

**HSS Independent Activity Report - Rev. 0****Report Number:** HIAR-RL-2011-04-07**Site:** DOE-Richland  
Operations Office**Subject:** Office of Enforcement and Oversight's Office of Safety and Emergency  
Management Evaluations Activity Report for the Sludge Treatment Project**Dates of Activity :** 11/17/2010 – 04/07/2011**Report Preparer:** Jake Wechselberger**Activity Description/Purpose:**

The U.S. Department of Energy's Office of Enforcement and Oversight, within the Office of Health, Safety and Security (HSS), performed operational awareness reviews of the Sludge Treatment Project (STP), Engineered Container Retrieval and Transfer System (ECRTS) during site visits.

**Result:**

On November 17, 2010, a HSS representative participated in a tour of the STP test facility. The HSS representative was also briefed by the Department of Energy Richland Operations Office (DOE-RL) Project Engineer, the CHPRC STP Design Manager, and the DOE-RL principal support contract engineer.

The HSS representative walked down the major components of the STP test facility housed in the Maintenance and Support Facility (MASF). During the tour, the Sludge Transport-Storage Container (STSC) was undergoing instrument checks in preparation for filling with sludge stimulant.

The Knock-Out Pot (KOP) Waste Stream Aluminum Wire Separator was demonstrated during the tour. This device, KOP material "squirrel cage" aluminum wire separator prototype, appeared to be effective in removing aluminum wire strands from the waste stream.

Test preparations were in progress for the Integrated Decant Test, which will test the Decant Sand Filter and include decanting simulated supernate from the STSC, and verifying normal and back flush operations of the Sand Filter. Site personnel reported that, earlier in the week, a test was run to verify the sand filter capability to reduce decant to less than the required 100 NTUs (Nephelometric Turbidity Units are an indicator of suspended solids and water clarity) or less for Sand Filter effluent. During the tour, a modification to the Sand Filter was in progress to install an additional valve to prevent back siphoning.

During the period February 14-17, 2011, the HSS representative also visited MASF to observe test activities. The Knock-Out Pot Pretreatment Operator Training was in progress during the HSS visit. This training was intended to provide initial orientation to the training procedures and training in the use of full scale equipment and long reach tools. HSS observations were limited during this visit because of access restrictions in place for the KOP test mezzanine (due to egress issues). An additional stairway has since been installed to address the egress issues and allow more access. The assigned Facility Representative was in attendance. As part of the preparation for Full Scale Integrated Testing, ECRTS, the STSC trailer, truck scale was being calibrated.

HSS received a copy of the training guide governing the Knock-Out Pot Pretreatment Operator Training, which appeared to be adequate. Operators provided some suggested enhancements to the training guide.

The HSS representative attended the Joint Test Group (JTG) meeting to review the XAGO Dry Test report for final release. This test demonstrated the capability of the XAGO hydrolance to retrieve a range of conservative sludge simulants from the test Engineered Containers in conjunction with the Bredel-Watson sludge booster pump (large industrial peristaltic pump). The test report was approved for release with some minor changes. The JTG process appears to be an effective project activity to help reduce risk and increase project success.

The HSS representative also attended the Sludge Treatment Project Safety Design Integration Team February Administrative Meeting. During the meeting, a detailed review of the STP Field Execution Schedule, including the status of significant activities, was conducted. An ECRTS schedule was promulgated for major tasks, including activities for Draft Preliminary Design, Preliminary Design Safety Basis, Final Design Safety Basis, Documented Safety Analysis Preparation, T-Plant Safety Basis, and Transportation Safety Basis. The meeting appeared to be comprehensive and effective in engaging functional and programmatic groups.

During the period April 4-7, 2011, the HSS representative visited MASF to observe test activities that included the ECRTS testing. The full-scale ECRTS test is intended to demonstrate a Technology Readiness Level 6 for the sludge retrieval system. HSS observed interlock testing using the seismic switch signal simulator, which was satisfactorily performed. The

seismic safety switch, when actuated, shuts down any transfer in progress.

The HSS representative also toured KW-Basin to observe STP activities. The KOP Pretreatment equipment was installed in the KW-Basin. The future STP Annex installation task/project was discussed during the tour. The new basin ventilation system was functioning with basin personnel working "off hood." The tour included an inspection of the basin floor area where the sludge retrieval equipment will be installed and also the Settler Tank instrument rack.

The HSS representative attended various integrated project review team meetings and contractor review meetings, such as the Sludge Treatment Project Safety Design Integration Team Administrative Meeting.

During the April 4-7, 2011, visit, the HSS representative was briefed by DOE-RL on KE Reactor work stoppage. The KE Reactor which was shut down in 1970 is defueled and in a deactivation and decommissioning (D&D) status. During dismantlement activities, some control rods were still connected to their respective drive rod mechanism, when an exterior control rod drive room wall was taken down. This resulted in the control rods, still attached to their respective control rod drives, being withdrawn and in at least one case, an aluminum sheathed control rod being exposed to the outside. The contractor halted the work at this time. RADCON personnel, surveying the situation, entered the control rod room. RADCON recorded high radiation levels in the upper levels of the room, which was the approximate location of a special test control rod. This special test control rod would have most likely been installed in the 1950s. The high radiation emanated from the special test control rod which was composed, in part, of an inconel ([austenitic nickel-chromium-based super alloys](#)) sheath. Apparently, the contractor's safety analysis had not discovered the presence of the special test control rod. The other control rods are encased in an aluminum sheath. The inconel, with high flux exposure in the KE production reactor, would have yielded activation materials, including Co-60, as the dominant contributor to the high radiation levels. DOE-RL is preparing a letter to the contractor directing a formal review of the work practices followed on the KE Reactor.

HSS Participants	References
1 (lead). Jacob Wechselberger	
2. Donald Prevatte	

Were there any items for HSS follow up?  Yes  No

**HSS Follow Up Items**

1. Continue operational awareness reviews of the Sludge Treatment Project.