DEFENSE NUCLEAR FACILITIES SAFETY BOARD

July 31, 2009

TO: T. J. Dwyer, Technical Director
FROM: M. P. Duncan and M. T. Sautman, Site Representatives
SUBJECT: Savannah River Site Weekly Report for Week Ending July 31, 2009

Tank 48 Processing: DOE formally requested that SRR provide a briefing on their actions to resolve issues identified during Fluidized Bed Steam Reforming (FBSR) Phase III testing. These issues are of particular concern considering that DOE just recently made a business decision to pursue FBSR although the contract has not been issued yet (see 6/12/09 report). It is the SRR position that the Justification for Award is still valid. During one test, fluidizing super-heated steam was lost seven times to the Denitration Mineralization Reformer (DMR), which eventually resulted in enough agglomeration of the DMR bed material that fluidization could not be restored and the DMR had to be manually cleaned. SRR partly attributes the agglomeration to problems with a steam boiler (not one that would be used in actual process) and changes to an interlock set point. Based on some preliminary solubility indications, SRR believes that adding the capability to provide water flushes may be able to mitigate agglomeration without the need for further testing. DOE also stated that a firm technical basis for the total amount of coal in the FBSR product stream, the allowable coal in the product stream, and a demonstrated ability to meaningfully reduce the coal in the product stream to the allowable value are lacking. The initial coal separator had problems with mechanical binding. While a dry vibratory screen particle size separator removed larger particles, it was not effective at removing the fine particles in the overheads stream that make up most of the coal carryover. SRR is looking at changing the DMR dimensions to increase the carbon residence time to reduce coal carryover or raising the allowable carbon concentration in vitrified glass. DOE also noted that Particle Size Analyzer sample lines have repeatedly plugged and these blockages have had to be removed manually. SRR is investigating a number of design changes to prevent plugging. Finally, SRR is planning to utilize a formal Design Review Board. The independence of this Board will be a key attribute.

F-Canyon: Preparations to restart transuranic drum remediation operations in F-Canyon's Warm Crane Maintenance area are in progress. While a construction worker was replacing some HEPA filters, a hole was unknowingly torn in the left glove of the plastic suit. Radiological control personnel discovered the hole during a survey in response to a discovery that a small section of a containment sleeve was not taped. The sleeve probed approximately 400,000 dpm alpha. Contamination on the worker's lapel sampler indicated that a small intake may have occurred so a special bioassay was required. An inspection of the work area and a review of the work package were required prior to resumption of work.

H-Canyon: Because recent samples results unexpectedly showed free acid concentrations higher than total acid ones, engineers decided to revise procedures for low and high activity waste processing to use the higher of the two concentrations for determining the amount of caustic to add. Due to weak shift turnovers and tracking of this action, the shift technical engineers not only did not develop an immediate procedure change for one of the affected procedures, but they also did not put this procedure on hold. A systems engineer later noticed lower than expected pH values for a tank and determined that the uncorrected version of the procedure was used for adding caustic to high activity waste.