

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

# DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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92-0003223

June 17, 1992

The Honorable Leo P. Duffy  
Assistant Secretary for Environmental  
Restoration and Waste Management  
U.S. Department of Energy  
Washington, D.C. 20585

Dear Mr. Duffy:

Enclosed for your consideration and action, where appropriate, are a number of observations concerning operator training and qualification, and conduct of operations implementation at FB-Line, HB-Line, and 1H-Evaporator at Savannah River Site (SRS). These observations were developed by our technical staff and outside experts during briefings, discussions and interviews with Department of Energy (DOE) and contractor personnel at SRS from May 5-8, 1992.

If you need further information, please let me know.

Sincerely,

John T. Conway  
Chairman

Enclosure:  
Savannah River Site (SRS) Trip Report: May 5-8, 1992

Identical Letter Sent to The Honorable Richard A. Claytor

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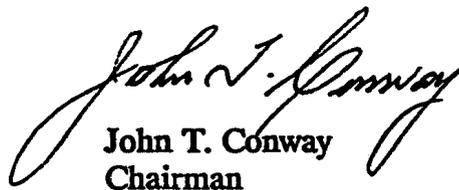
The Honorable Richard A. Claytor  
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# DEFENSE NUCLEAR FACILITIES SAFETY BOARD

June 16, 1992

MEMORANDUM FOR: Board Members  
G.W. Cunningham, Technical Director

FROM: David Lowe  
Ralph Arcaro  
Matthew Moury

SUBJECT: Savannah River Site (SRS) Trip Report: May 5-8, 1992

1. **Background** - From May 5-8, representatives of the Defense Nuclear Facilities Safety Board (DNFSB) conducted a review of operations, training, and qualification at the FB-Line, HB-Line, and 242-1H Evaporator. DNFSB Technical Staff included David Lowe (team leader), Ralph Arcaro and Matthew Moury, and outside experts Richard Thompson, David Boyd and Doug Volgenau.
2. **Summary** - Several general comments can be drawn from our review of the three SRS facilities:
  - a. Operator level of knowledge is generally inadequate with major deficiencies noted in radiation and engineering fundamentals, identification of health and safety issues, Operational Safety Requirements (OSRs), and conduct of operations. Additionally, the principles contained in DNFSB Recommendation 90-1, which outlined a methodology to upgrade operator training and qualification prior to restarting a nuclear facility, are not being incorporated into restart preparations for SRS non-reactor facilities.
  - b. The WSRC ORR and DOE ORR/ORE process is inadequate in assessing the readiness of a facility to operate in a safe manner while ensuring that the public (including workers) health and safety is adequately protected. These reviews tend to be "paperwork" reviews instead of "performance-based" reviews of facility operational readiness.
  - c. There is no effective mechanism to ensure lessons-learned from DOE and contractor ORR/OREs are transmitted to other facilities within the site or throughout the DOE Weapons Complex. The lessons-learned identified at each of the HB-Line, FB-Line, and 1H-Evaporator on the conduct of ORR/OREs were similar despite having not been conducted concurrently. In fact, all three DOE ORR/OREs indicated that the contractor ORR was inadequate.

3. **FB-Line** - In February 1992, representatives from the DNFSB performed a review of the facility's preparations for restart. Following this review, representatives from Department of Energy (DOE) Defense Programs (DP) and Savannah River field office (SR), and Westinghouse Savannah River Company (WSRC) provided a presentation to the Board regarding their preparations for restart. It was in follow-up to both the site visit and the DOE/WSRC presentation that our review was conducted.

The FB-Line is shutdown. A WSRC Operational Readiness Review (ORR) and a DOE Operational Readiness Evaluation (ORE) were conducted in December 1991. Several findings resulting from these reviews are required to be resolved prior to restart of the facility. Restart of the Cation and Recovery Dissolver is scheduled for August 25, 1992 followed by restart of the Precipitator and Mechanical Line on October 26, 1992.

a. **Summary:** During the visit, the DNFSB review team examined the areas of restart readiness, training, conduct of operations, and safety system identification. DOE-SR and WSRC presentations, facility walkthroughs, and operator interviews were conducted. Based on this review, it is apparent that little has been done to correct the major deficiency discovered during the previous DNFSB review, i.e., most improvement programs in place at FB-Line have not matured to the point where they can be of significant value. Several statements were made by senior DOE-SR and WSRC managers that support this conclusion; "this program will be implemented by..." and "we expect to be in full compliance by...".

b. **Discussion:**

**FB-Line Restart:** The FB-Line production mission is not clear considering the decision not to resume production at Rocky Flats. Alternatives to the production of plutonium metal for long-term storage, do not appear to have been fully considered and factored into FB-Line restart plans.

Following the DOE ORE in December 1991, WSRC and DOE planned to resume FB-Line operations in February 1992. This schedule has now slipped to August 1992. Although over six months have been added to the schedule, minimal effort is planned to take corrective action on Category II (non-restart) findings even though some have safety significance, and if corrected would enhance safe operation of the facility.

In preparation for the August restart, WSRC will use an Independent Verification Team (IVT) to ensure restart findings are closed adequately. The IVT will verify that administrative control systems have not drastically changed since completion of the ORR and ORE and will also review qualification of new personnel. Although the IVT may have some of the same members as the ORR team, it is not planned to be a comprehensive review of readiness or a continuation of the original ORR. Rather, it is an evaluation to ensure that the findings of the previous ORR and ORE are closed. The IVT is anticipated to last approximately four weeks.

Following the WSRC IVT, an unspecified DOE-SR review of approximately four weeks will be

conducted. The scope of this review is still not specified. This sequence and schedule requires that all upgrade and corrective actions be completed by late June 1992. Considering the scope of work ahead for the FB-Line, this schedule appears optimistic.

**Training and Qualification:** WSRC presentations on FB-Line training and qualification and personnel interviews indicate some limited improvement in the training deficiencies noted during the DNFSB visit in February 1992. An additional day of training has been added each month in order to correct training deficiencies and conduct continuing training. Most improvements, although planned, have not been fully implemented. Specific comments follow:

- WSRC does not intend to requalify fissionable material handlers (process operators) prior to restart as required by DOE Order 5480.20, *Personnel Selection, Qualification, Training and Staffing Requirements at DOE Reactor and Non-Reactor Nuclear Facilities*, Chapter IV.6, which states "if the facility is infrequently operated, certification shall be reinstated prior to facility operation by administering written and oral examinations to ensure adequate operational knowledge". WSRC stated they would not be in compliance with this section of DOE Order 5480.20 until December 1992. This Order is dated February 20, 1991 so there has been ample time for this requirement to have been factored into the FB-Line restart plans. Additionally, the principles contained in DNFSB Recommendation 90-1, which outlined a methodology to upgrade operator training and qualification prior to restarting a nuclear facility, were not incorporated into FB-Line restart plans.
- The Separations Training Implementation Matrix required to implement DOE Order 5480.20 is still in draft and has not yet been approved by DOE-SR. DOE Order 5480.20, paragraph 10.a, states that this "...matrix shall be submitted to the cognizant field organization by November 8, 1991". In this matrix, the implementation status for numerous requirements was given as "incrementally implemented". The definition of this status was questioned by both the DNFSB team and DOE-SR representatives. WSRC could not provide an adequate explanation.
- The use of oral qualification boards is scheduled to start the summer of 1992 with FB-Line selected as the pilot facility. Current qualified operators will only require an oral board for biennial requalification.
- Supervisors are not trained to a higher standard than operators. No additional training or examination is required for supervisor qualification. This is not in compliance with DOE Order 5480.20, Chapter IV.5.c, which states "...training shall be of increased depth to reflect the added responsibility of the supervisor position", and DOE Order 5480.5, *Safety of Nuclear Facilities*, paragraph 10.a.(10) which states "...supervisor training shall require an understanding in greater depth than...operator training".
- Engineering fundamentals training in chemistry principles and other pertinent

subjects are not required prior to restart despite being required by DOE Order 5480.20, Chapter IV.5, and DOE Order 5480.19, *Conduct of Operations Requirements for DOE Facilities*, Chapter XIII.C.2.

- Process technical engineers will be designated Engineers on Shift for technical support during operations as a compensatory measure. The specific functions and responsibilities of the Engineer on Shift have not been defined. The process technical engineers receive no training on the specifics of FB-Line process operations. Training is limited to Operational Safety Requirements (OSRs), Safety Related Systems, and Conduct of Operations. It is not clear how effective a compensatory measure these Engineers on Shift provide if some degree of operations training and qualification is not required.
- Personnel interviews indicate that general radiological fundamental knowledge continues to be deficient. Weaknesses were observed in the areas of criticality safety, sources of ionizing radiation, and expected radiation levels at operating stations.
- Training on Operational Safety Requirements (OSRs) has been implemented. A senior operator and a process technical engineer showed adequate knowledge of OSRs.

**Conduct of Operations:** WSRC has started an aggressive training program for Conduct of Operations using both classroom lectures and field work. The audience for this training includes all levels of operations: operators, support personnel, supervisors and management. As is the case in many of WSRC improvement programs, the individual conduct of operations elements have not been fully implemented in the facility, but only in the written procedures. Observations made during facility walkthroughs by the DNFSB review team and during personnel interviews indicate that the philosophies embodied in "conduct of operations" have not been fully grasped by FB-Line personnel. The following observations are provided:

- During a facility walkthrough numerous types of tags were observed hanging on equipment, among these were: Do Not Operate (DNO), Caution, Warning, QA Hold, and Information tags. It was explained to us by facility personnel that each of these tags had a specific purpose and governing procedure, but the Shift Supervisor only had "control" of the Do Not Operate (DNO) and Caution tags in a manner consistent with the requirements of DOE Order 5480.19. The other tags either did not have any controls or were controlled by an organization other than Operations. As an example, the "Warning" tag was explained to us as used at boundaries to warn personnel of potential dangers which appears to be a duplication of the "Caution" tag. But, the controls exercised on "Warning" tags are considerably less than those required for a "Caution" tag, including: no record of "Warning" tags is maintained by facility personnel, no periodic review of the record and active "Warning" tags, and no review of the continuing need for those tags. It

may be appropriate to reevaluate the use of the various "tag" systems and to bring these systems under the umbrella of "conduct of operations".

- A control room operator was not familiar with various tags hung on control room panels and equipment.
- Miscellaneous trash, loose cover plates on electrical panels, and corrosion on piping and equipment were observed in various spaces.
- A supervisor interviewed stated that the conduct of operations training reemphasized what they have been doing all along.

**Safety Systems:** FB-Line does not have a facility specific Operational Safety Requirements (OSR). The development of a FB-Line specific OSR is not required by DOE prior to restart. As a compensatory measure, FB-Line management has designated 21 "components" as "Safety Related Systems". WSRC contends that the designation of these safety related systems and the associated administrative controls that will be implemented at startup to meet the requirements of an OSR. WSRC representatives stated and DOE-SR representatives agreed that lack of resources was the primary reason for not creating an FB-Line specific OSR prior to startup. The current schedule is for a FB-Line OSR to be approved in 1994 and the facility to enter a "transition" status around that timeframe. Therefore, the new OSR will be for a "transition" facility not for an operational facility.

Safety Related Systems require specific functional testing prior to operation and corrective action should they become inoperable. However, what is missing is operator control of the configuration or operational status of these systems, such as a status board or log (Reference: DOE Order 5480.19, Chapter VIII).

In addition to Safety Related Systems, there also exists controls over other systems dependent on their relative importance to safety, termed design class. The four levels of design class are nuclear safety (NS), critical protection (CP), process support (PS), and general services (GS). All designated Safety Related Systems are either NS or CP, but all NS and CP systems are not Safety Related Systems. This is a result of a very specific definition of NS and CP systems that includes all aspects of plant safety and support to plant safety. However, the selection criteria for Safety Related Systems is not so encompassing. Safety Related Systems are those systems that are either accounted for in Safety Analysis Report (SAR) calculations or support such systems. These criteria have resulted in several systems conspicuously missing from the Safety Related Systems list, including: fire detection and suppression systems, instrument air system, and the electrical distribution system.

Differential pressure gauges used to measure glovebox (differential pressure between a glovebox and the room) and room (differential pressure between the room and the corridor) vacuum do not require periodic calibration since they are classified as Category 2 measuring and test equipment (M&TE). The WSRC 1Q Manual provides the following definitions:

Category 1: M&TE used: to determine acceptability of the physical, mechanical, electrical, radiological, environmental, and chemical characteristics of items, products, processes, systems, and structures; ... and for the protection of health and safety of personnel and the environment. Scheduled calibration is required.

Category 2: M&TE used for reference only. Scheduled calibration is not required.

The rationale given for these gauges not being classified as Category 1 M&TE is that they do not provide a safety function, but are merely for reference only. An exhaust fan inlet low vacuum alarm provides the safety function for ensuring room and glovebox vacuum, but this alarm does not sense pressure in each of the individual gloveboxes or rooms. Therefore, one can postulate several scenarios (e.g., blocked ventilation duct) where this alarm would not actuate, but a loss of vacuum in a particular room or glovebox would exist. Good practice suggests that operators should ensure that room/glovebox vacuum is acceptable prior to entering the room or conducting glovebox operations. This may indeed be the normal practice in Separations today, but staking worker safety on a gauge of unknown calibration is certainly not good practice.

**Material Holdup in Exhaust Duct System:** FB-Line has implemented a duct cleanout program similar to that conducted at Rocky Flats in response to DNFSB Recommendation 90-6. This program has reduced the amount of Pu-239 in FB-Line ducts from approximately 2790 grams (interim assay) to approximately 620 grams (final assay). A video of the ducts before and after cleaning reveals that the major material holdups have been removed. The remaining material is spread out over several ducts and is below the 400 gram limit per duct as defined in the 90-6 Implementation Plan. The approved criteria for handling future accumulations is:

"The cleanout criteria for the Mechanical Line exhaust system is 1020 grams Pu-239 reported as twice the measured value or the minimum detectable value using non-destructive assay techniques. The 1020 grams limit allows for the 620 grams remaining in the duct after cleaning plus an additional 400 grams accumulation. This would be consistent with the policy established for RFP."

This criteria is not consistent with the DNFSB Recommendation 90-6 Implementation Plan for Rocky Flats. The Rocky Flats criteria is that the total accumulation (not the additional accumulation) is limited to 400 grams in any single duct.

4. HB-Line - The WSRC ORR and DOE-SR ORE for HB-Line restart was conducted in parallel in June 1991. Phase I operation (Pu-238 Scrap Recovery Facility) started on July 19, 1991 and Phase III operation (Pu-238 Plutonium Oxide Facility) started on December 13, 1991. Since the original startup, operations have been curtailed for various reasons, including: Phase I operations shutdown from July 25 - September 30, 1991 for recovery from several personnel contamination occurrences, and all HB-Line "discretionary radioactive material processing limited" since March 20, 1992 due to an Unreviewed Safety Question (USQ) concerning the H/F-Canyon stack liner seismic capability (Occurrence Report SR-WSRC-SEPGEN-1992-0002).

a. **Summary:** During the visit, the DNFSB review team examined the areas of restart readiness, training, conduct of operations, and the status of safety documentation. DOE-SR and WSRC presentations, facility walkthroughs, and operator interviews were conducted.

b. **Discussion:**

**Safety Documentation Status:** HB-Line safety documentation include the Safety Analysis Reports (SARs), Operational Safety Requirements (OSRs), and Technical Standards. The SARs were prepared from 1983-1986 and a limited revision was made in July 1991 to reflect maximum batch sizes (twice the nominal batch size) and ICRP-30 dose factors. An updated SAR is scheduled to be prepared in the 1995 timeframe.

HB-Line is the only SRS Separations facility to have a facility specific OSR. The OSR was approved in July 1991 and resulted in the development of 30 Limiting Conditions of Operations (LCOs). The Technical Standards were updated in July 1991 to reflect the revised SAR and OSR.

A list of safety-related systems was developed in February 1991 to "provide a link between the existing safety documentation and the new Configuration Management program". This list is based on safety systems listed in the SAR, incorporated in OSRs, or controlled by Technical Standards. There are 14 HB-Line safety-related systems. Some of these systems are not incorporated into the OSR, including: Instrument Air System, Nuclear Incident Monitors, and Cabinet/Glovebox Confinement.

**WSRC ORR:** The WSRC ORR was conducted June 10-21, 1991. The Team Leader stated that the ORR "evaluated all pertinent factors of: plant and hardware; administrative systems; and personnel". Further discussions revealed that the ORR did not review several safety-related areas, including: an evaluation of operator knowledge and qualification (interviews) or an evaluation of personnel performance when confronted with abnormal or emergency situations (drills) because these areas were beyond the scope of the ORR. It was not clear why these and other safety-related areas were beyond the scope of the ORR.

Actions in response to ORR findings and exceptions were described as "punchlist" items which indicate they were treated as narrowly defined deficiencies. It may have been appropriate to use these findings as indicators of more general problems which require analysis in order to identify root causes and define corrective actions.

One of the conclusions of the DOE-SR ORE was that the WSRC ORR was inadequate, but there was no attempt by DOE-SR to require WSRC to conduct an adequate ORR. It is not clear what the purpose of the contractor ORR is if DOE acknowledges that the contractor conducted an inadequate ORR, but still allows the facility to continue the restart process.

**DOE-SR ORE:** The DOE-SR ORE was conducted in parallel with the WSRC ORR during the period June 15-24, 1991. It was not clear how the ORE evaluated the adequacy of the WSRC

ORR since they were conducted in parallel. DOE-SR Separations management stated that there has been a shift in policy concerning the sequencing of events leading to facility startup including when contractor ORRs and DOE OREs would take place. It appears that this policy change is the result of lessons-learned from the FB-Line ORR/ORE process.

**Conduct of Operations:** HB-Line is in process of implementing conduct of operations. Most of the conduct of operations areas as identified in DOE Order 5480.19 have been implemented in procedures and operations personnel have received initial training. But, the real measure of conduct of operations implementation is the effect it has on facility operations. The following observations were noted during a walkthrough of HB-Line:

- The Phase III supervisor was asked how he would respond to an alarm on one of the Phase III control room panels. He retrieved a binder with the alarm response procedures in it and started to explain how he would use the procedure. DNFSB representatives noted that all three alarm response procedures (Alarm Actions for Pu-238 Process; Alarm Action for Fire Suppression System; and Alarm Action for Air System Failure) were "working copies" and were only valid for 30 days after issue, which was May 20, 1991. A check of these procedures against the master procedure record indicated that all three of these procedures were superseded in the July-October 1991 timeframe.
- A discussion with the Phase III Supervisor and Process Technical Engineering Manager revealed a general lack of appreciation for the procedural compliance aspects of conduct of operations as described in DOE Order 5480.19. After discovering three available alarm response procedures which were superseded, members of the DNFSB review team asked how the procedures were used. The supervisor indicated that use of the procedure depended on the operator's familiarity (the operator is not required to memorize immediate actions contained in these procedures) with them since these procedures are classified "Training and Reference (T&R)" procedures. T&R procedures are not required to be followed verbatim or required to be referred to after completion of immediate actions, they are merely available for training and reference by the operator if the operator chooses to use them. The manager agreed with this policy and stated that there would always be subtle differences in the use of procedures. This is not in keeping with the procedural compliance requirements outlined in DOE Order 5480.19, Chapter XVI.
- The caution tag record was not audited as required by DOE Order 5480.19, Chapter IX.C.9.c.
- In some cases, tags on control panels obscured instrumentation. This is not in accordance with DOE Order 5480.19, Chapter IX.
- A round sheet was not correctly filled out in that readings were missing and not explained as required by DOE Order 5480.19, Chapter II.C.4.

- Observations similar to those already discussed for FB-Line were noted in the areas of multiple "tag" systems and calibration of safety-related glovebox and room differential pressure gauges.

The range and number of conduct of operations related deficiencies observed at HB-Line during a limited walkthrough indicate that implementation of conduct of operations at HB-Line is still in its infancy and currently can not be relied upon as an additional measure of safety.

**Training and Qualification:** A review of the HB-Line operator training and qualification program was conducted using WSRC presentations and the resulting discussions, training and qualification record reviews, and oral interviews of selected operators and supervisors. The state of operator qualification and knowledge level is similar to that at FB-Line which was previously discussed. The following comments are provided:

- The training and qualification process for HB-Line operators consist of about 2 weeks of general and facility training, 2 weeks of qualification area training, several months of On-the-Job Training (OJT), and final qualification by Job Performance Evaluations (JPE).
- There are four operator qualification stations for HB-Line: Phases I, II, and III, and Auxiliary. OJT guides were approved about a month ago for Phase I operators, the remaining OJT guides are in development. JPE guides are approved for all four stations.
- Written examinations administered to evaluate classroom knowledge consist of multiple choice, true-false, and short answer questions. They are not challenging and do not adequately evaluate the individuals level of knowledge.
- The use of oral qualification boards is scheduled to start later in 1992. Current qualified operators will be required to take an oral board only for biennial requalification.
- Engineering fundamentals training (chemistry, heat transfer, etc.) has not started for HB-Line operators, but some training is planned for later in 1992. It appears that this training is being provided to upgrade operator knowledge, but will not be a requirement for operator requalification despite being required by DOE Order 5480.20, Chapter IV.5, and DOE Order 5480.19, Chapter XIII.C.2.
- A supervisor and operator proficiency program has not been established for operating Separations facilities, such as HB-Line, as required by DOE Order 5480.20, Chapter IV.6.

DNFSB representatives interviewed six (out of a total of 29) qualified operators and supervisors, two process engineers, two health physics (HP) technicians, and two maintenance technicians.

In general, weaknesses were noted in radiation protection fundamentals, engineering fundamentals, worker health and safety issues, OSRs, and conduct of operations. The following observations are provided to give an idea of the type of deficiencies noted during the interviews:

- A process operator could not describe the hazards of neutron and beta radiation.
- A process operator and a maintenance mechanic could not explain the difference between radiation and contamination.
- A process operator could not state the differential pressure requirements for glovebox operations.
- A process operator could not explain the purpose of the tank purge system or safety concerns if purge air is lost.
- A process operator could not relate Operational Safety Requirements to technical limits.
- A process engineer was weak in knowledge level of the SAR, OSR, and basic radiological protection practices.
- A Phase III supervisor and maintenance technician were knowledgeable in all areas questioned.

**Occurrence Reporting Program:** There have been 31 occurrence reports in the period July 1, 1991 to May 1, 1992. None of these occurrences has an approved final report. It was not clear where the delay was in approving the final reports: WSRC, DOE-SR, or the DOE-DP program manager. DOE-SR and WSRC Nuclear Material Processing Division (NMPD) senior management stated that they are aware of this problem and are attempting to fix it.

**DOE Facility Representative Program:** The SRS Facility Representative program has been established with procedures governing Facility Representative responsibilities, training and qualification being approved this week. DOE-SR Separations is required to rewrite qualification cards to the standardized format and continue the qualification process. Separations expects the initial five facility representatives to complete qualifications in November-December 1992. The HB-Line Facility Representative was interviewed and he had good knowledge of what his responsibilities were with regard to facility operations.

5. 242-1H Evaporator - The 242-1H Evaporator receives supernate from the H-Area tank farm which stores high-level radioactive waste generated from separations operations. The evaporator performs a single stage evaporation to reduce the quantity of stored wastes. The distillate is condensed, passed through an ion exchanger to remove cesium and then sent to the Effluent Treatment Facility (ETF) for further treatment and storage. The concentrated waste is returned to the tank farm for storage. The evaporator began operation in 1963 and was

shutdown in 1988 following a series of incidents. The root causes of these incidents were: (1) degraded material condition of evaporation system; (2) inadequate procedures; (3) deficient personnel knowledge and skill; and (4) informal conduct of operations. The facility completed a WSRC ORR and a DOE ORR (Note: EM facilities conduct ORRs instead of OREs), and are closing out the final ORR findings in preparation for restart. DOE-SR and WSRC believe that they will be ready to operate after State approval of the Tank Farm Waste Water Permit or Federal Facilities Compliance Agreement. This could occur anytime from "2 weeks to 9 months".

a. **Summary:** The DNFSB review team toured the 1H-Evaporator area and received briefings on the startup program, WSRC ORR, DOE ORR, training and qualifications, conduct of operations, and facility representative program status. Many of these programs are newly implemented and it is premature to assess their effectiveness.

b. **Discussion:**

**Training and Qualification:** The training program is well founded with a defined path forward, however it is a new program and it is too soon to assess the programs effectiveness. The following comments are provided:

- The training plan does not address any additional level of training or qualification for supervisory personnel as required by DOE Order 5480.20, Chapter IV.5.
- As part of the operator qualification process, the evaporator recently completed cold run operations that provided operators with OJT and training drills, but these drills did not include performance of an emergency shutdown of the evaporator even though the evaporator was shutdown several times. Waste Management line management missed valuable opportunities to conduct continuing training by drilling their operators.

**Conduct of Operations:** All operators have received 16 hours of training on principles of conduct of operations followed by 8 hours of specific topic training (e.g. shift turnover, tagouts, etc). The facility has incrementally implemented DOE Order 5480.19 with three chapters remaining to be fully implemented.

During a walkthrough of the 1H-Evaporator area the following items were identified:

- The control room operator was asked what his actions were for a High-High level alarm, he responded by saying that he would get the appropriate procedure from a binder of alarm response procedures. The control room operator could not find the applicable procedure. Based on a cursory review of the alarm response procedures there appeared to be several procedure numbers missing indicating the possibility that other alarm response procedures were also missing.

- The Radiation Work Permit (RWP) posted outside the control room building refers to a status board for required protective clothing. The information provided on the status board was not approved, signed, or dated by the appropriate management. This practice does not provide the operator with the knowledge that the appropriate organizations prepared and reviewed these requirements.
- Several valve labels were lying on the ground underneath an instrument air valve panel. The wire attaching the labels to the valves appeared to be rusted through. A more permanent mechanism for attaching valve labels should be considered.
- The operator aid logbook was reviewed and some deficiencies were noted in that operator aids were removed and lined out in the logbook instead of the appropriate line management authorizing their removal. It is not apparent if these operator aids were properly removed. Also, several operator aids were noted in the control room that should be considered for inclusion in the operator aid program.

A member of the DNFSB review team observed a classroom training session on Conduct of Operations. The topic observed was "Assessment Techniques". The audience consisted of operators from the Waste Management Division and the instructor was a waste management facility manager. While understanding that this is only a single data point, the following observations were noted:

- The letter of the requirements of Conduct of Operations with regard to self assessment and deficiency correction were presented to the class.
- The lesson plan for the class was prepared for supervisors. Adaptation for operators was the responsibility of the instructor. It was not apparent that the instructor had reviewed the lesson plan and modified the presentation for the operators. In one instance the instructor did not understand the purpose of one of the presentation viewgraphs. He removed it from view and continued with his own explanation.
- The instructor described jury-rigging equipment as strictly a management problem. It was encouraging to note that the instructor realized his responsibility as a manager to communicate standards and the requirements of conduct of operations to the operators. However, the manager did not take the opportunity to stress the importance of the operator's personal dedication to conduct of operations. The operators may have been left with the impression that conduct of operations was only a management responsibility.

**Facility Representative Program:** DOE-SR is developing a formal qualification program for facility representatives. In the interim, the 1H-Evaporator Facility Representative, who is also responsible for the H-Area Tank Farm, has attended training on DOE Operations, Surveillance Training, and an abbreviated course on the evaporator system. Based on informal discussions with the Facility Representative, it appeared that he is competent and has a good engineering

background (BS Nuclear Engineering and experience as a Systems Engineer at a nuclear utility). His only apparent weakness is a lack of "operational" experience.

**WSRC ORR:** The WSRC ORR was conducted in a twenty-two week period from April to August 1991. The team was composed of one WSRC employee (Team Leader) and eleven subcontractors. A total of 32 restart findings and 26 post-restart findings were identified. All restart findings have been closed. The following comments are provided:

- The independence of the ORR team leader is open to question since that he is in the WSRC Waste Management and Environmental Restoration Division.
- The ORR was a paperwork review and did not adequately address the root causes of the previous shutdown. As an example, the ORR did not assess the level of knowledge of the operators by interviews or examination. The only assessment of their knowledge and skills was a paperwork review to ensure the operators had been to the correct training courses.

**DOE ORR:** The DOE ORR team was formed in June 1991 and the field work was conducted in August 1991. The ORR team was comprised of DOE headquarters and DOE-SR personnel. Eighteen restart findings and 79 non-restart findings were identified. A single restart finding is open, that overhead tanks and underground lines do not meet secondary containment requirements of the Resource Conservation and Recovery Act (RCRA). This finding will be resolved with approval of the Tank Farm Waste Water Permit or the Federal Facilities Compliance Agreement. The following comments on the DOE ORR are provided:

- The Rocky Flats Building 559 ORR plan was used in developing the 1H-Evaporator ORR plan.
- The ORR team members did not close out findings. The DOE Facility Representative closed out the findings with surveillances. The surveillances were later reviewed and accepted by the ORR team members.
- The DOE ORR did not assess DOE-SR support capabilities or the Facility Representative.
- No oral boards were conducted, only walkthroughs of operating procedures.

The DOE ORR was conducted in August 1991, but there does not appear to be a "mini-ORR" planned to verify the operational readiness of the facility prior to restart.