

John T. Conway, Chairman  
A.J. Eggenberger, Vice Chairman  
John W. Crawford, Jr.  
Joseph J. DiNunno  
Herbert John Cecil Kouts

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

625 Indiana Avenue, NW, Suite 700, Washington, D.C. 20004  
(202) 208-6400



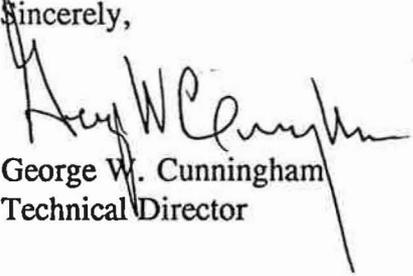
April 10, 1995

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

Dear Mr. Whitaker:

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

Sincerely,

  
George W. Cunningham  
Technical Director

Enclosures (8)

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

May 4, 1994

MEMORANDUM FOR: G.W. Cunningham, Technical Director

COPIES: Board Members

FROM: Paul F. Gubanc

SUBJECT: Report of Visits to the Savannah River Site (SRS) Replacement Tritium Facility (RTF) to Review Conduct of Operations on January 12-14 and March 4, 1994.

1. **Purpose:** This memorandum describes and provides comments on the Conduct of Operations at the Savannah River Site (SRS) Replacement Tritium Facility (RTF). A DNFSB staff member, Paul Gubanc, and outside expert, Douglas Volgenau, performed an assessment of the Conduct of Operations at RTF from January 12 to 14, 1994. This assessment was conducted to provide the DNFSB an evaluation of the Conduct of Operations at RTF prior to the start of War Reserve Production operations in March 1994. An *unannounced* follow-up evaluation was conducted by Douglas Volgenau on March 4, 1994.
2. **Summary:** The DNFSB review team found many positive aspects relative to the Conduct of Operations at the RTF. However, the level of performance achieved by RTF was expected to exceed that of older facilities which have considerably greater challenges to overcome in conducting operations. There is a distinct opportunity for RTF to become a "model facility" for the defense weapons complex; however, for this to occur RTF standards must continue to be raised above those prevalent throughout the complex. The reviews identified two key areas of concern.
  - a. Establishing a superior level of Conduct of Operations throughout RTF is being significantly hindered by the poor performance of the Westinghouse Savannah River Company (WSRC) Health Physics (HP) Organization. This organization is not being required to meet the same standards of performance as the rest of facility personnel. Radiological control practices were also noted to be very weak.
  - b. The management self-assessment program at RTF requires reexamination and redirection to ensure the effectiveness of assessments. The current program is not fully understood or used by subordinate managers in RTF.

- 3. Background:** With DOE approval, tritium was first introduced into the RTF on June 17, 1993. Since then, the RTF conducted systems tests using initially 2%, then 50% concentrations of tritium in deuterium. Production qualifications for operating personnel were underway at the time of the January review. The DNFSB staff reviews evaluated the RTF conduct of operations against the requirements of DOE Order 5480.19, *Conduct of Operations Requirements for DOE Facilities*, prior to the start of production operations which commenced in March 1994.

The assessments were conducted through the observation of specific evolutions, the monitoring of general watchstanding practices, the review of logs and records, discussions with operators, supervisors, WSRC management and the DOE Facility Representatives, observation of maintenance practices, and the administration of oral examinations.

- 4. Discussion:** The following comments and observations concerning the RTF resulted from the reviews. Except as specifically noted, these observations are from the January review.
- a. Although not planned as a particular focus during the review, the performance of the Health Physics (HP) Organization at RTF was observed and noted to be in need of significant improvement. Below are some examples of areas requiring improvement:
1. Many operation and maintenance functions are performed in radiologically controlled areas (RCA's). Proper radiological work practices, such as waste and exposure minimization, are not routinely considered prior to conducting these functions.
  2. On several occasions, HP personnel were observed using informal or improper verbal communications. These deficiencies were not immediately corrected by the HP Supervisor or the RTF Operations Manager, both of whom were in attendance.
  3. An HP Technician was noted in an RCA not wearing the prescribed protective clothing (i.e., missing plastic bootie).
  4. Radiological Work Permits (RWPs) were not consistent with one another regarding protective clothing requirements for RCA entry (e.g., requiring use of safety glasses for beta shielding).
  5. When one of the RWPs was revised during the review, there was no deliberate effort made to review the sign-in log to assure all personnel signed in on that RWP were aware that it had been revised (e.g., DNFSB review team).
  6. An HP supervisor was noted by the review team to be weak in some aspects of his responsibilities. (He was disqualified by the RTF HP manager within hours of the

review team identifying these observations to the manager. The DNFSB team stressed to senior DOE and WSRC management the importance of assuring that this action was merited and not based solely on the DNFSB review team's observation.)

7. During the follow-up review, a HP Technician was observed conducting a routine daily swipe survey. The survey required in excess of a dozen swipes. None of the swipes was marked with either a number or location. When asked how he kept them straight regarding location, he replied that he remembered each one. The HP Counting Room was also noted to suffer from poor housekeeping.
- b. In October 1993, RTF implemented a management self-assessment program. However, this program in its present form lacks effectiveness. The program areas for assessment are not prioritized by need, which results in some critical areas of interest not being evaluated for an extended period. Full implementation of the program is planned by the end of 1994. The current schedule will result in some areas, which are identified as requiring review on a quarterly basis, not being looked at for nearly a year. Subordinate facility managers do not fully understand or use the program. Deficiencies are entered and tracked by computer. The individual responsible for this is overloaded trying to keep up to date on the status. As a result, little apparent use is made of the computer data.
- c. From October 1993 to January 1994, there were five occurrences/incidents the principal cause of which was personnel-error related. In most cases, it appeared that proper action to correct the causes was identified, but not all supervisors and operators had been briefed on the incident causes, and the lessons learned, in a timely manner.
- d. The conduct of a weekly surveillance requirement to sample a TCAP (Thermal Cycling Absorption Process) Deuterium Storage Bed was observed. The evolution, except for the actual sampling and the manual manipulation of several valves, is conducted in the control room. The manual valve lineup sheet listed the correct procedure, but did not indicate the effective revision of this procedure. The control room operator did not follow the procedure requirements in one step. This step required the controlling of a pressure control valve in manual to raise pressure in the storage bed. He initially controlled the valve in manual to the 5% open position, but when the process showed little change he placed the valve in automatic and the valve fully opened. Contributing to this violation was the fact that the procedure did not specify how to control the valve when operating in manual.
- e. A monthly preventive maintenance (PM) action to conduct a loop check on a Delta F Corporation Series 100 Oxygen Analyzer (SOP T-706516) was observed. This PM is conducted inside an RCA and requires two people. Many deficiencies were noted during the conduct of this routine PM. There was no consideration given to proper radiological

controls work practices at any time before or during the PM performance. A temporary change to the procedure had been incompletely entered and this was not noted by either the maintenance supervisor or technicians. The procedure uses a valve numbering system that could easily confuse the technician since it does not refer to the actual valve numbers, but rather to generic numbers on an attachment to the procedure. Neither the instrument or work permit numbers were filled in on the sign-off sheet as required. Some additional minor procedure errors were noted.

- f. A corrective maintenance task to clean one of the unloading line glovebox ion chambers (SOP T-706506) was observed. The following comments apply:
1. Prerequisites called out in the procedure do not require confirmation by the user.
  2. A "DI Instruction" accompanying the procedure included a handwritten caution statement to deenergize and disconnect the picoammeter. This step is NOT included in the maintenance procedure. Also including action steps in caution statements is in violation of DOE Order 5480.19.
  3. "Repeat backs" from the control room over the intercom required prompting by the maintenance personnel.
  4. The E&I Technicians performing the maintenance installed adhesive paper labels in the electrical supply cabinet to supplement existing cable labeling. They stated there were no controls on use of such labels. Such labels are not in accordance with the existing label fire ratings and their installation degrades the fire rating. This was pointed out to facility management.
  5. Minor deficiencies were appropriately reported to the control room. Follow-up with the control room supervisor identified that he was unaware of where minor deficiency repair request forms were located.
  6. Masking tape was discovered obscuring a glovebox High Activity alarm light on Unloading Line A.
  7. The maintenance evolution took much longer than scheduled due to inadequate cleaning materials being staged. The technicians indicated that there were several methods to identify improvements to the procedure but that there was no preferred or standard modus operandi to report these improvements.
- g. A Shift Supervisor Oral Board, for Loading Operations, was given to an individual who was currently standing shift supervisor watches in the facility. This oral board served to

certify him for the next phase of operations. The conduct of the oral board was observed. The individual demonstrated a lack of knowledge in some fundamentals and his board technique was weak. Most of the questions asked were at the operator level of knowledge and did not emphasize the increased requirements of a supervisor. The operator did not seem to demonstrate the confidence and knowledge required of a shift supervisor. He was certified as a shift supervisor by the board. A separate Oral Board for a Shift Manager was also observed with no deficiencies noted.

- h. A scheduled on-the-job (OJT) training and job performance measure (JPM) examination were observed for loading room operators. The trainer and examiner both demonstrated excellent knowledge and techniques. One deficiency common to both of the above evolutions was that the necessary equipment for reservoir assembly was not prepositioned inside the training glovebox in a manner to duplicate the conditions found during actual loading operations.

During the follow-up review, an OJT exercise was observed on the Distributed Control System. The trainer was very quiet and unenthusiatic. This, combined with plant limitations which precluded actual operations, made the training of minimal value.

- i. There is no difference in the qualification and certification requirements for Control Room Supervisors and Shift Managers. Facility management indicated that Shift Managers are positioned through availability of a position and by observation of performance. There is no formal means to substantiate how the Shift Manager, whose position has greater responsibility, is certified to stand that watch.
- j. The terms Control Room Supervisor and Shift Manager are used interchangeably on a routine basis. This could be confusing to operators, HP and maintenance personnel.
- k. The installation of a lockout prior to the replacement of a rupture disc was observed. Two deficiencies were noted. The individual conducting the lockout did not inform the control room prior to his taking an action that would result in the actuation of an alarm. Much of the lockout was conducted inside an RCA, yet no prior consideration was given to waste or exposure minimization. A review of the Lockout/Tagout Log revealed few errors.
- l. The Flame/Spark Permit Log contained a permit that had not been completely entered in the log and was improperly left open over a shift change. The follow-up review found no significant deficiencies.
- m. A review of operator logs revealed one deficiency. Prior to shift change, the Control Room Supervisor had not reviewed the Control Room Operator's log for the previous two shifts as required by the Conduct of Operations Manual.

- n. The Facility Operations Manager writes both the standing orders and the daily shift orders. He has placed direction in the daily shift orders that are intended to be effective for a longer time than just a day or so. In several cases, it was noted that these had not been institutionalized, as was his intent.
  - o. Morning and evening shift turnover briefings were attended. The room where these briefings are held has loud background noise which makes it very difficult for people to hear. Several times the briefers talking could not be heard by many in the room, yet few questions were asked. At two briefings, the Limiting Conditions for Operations (LCO) status board did not list all of the LCO's in effect or listed the incorrect LCO number.
  - p. Operator turnover in the control room was witnessed with no major deficiencies noted.
- 5. Future Staff Actions:** The staff intends to continue to monitor RTF production operations and evaluate actions taken to correct deficiencies noted during this and other reviews.