

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

January 17, 1995

**MEMORANDUM**  
**FOR:** G. W. Cunningham, Technical Director  
**COPIES:** Board Members  
**FROM:** J. T. Arcano, Jr.  
**SUBJECT:** Savannah River Site (SRS) - In-Tank Precipitation (ITP) Order Compliance Review (November 30-December 2, 1994)

1. **Purpose:** This trip report documents a Defense Nuclear Facilities Safety Board (DNFSB) technical staff (T. Arcano, M. Merritt, Outside Expert R. West) November 30-December 2, 1994, review of the Westinghouse Savannah River Company (WSRC) In-Tank Precipitation Facility Order compliance program.
2. **Summary:** The ITP facility is in the early stages of implementing continuing adherence assessments into its Order compliance program. Several weaknesses in the program were identified by DNFSB staff:
  - a. Senior facility management appears knowledgeable of, but uninvolved in, Order compliance efforts. This lack of involvement appears to have contributed to uneven performance across the Order compliance functional areas reviewed by DNFSB staff. However, the recently assigned WSRC ITP facility manager indicated that he will be more directly involved in the Order compliance effort.
  - b. The majority of the adherence Order compliance assessments sampled were not adherence-based and in some areas were incomplete. Guidance for conducting assessments is fragmented and is inadequate regarding the conduct of adherence assessments, especially in view of the training provided.
  - c. No adherence Order compliance assessment was conducted or is planned for U.S. Department of Energy (DOE) Order 5480.31, *Startup and Restart of Nuclear Facilities*, despite the fact that a Readiness Self-Assessment (RSA) and WSRC Operational Readiness Review (ORR) had just been conducted.
  - d. WSRC does not plan to assess compliance to DOE Order 5481.1B, *Safety Analysis and Review*, despite the fact that ITP safety analysis documentation was prepared to this Order.
  - e. A review of the DOE Savannah River Office (SRO) Order compliance package for DOE Order 5700.6C, *Quality Assurance*, revealed an incomplete and inadequate product.
3. **Background:** The ITP facility will separate high-level waste supernate into

concentrated high-level waste and low-level waste fractions. ITP is currently scheduled to start up in June 1995. WSRC conducted its initial administrative (phase 1) Order compliance assessment at SRS on a facility-by-facility basis from mid-1992 to mid-1993. This approach was found to not be cost-effective since many common procedural controls are used sitewide. A revised plan was established in the summer of 1993 to require assessment of a mix of facility specific and sitewide requirements. This revised compliance effort was accomplished at ITP in late 1993. As a prerequisite to ITP startup, an RSA was conducted by ITP line management between June - July 1994 and serves as the baseline for the ITP adherence (phase 2) Order compliance assessment. In May 1994 guidance was provided to accomplish adherence assessments using the WSRC SCD-4 Manual, *Operational Readiness Functional Area Requirements*. A comparison was made between the RSA and SCD-4 requirements, and additional "delta" assessments were conducted to satisfy the new direction. Delta assessments were completed in August 1994. The SCD-4 Manual is the source for the continuing adherence assessment program at ITP.

4. **Discussion:** WSRC High Level Waste (HLW) Management personnel indicated that they have assessed compliance to 45 of the 52 Orders of interest to the DNFSB which they believe are applicable to ITP. (Discussion of the 7 Orders not assessed is provided in Attachment 1.) This DNFSB staff review focused on the WSRC ITP Order compliance program and sampled the resulting compliance packages for DOE Orders concerning training and qualification, conduct of operations, quality assurance, radiological protection and occurrence reporting.

Senior WSRC ITP line management is not directly involved in assessing Order compliance, but rather, has delegated this effort to the Order compliance coordinator. This became apparent during DNFSB staff discussions with management and their lack of participation during the review. This lack of involvement by senior line management appears to have contributed to uneven performance of assessments across the functional areas. However, the recently assigned facility manager indicated that he will be more directly involved in the Order compliance effort. Key issues noted by DNFSB staff are summarized below and the details are provided in Attachment 1:

- a. WSRC Order Compliance Assessment Program Administration: Direction for conducting compliance assessments is contained in two procedures in the WSRC DOE Directives Administration Manual 8B, two procedures in the S4 Manual and one procedure in the WSRC Management Requirements and Procedures Manual 1B. The guidance for conducting administrative assessments is adequate. However, the guidance for conducting adherence assessments lacks details for conducting assessments. Training requirements are lacking for managers and assessors. The DNFSB staff believes these requirements may be necessary based on the quality of many of the assessments reviewed, and the fragmentation of assessment guidance. SCD-4 Manual criteria have been used to develop HLW Management Division "Self-Assessment Cards" which form the basis of the continuing adherence assessment program.
- b. Review of WSRC Order Compliance Assessment Results: A sampling of the Order compliance packages revealed that:

1. Phase 1 administrative Order compliance packages appeared to be in order, except for DOE Order 5700.6C, *Quality Assurance*.
  2. The majority of the Phase 2 adherence Order compliance assessments sampled were not adherence-based, but rather, were administrative in nature. In the areas of training and quality assurance, these assessments did not fully address key requirements of DOE Orders 5480.20, *Personnel Selection, Qualification, Training, and Staffing Requirements at DOE Reactor and Non-Reactor Nuclear Facilities*, and 5700.6C.
  3. No adherence Order compliance assessment was conducted or is planned for DOE Order 5480.31, *Startup and Restart of Nuclear Facilities*, despite the fact that an RSA and WSRC ORR had just been conducted.
  4. The WSRC ITP continuing adherence assessment program has not yet been fully implemented. The limited sample of six conduct of operations assessments available in the areas reviewed was mostly not adherence-based.
  5. WSRC has indicated that DOE Order 5481.1B, *Safety Analysis and Review*, is not applicable since the Order has been cancelled by DOE Order 5480.23, *Nuclear Safety Analysis Reports*, for nuclear facilities. However, the ITP safety analysis report, *Additional Analysis For Defense Waste Processing Facility (DWPF) Feed Preparation by In-Tank Processing*, WSRC-SA-15, Revision 5 of October 1994, is written in accordance with DOE Order 5481.1B. Because no Basis for Interim Operation (BIO) has been written per DOE Order 5480.23, it appears that WSRC should either produce a BIO or assess compliance to DOE Order 5481.1B.
- c. WSRC Oversight of ITP Order Compliance Effort The DOE SRO *Program Plan for High Level Waste Order Compliance Program*, issued in March 1994, calls for WSRC to conduct oversight and independent verification of the High Level Waste Order compliance process. Further, it calls for the WSRC Quality Assurance organization to conduct and document a formal assessment which evaluates the process, procedure adherence, and the basis and validity of conclusions. WSRC personnel indicated that the only oversight of the Order compliance program was conducted by the WSRC ORR board, and that this did not meet the requirements of the Program Plan.
- d. DOE SRO Oversight of WSRC Adherence Order Compliance: No DOE program exists or is planned to oversee WSRC ITP continuing adherence assessments.
- e. DOE SRO Order Compliance Program: DNFSB staff conducted a limited sampling of the SRO Order compliance program. Compliance assessment data for DOE Order 5700.6C, *Quality Assurance*, was reviewed and discussed with the DOE person responsible for the assessment. The person responsible was unable to describe the difference between a phase 1 administrative assessment and a phase

2 adherence assessment. This person was also unable to describe the contents of the DOE Order 5700.6C compliance package, which was confusing at best. (It should be noted that this package had been fully approved, to the level of DOE SRO Assistant Manager for High Level Waste.) The DOE SRO HLW Order compliance coordinator indicated that DOE personnel would be retrained on Order compliance, and that all DOE SRO Order compliance packages would be reviewed again for adequacy. DNFSB staff will sample the DOE packages after DOE SRO has convinced itself of their adequacy.

5. **Future Staff Action:** The DNFSB staff will:

- a. Follow-up on the implementation of the WSRC continuing adherence assessment program.
- b. Sample DOE SRO Order compliance packages after DOE SRO has assured itself of their adequacy.
- c. Continue to review other Order compliance packages in conjunction with ongoing DNFSB staff functional area reviews.

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Attachment 1 - Detailed Comments on WSRC ITP Order Compliance Program

1. ***Assessment Program Administration:*** The basic documents for conducting compliance assessments are WSRC DOE Directives Administration Manual 8B, Procedures DAP-5, *Conduct of WSRC Compliance Assessment - Phase I* and DAP-6, *Conduct of WSRC Compliance Assessment - Phase II*. DAP-5 provides a methodology for conducting administrative assessments and is supplemented at the High Level Waste (HLW) Division level by S4 Manual Procedure ADM 30, *Regulatory Requirements Compliance Control Procedure*. The DAP-6 procedure is general in nature while specific guidance for the assessment program is contained in the WSRC Management Requirements and Procedures (MRP) Manual 1B, Procedure MRP 5.15, *Self-Assessment*. MRP 5.15 is also supplemented by a HLW S4 Manual Procedure ADM-40, *Continuous Self-Assessment Program*.

SCD-4 Manual criteria have been used to develop HLW Management Division "Self-Assessment Cards" which form the basis of the continuing adherence assessment program.

The WSRC ITP Order compliance program addresses 45 of the 52 Orders of Interest to the DNFSB. WSRC sitewide Order compliance efforts have resulted in the development of administrative Compliance Assessment and Implementation Reports ("CAIR Packages") for the majority of these 45 Orders. The 7 Orders which WSRC believes are not applicable to ITP include: DOE Orders 5400.3- *Hazardous and Radioactive Mixed Waste Program* (cancelled), 5480.5- *Safety of Nuclear Facilities* (cancelled), 5480.6- *Safety of DOE-Owned Reactors*, 5480.25- *Safety of Accelerator Facilities*, 5480.30-

*Reactor Design Criteria, 5481.1B- Safety Analysis and Review* (superseded by DOE Order 5480.23 for nuclear facilities), and 5632.11- *Physical Protection of Unclassified, Irradiated Reactor Fuel in Transit* (cancelled).

ITP "Order compliance upgrade reports" were to be developed to amplify the site compliance CAIR packages with information specific to ITP. However, for DOE Orders for which there were no company generic CAIR packages developed, ITP facility was to develop "stand alone" administrative Compliance Assessment Packages (CAPs).

2. **DOE Order 5480.20, Personnel Selection, Qualification, Training, and Staffing Requirements at DOE Reactor and Non-Reactor Nuclear Facilities:** The Training Implementation Matrix (TIM) has scheduled ITP compliance with DOE Order 5480.20 except for continuing training (December 31, 1994) and management and supervisory personnel training requirements (December 31, 1996). There are no outstanding Requests For Approvals (RFAs) (formally indicating noncompliance) for this Order. The DNFSB staff Order compliance review focused on the following areas:
  - a. **Certification Program.** The facility intended to certify operators and supervisors after the completion of the self-assessment. A decision was made in August 1994 as to the method and positions to certify. As a result, no RSA assessment was made of this topic and no delta assessment was conducted although it would have been appropriate.
  - b. **Qualification Program.** A WSRC assessment to verify that requirements are met before qualification is granted only checked that the qualification cards contained this requirement and did not verify that it was being adhered to. Another WSRC assessor did make a thorough review of qualification cards to ensure that they were completed properly and found only one deficiency. A third WSRC assessor interviewed operators and supervisors and made appropriate remarks about the level of knowledge.
  - c. **Maintenance Personnel Qualifications.** No assessment requirement could be found for technician and maintenance personnel qualification and maintenance personnel training on safety-related systems which are considered to be significant areas of training requiring assessment.
  - d. **On-The-Job (OJT) Performance.** WSRC adherence assessment consisted of only observing OJT for a general operator (the initial qualification position which cannot perform any system operations). The line of inquiry for the assessment required observation of the training to ensure that it is related to job duties. There were no comments concerning the performance of the training and therefore, the assessment was not adherence-based.
  - e. **Classroom Training.** Similar to the OJT assessment, the line of inquiry for classroom training required observation to ensure training is job related. The assessor found the observed training to support job responsibilities. Again, there was no indication of evaluation of the effectiveness of the training; his assessment was not adherence-based either.

- f. **Continuing Training.** No WSRC assessment was conducted during the RSA because the continuing training program had not started. However, a delta package was generated in this area which reflected the observance of chemical cleaning training and found that there was continuity between the initial and the continuing training program. This review of one training session does not constitute a review of the continuing training program. The WSRC ongoing assessment program is to be in place by the end of December and a review of the elements of this program by WSRC would be appropriate to ensure the planned program meets DOE requirements.
  - g. **Continuing Adherence Assessment Program.** Despite a briefing that the continuing assessment program for training had been initiated, it was found that the functional area manager did not have a smooth copy of the assessment requirement cards and had only a rough draft of an assessment schedule without all of the required information filled in.
3. **DOE Order 5480.19, Conduct of Operations Requirements for DOE Facilities:** There are no outstanding RFAs for this Order.
- a. **Equipment Control/System Status.** An RSA assessment of status change authorization and reporting did not comment on the specific criteria provided, but instead commented on other aspects of the task observed. A review of checklists commented on the availability of the lists but did not indicate that the performance of a checklist had been observed. Both of these reviews had been done by personnel subcontracted to WSRC.
  - b. **Round Sheets.** Although there were multiple evaluations of roundsheets, most reviews were not adherence-based. One review contained comments about the availability of the sheets but no observation of use of the sheets. Another line of inquiry required verification of proper supervisory review of completed round sheets. This assessment did not comment about the lack of operator or supervisor comments about out-of-specification readings which were apparent when DNFSB staff reviewed copies of logsheets attached to the compliance assessment. These assessments had been conducted by subcontractor personnel.
  - c. **Continuing Adherence Assessment Program.** A continuous assessment program for the conduct of operations functional area had begun in September. Only six assessments were scheduled to be completed at the time of the visit. The lockout/tagout assessment card sets forth the monthly inspection requirements of the 8Q Safety Manual Procedure 32 basic program direction. The assessment had not recorded all the data required by the card and reference procedure. No card had been developed for the annual inspection required by the basic procedure.

The assessment of shift routine relied excessively on paperwork review. This review

noted problems with the tagging of four activated alarms. The corrective action was to correct the noted deficiencies, but no action was taken to determine the full extent of the problem or to develop programmatic corrective action.

A review of equipment and piping labeling had lines of inquiry to interview personnel, but did not include an inspection of the facility so that it was not adherence based.

A review of temporary modifications required verification of numerous items but it was unclear what action the assessor took to perform the verification and whether it was adherence based. The card required the review of 3 modifications which found problems with each. The corrective action was to correct the specific problems found, but no action was taken as a result of a 100% noncompliance rate found during the assessment.

4. **DOE Order 5480.31, Startup and Restart of Nuclear Facilities**: A phase 1 assessment, conducted in early 1993, compared the Order with two company documents, WSRC Procedure Manual 12Q, *WSRC Operational Readiness Review Manual*, and WSRC Procedures Manual E, *WSRC Startup and Restart Manual*. Two Compliance Schedule Approvals were submitted, approved and completed. Subsequent to this review the two Manuals were combined into the 12Q Manual. The High Level Waste Management Manual S4 Procedure ADM 30, *High Level Waste Management Regulatory Requirements Compliance Control Procedure*, requires a review if a site level manual is revised to determine if there is any impact of the changes on DOE Order administrative compliance. However, no evidence of the required review was produced. No adherence assessment was conducted or planned for this Order despite the fact that a self-assessment had just been completed and the WSRC ORR was conducted in October-November 1994. There are no outstanding RFAs.
5. **DOE Order 5700.6C, Quality Assurance**
  - a. **Phase 1 Administrative Compliance Assessment**. No WSRC SRS sitewide administrative Compliance Assessment and Implementation Report (CAIR) was generated for DOE Order 5700.6C, nor is one planned for development. A WSRC HLW Management Division Compliance Assessment Package (CAP) was generated. However, it only provided the sitewide implementation plan for DOE Order 5700.6C; WSRC did not present administrative compliance information for this Order although this effort had apparently been conducted. The implementation plan called for sitewide implementation of the Order by September 30, 1994, including the verification of compliance. However, DOE-SRO advised WSRC that with the advent of 10CFR830.120, *Quality Assurance*, "...another assessment to the Order would be neither beneficial nor cost effective." There are no RFAs for this Order.
  - b. **Phase 2 Adherence Assessment Baseline**. ITP readiness-self assessment quality assurance criteria were structured around the 18 basic requirements of NQA-1, *Quality Assurance Program Requirements for Nuclear Facilities*: The adherence baseline was formatted to assess DOE Order 5700.6B, rather than the 10 criteria of DOE Order 5700.6C. As a result, the baseline assessment was very inefficient in addressing the 10 criteria of DOE Order 5700.6C.

The majority of the assessments sampled were administrative in nature, rather than adherence-based. A discussion of the administrative Order compliance effort follows:

1. **Personnel Training and Qualification.** Assessments performed were either extremely limited in their scope or were not adherence-based. Although 14 self-assessment criteria were used to assess compliance to Criterion 2 of DOE Order 5700.6C, only one of these criteria actually addressed the Order requirement that "Personnel shall be trained and qualified to ensure they are capable of performing their assigned work." However, the scope of this assessment was extremely limited, and as a result appears to have fallen short of adequately representing the status of the facility population.

In general, the assessments looked at the procedural aspects of training and qualification (e.g., did personnel attend training) rather than its product (e.g., knowledgeable and capable watchstanders). One assessment criterion called for a training and indoctrination program to be established per DOE Order 5480.20. This was assessed by WSRC to be acceptable by determining that "WSRC procedures have established a training and indoctrination program that fully incorporates the requirements of DOE Order 5480.20 for ITP," without any review of the training program indicated.

2. **Management Assessment.** DOE Order 5700.6C requires that "management periodically assess the integrated quality assurance program and its performance such that problems that hinder the organization from achieving its objectives be identified and corrected." However, the only RSA assessments in this area were administrative in nature: one assessment verified that a management assessment program was procedurally required; the other determined that management assessments were being performed on a periodic basis, based on management assessment record review. The WSRC administrative compliance baseline did not establish that management assessments were identifying and providing the catalyst for correcting problems.
  3. **Independent Assessment.** The majority of assessments sampled in this area were administrative-based vice adherence-based and were very limited in their sampling. For example, the self-assessment criteria that "Independent assessments should focus on improving items and processes by emphasizing the line organizations quality achievements" was performed by sampling only one assessment report and found that this one report focused on improving items and processes. However, the assessment did not look to see if the effect of the report was to stimulate improvement.
- c. **Continuing Adherence Assessment Program.** The Continuing assessment program has not yet been implemented for quality assurance.



6. **DOE Order 500.3B, Occurrence Reporting and Processing of Operations**  
**Information:** The Phase 1 administrative Order Compliance Assessment appeared to be satisfactory; The phase 2 adherence assessments were a mix of interviews, document and record reviews, and observation of critiques which appeared appropriate for this Order. There are no outstanding RFAs.