DEFENSE NUCLEAR FACILITIES SAFETY BOARD

August 17, 1993

MEMORANDUM FOR: G. W. Cunningham, Technical Director

COPIES: Board Members

FROM: Daniel G, Ogg, SRS HLW Program Manager

SUBJECT: Savannah River Site, Tank Farms - Trip Report (July 27-29, 1993)

1. Purpose: This memorandum documents the DNFSB staff visit to the H- and F- Tank Farms at the Savannah River Site (SRS) during July 27-29, 1993. The DNFSB technical staff review team included Daniel Ogg, Monique Helfrich and outside expert, Doug Volgenau. The purpose of this trip was to discuss the Environmental Protection program, the Westinghouse Savannah River Company (WSRC) action plan for correcting findings of the Type B Investigation of the H-Tank Farm Concentrate Transfer System (CTS) contamination event, and to review the Tank Farms training and qualification program.

2. Summary: Several weaknesses were noted in the areas of environmental protection, training, and conduct of operations. Tank Farm management is not familiar with the DOE Order requirements relating to environmental protection. The environmental protection program does not include a drill or walk through program to demonstrate the ability to properly respond to potential environmental releases. The program to conduct environmental related surveillances is not formalized or effective. The waste minimization program focuses on controlling waste containers but does not provide well documented guidance on how to minimize the generation of waste.

   WSRC issued its response to the investigation of the CTS ventilation system contamination incident on July 26, 1993. It is not clear that HLW management reviewed, understood, and concurred in the response before it was issued to DOE-SR.

   Training programs at the Tank Farms are not effective and are significantly behind those of other facilities at SRS. An operator knowledge level assessment, conducted by WSRC Reactors Program personnel, showed that the knowledge level of most Tank Farm operators was below the acceptable standard. There is no formal or effective drill or evolution training program at either facility. Senior level management in WSRC HLW programs has been devoting most of its time to the In-Tank Precipitation facility and has given little attention to the Tank Farms.

   The significant deficiencies existing in the Tank Farms have greatly limited their ability to support the required missions of safely storing, transferring, and reducing the volume ol HLW at SRS. It is not clear that the F- and H-Tank Farms will be able to support the Fand H-Canyons, DWPF, and In-Tank Precipitation (ITP) when they become fully operational

unless significant improvement is made.

3. Background: F- and H-Tank Farms manage and operate 51 High Level Waste (HLW) tanks in the F- and H-areas of the SRS. Other facilities operated at the Tank Farms include the l-H and 2-H evaporators, the 2-F evaporator, the Effluent Treatment Facility (ETF), the Extended Sludge Processing (ESP) facility, and the ITP facility. The Tank Farms are not currently operating except for routine environmental monitoring and the performance of Operational Safety Requirement (OSR) surveillances. All evaporators have been shut down pending the completion of conduct of operations upgrades and other corrective actions required as a result of the H-Tank Farm (CTS) contamination event. ITP and ESP are engaged in non-radioactive testing. ITP is scheduled for a DOE Operational Readiness Review (ORR) in October 1993 in preparation for radioactive operations.

4. Discussion:

   a. Environmental programs applicable to H-Tank Farms (HTF) and F-Tank Farms (FTF) were reviewed and discussed. In addition, a tour of both tank farms was conducted with facility and department management. Emphasis of the tour was on environmental requirements. The following observations are provided:

      1. The facilities appear to be complying with the letter of the federal and state environmental statutes, regulations and standards. Management indicated that each regulatory requirement had been matched to procedural steps existing at the facilities. However, management was not familiar with the requirements of DOE Orders relating to environmental protection programs. They indicated that responsibility for compliance with these Orders resided with higher authority at the SRS.

      2. Some time in the past a leak developed in a pipe from tank #37 in HTF. The pipe was isolated and an excavation attempt was made to locate the source of the leak and to determine the extent of spillage to the surrounding soil. These attempts were abandoned because of elevated radiation levels. The excavation was filled in. The extent of the release has not been determined.

      3. The response program appears to be based on the assumption that all future tank leaks will be similar to leaks that have occurred in the past (i.e. slow and self sealing). HEPA filters are installed in the ventilation systems for the tank interiors and for the annuli of the tanks that have leaked, but HEPA filters are not installed on the annuli of tanks that have not leaked and it is expected that operator action to isolate the system will prevent the release of radioactivity in the event of a leak. The discipline of operations and operator level of knowledge are not at a level sufficient to provide this response.

4. The program and installed equipment designed to prevent the release of airborne radioactivity from the tank farms during routine operations appears effective.

5. The program to prevent the release of radioactive liquids includes a number of efforts to monitor tanks for deterioration. These include such things as recording tank levels, conducting chemistry analysis of samples, monitoring for radiation changes, visual/video tank inspections, etc. Correlating this data could lead to an effective trend analysis which could be used to detect weaknesses early and to focus attention for further inspections. This is not currently done.

6. The environmental monitoring program appears to be effective. During the facility tour it was noted that the marking of groundwater monitoring wells is not consistent and may not be accurate.

7. The Site Item Reportability and Issue Management (SIRIM) system is used at the facilities for reporting events, conditions and concerns with respect to DOE policy. Actions in case of environmental releases would be taken using this system. There is no drill or walk through program to demonstrate the ability to properly respond to potential environmental releases.

8. A program to minimize low level- and mixed waste exists, but the effort is not coherent or entirely effective. For example, effort is taken to control waste containers, but not to minimize generation of waste so that fewer containers are required. There is not an effective surveillance program in this area.

9. Although some environmental related surveillances are accomplished the surveillance program is not formalized or effective.

10. An aggressive decontamination program at HTF has resulted in a significant decrease in the sizes of contamination areas in the facility.

b. The training programs at the HTF and FTF facilities were reviewed and discussed. The following observations are provided:

1. There is no effective training program for supervisors, operators and maintenance people at the tank farms. A recent operator knowledge level assessment, conducted by WSRC Reactors Program personnel, showed that the knowledge level of most operators was "below the standard." A training program is currently being formulated. It is estimated that the program will take about two years to complete. Some experienced supervisors have recently been assigned to the tank farms to assist in

developing the training program.

2. That significant weaknesses in the management and operators knowledge of conduct of operations principals exist is recognized. A well organized and formulated plan to correct this does not exist.

3. Some contingency actions have been taken to account for the known training and qualification deficiencies. Many of these actions have not been formalized or properly instituted. For example, "Conduct of Operations Coaches" have been placed in the field on a full time basis. The responsibilities and authority of these people have not been clearly defined or promulgated. Although a deliberate operations plan is supposedly in effect, no plan has been issued. Management supervision during "critical evolutions" is required. What this means is not well defined or formal. These deficiencies indicate a lack of understanding of the conduct of operations principals on the part of senior management.

4. On July 26, WSRC issued responses to the "Recommendations for the Concentrate Transfer System Ventilation Type B Report. " The responses indicate that certain plans are in place and certain actions have been completed to correct noted deficiencies. Discussions with management and a review of documentation indicates a number of variances between what is claimed as being in place and what is actually in place. It is not clear that HLW management reviewed, understood and concurred in the response before it was issued to DOE-SR.

5. The facilities are currently on a five shift rotation. The fifth shift is supposedly devoted to training. No formal training program has been issued and discussions with individuals revealed that frequently people on the training shift are required to work instead of train.

6. Qualification of maintenance personnel is currently done on a task by task basis. It is anticipated that to formulate and accomplish a training and qualification program for maintenance people will take three years.

7. There is no drill or evolution training program at either facility.

8. The WSRC required Management Overview Program, which requires regular surveillance tours by assigned managers, is not effective.

9. It appears that senior level management attention has been lacking from the tank farm facilities for some extended period. The department senior manager has been devoting the vast majority of his time and efforts to the In-Tank Precipitation (ITP) Facility.

10. The significant deficiencies existing in the tank farm facilities bring in to question the ability to support the required missions of safely and properly storing, transferring and reducing the volume of waste at SRS. It is not clear that the Hand F-Tank Farms will be able to support the H- and F-Canyons, DWPF and ITP facilities when they become fully operational unless significant improvement is made.