

**SUBJECT:** Office of Independent Oversight's Office of Environment, Safety and Health Evaluations Activity Report for the Savannah River Site Salt Waste Processing Facility Construction Site, June 21-25, 2010

The U.S. Department of Energy (DOE) Office of Independent Oversight, within the Office of Health, Safety and Security (HSS), conducted an orientation visit on June 21-25, 2010, at the Salt Waste Processing Facility (SWPF) construction site at the DOE Savannah River Site (SRS). The purpose of the visit was to determine methods for HSS to carry out its independent oversight responsibilities with respect to this project in coordination with DOE's Savannah River Operations Office (DOE-SR).

The orientation visit was conducted by an HSS subject matter expert (SME) experienced in nuclear plant construction. Prior to the orientation visit, HSS reviewed the SWPF Independent Technical Review, dated November 22, 2006, the DOE Review Committee Report titled SWPF Construction Project Review, dated October 2009, and the SWPF Functional Specification. The HSS SME attended the SWPF contractor (Parsons) construction health and safety training and ladder, scaffolding, and fall protection training. With this training, the SME is authorized for unescorted access to the construction site.

The overall mission of the SWPF is to separate and concentrate the radioactive cesium (Cs), strontium (Sr), and actinide contaminants in the high-curie salt solutions to be removed from the liquid waste tanks in the F- and H- Area Tank Farms at SRS. The concentrated Sr, actinide, and Cs waste slurry, which contains most of the radioactive contaminants, will be sent to the Defense Waste Processing Facility for immobilization in a glass formulation by a vitrification process. The decontaminated salt solution left after removal of the highly radioactive contaminants will be sent to the Saltstone Production Facility for immobilization in a grout mixture and disposal in grout vaults at the Saltstone Disposal Facility. The SWPF is being designed and constructed by Parsons, which will also operate the facility for 1 year following construction completion.

The SWPF is divided into four areas: the Central Process Area (CPA), the Cold Chemicals Area, the Facility Support Area, and the Alpha Finishing Facility. All radioactive materials are stored and processed in the CPA, which is a 136 foot wide by 235 foot long reinforced concrete structure supported on an 8 foot thick basemat. The CPA is designed to DOE PC-3 criteria. The remaining SWPF areas are housed in structural steel buildings designed as PC-1 structures. Construction work currently in progress includes placement of concrete reinforcing steel and concrete in the CPA and onsite fabrication of piping for future installation in the CPA.

HSS reviewed drawings and specifications related to concrete construction activities, the project quality assurance program, and the SWPF structural acceptance criteria. HSS also toured the site

several times to observe ongoing work activities and witnessed portions of two concrete placements in the CPA. HSS interviewed the Parsons site Quality Assurance/Quality Control (QAQC) manager, Parsons QAQC inspectors, and MACTEC, a sub-contractor to Parsons, who provides inspectors who are responsible for testing concrete. HSS also reviewed assessments performed by the DOE construction project office during April and May 2010. These assessments covered ongoing construction activities and construction safety.

The DOE construction project office is adequately staffed to monitor current ongoing construction activities. However, according to discussions with Project Office Staff, additional personnel experienced in piping installation, electrical systems, and instrumentation will be required to monitor these activities.

The Project Office Staff advised that procurement issues have impacted construction and may affect the project schedule. Supplier quality assurance program deficiencies have delayed completion of the large tanks being fabricated by Amer Industrial Technologies. The concrete placement schedule has been revised to defer placement of the floor slabs at Elevation 139, which are the roofs over the tanks, because tank delivery and installation has been delayed. This situation has necessitated redesign of portions of the CPA to provide access to the building for installation of tanks. The floor slabs above the large tanks and the walls supporting the slabs have been redesigned to provide concrete rebar connection details and load transfer for the slabs above the tanks to the walls and adjacent floor slabs. The October 2009 DOE Review Committee Report documented concerns regarding procurement oversight, and the potential impact of deficiencies by vendors in their quality assurance program implementation on the project schedule.

A good candidate for a future HSS Independent Oversight and mission support activity would be a comprehensive review of civil construction activities, conducted jointly by HSS and the site DOE staff. Such a review would include observation of activities at the concrete batch plant (Note: Parsons was unable to arrange access to the batch plant during the orientation visit.), detailed review of qualifications of concrete materials, and concrete test results. Other potential areas for joint HSS and site DOE review include implementation of construction health and safety programs and review of procurement activities. Implementation of the corrective action program should be included during review of each of the above programs. Good practices and opportunities for improvement were provided separately to the Project Office Staff.