News from the Savannah River Site
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For Immediate Release

A Heavy Lift: Heavy Water Moderator Sampling Completed at SRS for disposition planning

AIKEN, S.C. (September 6, 2024) - Contractor employees at the Department of Energy's Savannah River Site (SRS) recently completed sampling of heavy water moderator tanks after almost a year of collaboration, leading to eventual disposition of the tritiated moderator.

The Spent Fuel Project at SRS has stored 42,000 gallons of heavy water moderator in tanks located in the facility housing C-Reactor, a no-longer-in-use nuclear reactor, since 1984. The moderator was previously used in SRS production reactors.

"Sampling the moderator was a huge undertaking, involving coordination and input from 12 different work groups at SRS," said Inactive Facility Manager Michael Ellis of the Site's managing and operating contractor Savannah River Nuclear Solutions (SRNS). "The moderator is contaminated due to its previous use, so sampling also required proper planning and hazard mitigation."

Ellis explained that there was also an added challenge in the lack of personnel experienced in dealing with heavy water, as the tanks were last opened more than 20 years ago. "Personnel with previous experience working with heavy water have retired or left the Site," he said. "This was an important learning experience for both seasoned personnel as well as the next generation that ensures capability for dealing with this material in the future."

Samples were sent for lab analyses. The Savannah River National Laboratory performed the radiological sample analysis, the results of which will help determine the final disposition path for this material.

"It took a tremendous amount of coordination and collaboration to get the samples shipped from the sampling tanks to the testing labs," said Alexis Hartwig, SRNS Spent Fuel Project Process Engineer. "It required continuous contact with the labs to determine what volume of material they would need to meet our requests; time frame discussion and coordination; and ensuring quality assurance requirements were met to allow for confidence in the results when determining further disposition paths. Knowing lab requirements also helped us gather the proper equipment for the job, another important factor in project completion."

Heavy water contains deuterium, also known as heavy hydrogen. In nuclear reactors, heavy water is used as a moderator to slow down neutrons and ensure an effective fission-chain reaction occurs.

None of the five original production reactors are now in use. Of the facilities housing these reactors, two have been filled with grout for permanent deactivation; two have been repurposed for other SRS activities; and one, C Reactor, is one of the storage facilities for SRS' heavy water supply.

Heavy water moderator storage tanks were recently sampled at the Savannah River Site for characterization and determination of a final disposition path.

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