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Knockout Pot Sludge Retrieval and Transfer

MCE supplied testing services in support of the knockout pot sludge retrieval and transfer activities at the Hanford Site. The results of the initial testing indicated that the baseline configuration did not meet the retrieval and transfer rate success criteria. Testing determined that the accumulation vessel needed to be changed to achieve the success criteria.

BNG America technical representatives identified a screw conveyor (auger) as a potential mechanism to mobilize and control the simulant retrieval rate. MCE modified the system to test the new concept.

The lower portion of the test article was modified to incorporate an auger and a transition for simulant to be transferred into the bypass stream. Additional sparge nozzles were also added, and the diameter of the baseline design sparge nozzle was reduced to increase maximum sparge velocities.

Test instrumentation and piping and valves were changed or rearranged to accommodate testing of the new features.

Testing of the modified system demonstrated that the new system successfully retrieved and transferred sludge within process limits. Two tests were performed.

The first test transferred a batch of simulant shortly after it had been loaded in the accumulation vessel. The second test transferred a batch of simulant after it had been loaded into the accumulation vessel and allowed to settle for a week.

In both tests, the simulant was transferred at an essentially constant rate over the period of the transfer, and the transfer was successfully completed well within the allotted time.

MCE developed the test procedure, set up and executed the test, and prepared the final test documentation for the test. Fabrication and testing was performed at the MCE Fabrication Shop in north Richland.

Client: Energy*Solutions* (BNG America) / Fluor Hanford - Richland, Washington