

DOE and Sacramento Municipal Utility District Sign \$2 Million Cooperative Agreement

The U.S. Department of Energy (DOE), Richland Operations Office (RL) and the Sacramento Municipal Utility District (SMUD) have entered into Phase I of a cooperative agreement for the development of equipment to be certified to transport and store spent nuclear fuel. RL is managing this project for the DOE Office of Civilian Radioactive Waste Management. Nuclear Regulatory Commission (NRC) certification of this transport and storage system is an important step toward developing spent nuclear fuel dry storage equipment that meets the requirements for transport off-site at a later date. This approach will enable the utility to reduce costs while maintaining the safe dry storage of spent nuclear fuel at the Rancho Seco Nuclear Generation Station, a shutdown power plant near Sacramento, California.

The spent fuel will be retained at Rancho Seco until a suitable interim or permanent spent fuel repository is available.

The DOE and SMUD have entered into a two-phased cooperative agreement. Phase I supports development and NRC certification of a shielded cask for transporting spent nuclear fuel. Conceptually, Phase II will involve the demonstration of a spent nuclear fuel dry transfer system. The system can be used to transfer spent nuclear fuel assemblies from a dry storage cask to a transport cask.

Under Phase I of the agreement, SMUD will buy two new 125 ton metal casks certified by the NRC for both transporting and dry storage of spent nuclear fuel in multi-element sealed canisters. The multi-element canister is 1.67 meters in diameter, 4.75 meters long and fits inside both the transportation cask and the storage module. The multi-element canister is constructed with internal dividers which form 24 identical tubes. Each tube can hold one spent nuclear fuel assembly.

DOE will pay for and retain ownership of one transportation cask with a \$2 million line item appropriation from Congress. The other cask will belong to the utility. The DOE focus is on the NRC review process for certifying the cask for transporting spent nuclear fuel after dry storage. The NRC experience in certifying the new cask design will aid in the future development of an MPC (multipurpose canister) subsystem for the Office of Civilian Radioactive Waste Management. The MPC subsystem design will address spent nuclear fuel disposal in addition to the storage and transport functions incorporated in this cooperative project.

DOE RL Manager, John Wagoner, said, "This partnership with industry is significant because it is a step toward solving a national transportation and storage problem. The development of new cask designs have the potential to eventually reduce costs and simplify handling of spent nuclear fuel at nuclear power plants and at DOE sites."

Spent nuclear fuel is a highly radioactive material that comes from the fissioning of uranium in commercial nuclear power plants. Currently, the spent nuclear fuel is stored in pools of water at most nuclear power plants. The pools are about forty feet deep. The water shields workers from radiation and helps to cool the spent nuclear fuel. Even though the spent nuclear fuel assemblies have been in the pool cooling for more than 5 years, each assembly is still radioactive and generates heat equivalent to five to seven 100 Watt light bulbs. Typically, the spent nuclear fuel assembly temperature in dry storage will be about 300 degrees Fahrenheit.

Currently, in order to transport spent nuclear fuel that has been in dry storage, the shielded storage

container must be moved into a spent fuel pool where it is unloaded underwater. The spent nuclear fuel is then loaded into a certified transport cask. The canistered spent nuclear fuel storage/transport system design being planned at Rancho Seco eliminates the need for moving the loaded dry storage cask back into the spent fuel pool. For shutdown reactors, this system can eliminate the high cost of maintaining a pool. The system also reduces the need for additional handling of individual spent nuclear fuel assemblies prior to transport.

By using sealed, multi-element canisters for dry spent nuclear fuel storage which can be subsequently loaded into a certified transport cask, SMUD will be able to proceed with the decommissioning of the spent fuel storage pool and save millions of dollars in overhead costs. Ken R. Miller, Decommissioning and Spent Fuel Disposal Project Manager at SMUD, said, "It costs us \$12.1 million annually to store the spent fuel in the storage pool. It will cost only \$2.8 million annually to store it in the dry storage casks, resulting in a yearly savings of \$9.3 million." Miller said the savings is significant in view of the anticipated delay in establishing a permanent waste repository.

This project is jointly managed by the Cooperative Agreement Technical Management Committee. The committee is made up of Dr. David Langstaff, DOE Project Manager; Mr. Robert Jones, SMUD Project Manager; Mr. Leroy Stewart, DOE OCRWM Program Manager; and Dr. Mikal McKinnon, Test Manager Pacific Northwest Laboratory. # # #

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