Fuel transfer system installed in K Basins

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Hanford's Spent Nuclear Fuel Project completed installation this month of the fuel transfer system, or FTS, in both the K East and K West Basins. The system will transfer fuel from the more contaminated K East Basin to the K West Basin for processing beginning on or before Nov. 30. The FTS was conceived by SNF Project employees as a way to save time, money and potential radiation exposure in the K East Basin.

"We're glad to have the installation finished because now we can move into equipment testing phases," said Bob Heck, Fluor Hanford vice president for the SNF Project. "The FTS is a complex system that stretches through two major radiological facilities. Installing it represents a giant step forward because this system is crucial to moving fuel out of the K East Basin and protecting the Columbia River. I'm extremely proud of, and grateful to, all of the SNF Project employees who worked so hard to make this work happen in record time."

Installation of the work platform in KE Basin, part of the FTS.

Major equipment in the FTS consists of a shielded transfer cask that will hold K East Basin fuel inside of a heavy cask transfer overpack. Together, the cask and the overpack are known as the transfer cask assembly. Each cask will hold 10 canisters of spent fuel, approximately 140 N Reactor fuel assemblies.

Transfers out of the K East Basin and into the K West Basin will take place in the "dummy elevator pits" of both basins. "Dummy elevator pit" is a historical Hanford term that refers to a small area in the reactor basins containing an elevator that lifted "dummy" elements — elements not containing uranium — out of the spent fuel discharge area during the defense production era. The dummies were then decontaminated and reused many times to level heat loads and create shielding in the reactors.

To facilitate the transfers, a lift platform has been installed in each pit. Loading and unloading of casks will be performed at the bottom of each dummy elevator pit while the fuel is still underwater. Sludge will be vacuumed from the top of the canisters in the K East Basin before the canisters are loaded into the casks. When a cask has been filled with fuel, the lid will be closed. A lift platform will then raise it to the top of the pit, through a rinsing system, and into a straddle carrier positioned on rails that have been installed above the K East Basin.

The cask will then be moved along rails out to an annex that has been constructed north of the K East Basin. There, a scissor lift raises the overpack base into position around the cask, and the annex crane lowers the overpack lid into place. Once the lid is secured, the annex crane then transfers the entire transfer cask assembly onto a cask transfer trailer. This vehicle will then drive the assembly and its fuel load out through the annex and across a half-mile transfer corridor that has been constructed between the K East annex and a

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similar annex that has been built just north of the K West Basin.

In the K West annex, a similar crane will then offload the assembly. The cask will be separated from the overpack in a reverse process to the one performed in the K East annex, and then moved into the K West dummy elevator pit. From the K West pit, the fuel canisters will be moved into the queue of fuel awaiting processing and loadout to the Cold Vacuum Drying Facility and later to the Canister Storage Building for dry storage. Two casks and two overpacks have been procured for the fuel transfer system.

Other equipment associated with the FTS includes a closed-circuit television system consisting of three remote-controlled cameras in the K East dummy elevator pit,two operator stations and video recording equipment to document activities.

Additionally, the FTS includes a software system controlled through a programmable logic controller with system interlocks to prevent damage to materials or equipment. Also a part of the new FTS are a work platform for operators to stand on while loading and unloading spent fuel into the lowered cask, and associated special hand tools.

The FTS now faces a schedule that includes a contractor operational readiness review in August and a Department of Energy ORR in September. Operator training to new system procedures is ongoing this summer,

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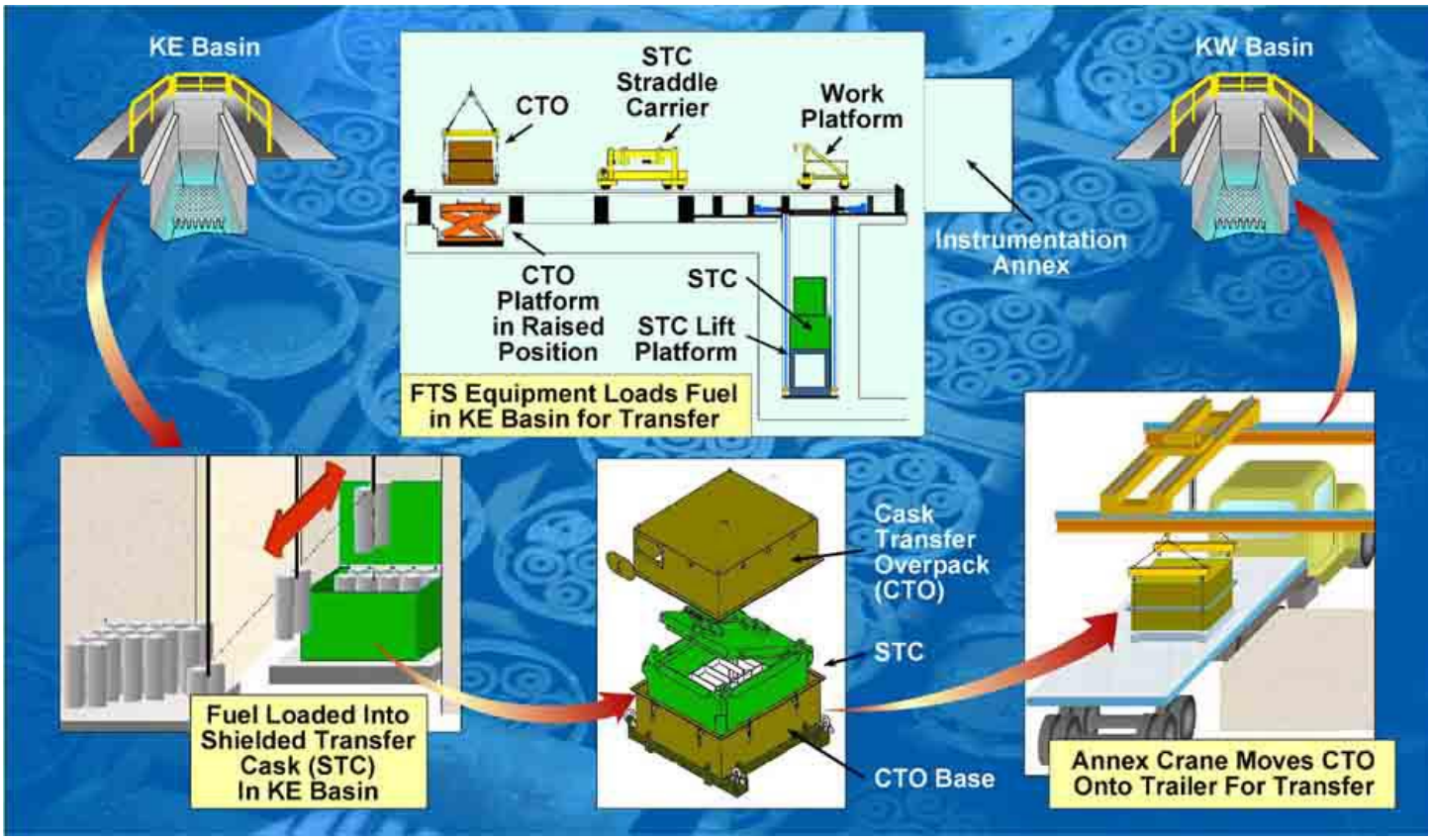

Fuel transfer system installed in K Basins, cont.

and fuel transfers are expected to begin in late autumn. According to K East Basin facility manager Tom Ruane, “We at K East Basin are anxious to begin fuel transfers. We have a huge role to play in successfully completing the SNF Project, our operators are highly motivated and we intend to meet our schedule.”

The idea for the FTS was conceived in 2000. It was then known as the “Alternate Fuel Transfer Strategy.” Once it was approved by DOE’s Richland Operations Office and the regulators in 2001, it became known simply as the Fuel Transfer Strategy. In was adopted as part of a package that changed the SNF Project’s Tri-Party Agreement milestones to incorporate sequential fuel removal from the two K Basins and earlier sludge removal.

Closely following the FTS installation, testing and reviews, a new Sludge/Water System is being developed for the K East Basin. This system will vacuum and capture the approximately 47 cubic meters of sludge in this basin.

To date, more than a third of the spent fuel that was stored in the K West Basin at the beginning of the SNF Project has been removed. The project has removed more than 375 tons of irradiated uranium and 12 million curies of radioactivity from Hanford’s River Corridor. This amount contains more radioactivity than amounts removed by any rivershore project. ■