-line operator training and qualification program consists of an initial 16 day general and site training sessions followed by performance of the on-the-job training (OJT) and completing the qualification card for any one of the 10 operator positions. The operator trainee is given 180 days to complete

the qualification card. There are no intermediate goals or periodic tracking of qualification status during this 180 day period. If the candidate fails to complete the qualification card during this 180 day cycle, then the candidate may start the whole cycle over again including the initial 16 days of training. For example, in the interview of one operator it was learned that he had been assigned to FB-line for three years and had just completed his first qualification station.

- f. Written examinations are given on the classroom material, and as part of the OJT and Job Performance Evaluation (JPE) process. The exams reviewed were relatively short (required 10 to 35 minutes to complete), multiple choice tests that were not particularly challenging. Oral examinations, as we understand them, are not given. Credit for oral examination is being taken on the basis that the OJT requires a limited amount of walk-through demonstration or simulation of process operations with discussion between the trainee and the evaluator. Qualified operators and job performance evaluators sign off the qualification steps, thus certifying completion of the individual requirements in the trainees' qualification cards. Production Supervisors may have personal knowledge from observation of the trainee prior to final sign off of the qualification card. The Shift Managers and the Facility Manager each sign off for final operator qualification, but this sign off is based only upon a paper review, not oral examination. Thus, there is no

quality control check by first line supervision and above.

- g. At the time of this visit, the Shift Manager and Facility Manager were not required by any administrative procedure to be qualified or previously qualified as an operator or supervisor at any of the operating stations at FB-line prior to selection to these positions. Nevertheless, it should be noted that qualified or previously qualified personnel had been chosen for Shift Managers. However, the current Facility Manager has not been a previously qualified operator or supervisor at FB-line. The Shift Manager is responsible for running the shift operations, and supervising at least four production supervisors and ten operators. The Facility Manager is also the final signature for qualification of production supervisors and operators.
- h. One of the salient features of the briefings on the training program was the fact that this is the program being used for new employees who have not yet qualified on an operator position (estimated to be 25% of the work force). Those operators who have already qualified are not requalifying to the levels of the program described even though the FB-Line has not operated for two years. In the absence of a base-line date for qualification and/or a policy for periodic requalification, operators with existing qualifications are considered "qualified." In point of fact, in a program so heavily oriented toward OJT and operating performance demonstration, it would appear that operating the

various FB-line processes may be the only way to accomplish a qualification or requalification check-out.

2. Operator Interviews: Six FB-line operators and two production supervisors were interviewed by the DNFSB representatives to discern their level of knowledge on safety related aspects of their jobs. The operators and supervisors displayed significant weaknesses with regard to knowledge of fundamentals, safety limits, radiation protection, and the associated hazards with ionizing radiation. A WSRC and a DOE representative were present at each of the interviews. Specific examples of level of knowledge deficiencies were:

- a. Two Nuclear Safety Specialist and two Production Supervisors interviewed could not explain the basis of the Operational Safety Requirements (OSR), and the relationship of the OSR to procedures and postings.
- b. A Nuclear Safety Specialist and Production Supervisor could not explain the basis of the criticality limits, and could not define or explain the multiplication factor, k_{eff} . Both of these items were covered in the recent OSR training course.
- c. Four of four personnel interviewed could not state the SRS exposure limit of 2 Rem/yr whole body. Eight of the eight personnel could not state their

lifetime exposure. Four out of eight individuals could not remember their annual exposure received in 1991. Three out of four individuals interviewed could not state the primary ionizing radiation associated with ^{239}Pu , or the ingestion toxicity associated with this radionuclide.

- d. A Production Supervisor could not state a single safety-related system of the 22 identified in a WSRC memorandum NMP-SBT-91-0121 Rev 1 dated December 31, 1991.
 - e. When posed with the problem of how to respond to exceeding a criticality limit, a production supervisor gave the answer "notify the supervisor."
 - f. The majority of personnel when asked what is the concern associated with exceeding a criticality limit responded with "the plant would be shut down".
3. Configuration Management: The 22 safety-related systems, as defined in the WSRC memorandum NMP-SBT-91-0121 Rev 1 dated December 31, 1991, are still not under configuration management control. Placement of the safety-related systems under configuration management control was a restart criteria commitment made by WSRC to DOE-SR. Functional testing of these systems is ongoing, but determining final, as-built configuration of these systems is not planned in the near future. This restricts the flow down of design basis information to procedures, training and qualification

of operators, and the surveillances for system operability. A significant example is the ventilation system which is relied upon to maintain the required differential pressure in the production rooms. WSRC stated they have had difficulty developing tests to verify or check the system functions as identified on their current drawings. To date, numerous discrepancies between the drawings and test results have occurred. The power supplies and interlock functions of the ventilation system as tested differed from what is described in the current as-built drawings.

4. Order Compliance: In the area of order compliance, programmatic work has been conducted and a status report is available. Implementation and auditing of implementation is just beginning. WSRC and DOE-SR management is active and interested, but the priority is not at a high level at DOE Headquarters as compared to that observed at Rocky Flats. Some consensus standards have been reviewed, but they are only addressing those incorporated by DOE orders. Specific observations are:

- a. The DOE-SR commented that the handling of the order compliance process is different for each of the PSOs - mainly DP, EM, NE, and ER. They further commented that there is no single point of contact in DOE Headquarters to deal with on this matter.
- b. WSRC and DOE SR Office have submitted to DOE Headquarters many

Compliance Schedule Assessment (CSA), Short Term Compliance Schedule (STCS), and Exemption packages regarding Order compliance. According to WSRC and DOE SR, these packages have been at DOE Headquarters, some for over nine months. Just recently, according to DOE-SR personnel, a few packages on Fire Protection have been returned with comments. The emphasis for order compliance packages by DOE Headquarters personnel has been on SRS K-reactor and Rocky Flats Building 559. The review and approval process of order compliance packages for other facilities, until very recently, had been delayed by DOE Headquarters.

5. DOE-SR Facility Representative Program: The DOE-SR Facility Representative Program is not defined, developed, or implemented for the Separations facilities. The following observations were made in the review of the DOE-SR Facility Representative Program:
 - a. The Facility Representative Program has no firm guidance, standard, or order from DOE Headquarters that defines their functions and responsibilities with respect to facility operation and safety, such as "stop work" authority. The Facility Representatives are referenced in two DOE orders - DOE Order 5000.3A "Occurrence Reporting System", and DOE Order 5480.19, "Conduct of Operations".

- b. The facility specific qualification cards for the Facility Representatives have not been developed to date. The General Qualification cards have been drafted but are in the final approval cycle at the DOE Savannah River Office.
 - c. The Facility Representatives (8 personnel for 14 Separations facilities at SRS) are not qualified on the proposed qualification program. Only five Facility Representatives are projected to be qualified by December 1992. In addition, qualification goals have not been established for the current Facility Representatives.
6. Lessons Learned: This is a facility that considers itself almost ready to resume operations. It was obvious to see how little that DOE-SR and WSRC had profited little from the lessons learned at other DP facilities. The elements of the Board's Recommendation 90-1 on training and qualification, paraphrased during one briefing as one-line bullets by the WSRC Site Training Integration Manager, were not articulated as the thrust of the training program for Separations including FB-line until late 1991. From the description given above of the current training, it is hard to discern the application of any lessons learned.

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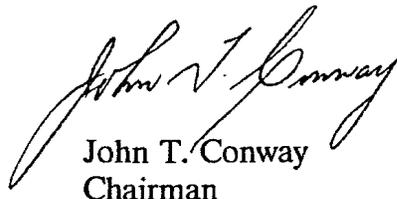
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