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NRC STAFF AUTHORIZES LOADING OF SPENT FUEL  
INTO DRY CASKS AT ARKANSAS PLANT

The Nuclear Regulatory Commission staff has lifted a restriction that prevented Entergy Operations Inc., operator of the Arkansas Nuclear One (ANO) power plant, from loading spent reactor fuel into a type of spent fuel storage cask that experienced a problem earlier this year at a plant in Wisconsin.

This action permits Entergy to begin transferring fuel assemblies from the ANO Unit 1 spent fuel pool into the casks. They will be mounted on a concrete pad foundation at the plant site near Russellville, Arkansas.

A pair of inspectors dispatched from NRC's Region IV office in Arlington, Texas, as well as an NRC resident inspector stationed at the plant, will provide 24-hour observation of loading activities. The project began after the restriction was lifted and will continue for several days. A total of 24 assemblies will be stored in the first dry cask; other casks will be filled in the coming months.

In lifting the restrictions, the NRC staff determined that changes in procedures proposed by Entergy would prevent a recurrence of hydrogen gas as occurred on May 28 at the Point Beach nuclear plant near Two Rivers, Wisconsin.

After a thorough evaluation, an NRC inspection team and the operator of the Point Beach plant, the Wisconsin Electric Power Co., concluded that hydrogen was generated by a chemical reaction between the zinc coating on the cask interior and acidic borated water from the plant's spent fuel pool. Some water was inside the cask.

The hydrogen ignition occurred as Point Beach technicians welded a shield lid onto the storage cask. Pressure from the ignition displaced the 6,390-pound lid, leaving it slightly tipped. No one was injured and no radioactive materials were released.

But as a result of the event, the NRC staff issued Confirmatory Action Letters to Entergy, Wisconsin Electric and Consumers Power Co., operator of the Palisades nuclear power plant near South Haven, Michigan. Those three utilities have used or plan to use the same type of cask that experienced the problem at Point Beach. The Confirmatory Action Letters documented agreements by the utilities that they would not use the casks until NRC concerns were adequately addressed.

The cask in question is the VSC-24 model, manufactured by Sierra Nuclear Corp. of Scotts Valley, California. The Palisades plant has loaded 13 casks of the same type and plans to load others. Arkansas will use the VSC-24 for the first time.

The Confirmatory Action Letters were followed by an NRC Bulletin in early July that required licensees to assess the potential for chemical, electro-chemical or other reactions within the casks and propose additional safety measures.

Among the measures proposed by Entergy and approved by the NRC staff is the establishment of an air flow during welding operations that is designed to assure that hydrogen concentrations are kept very low.

“The staff agrees that continuous venting of the [cask] will effectively prevent the accumulation of a combustible concentration of hydrogen during welding and cutting operations,” the NRC's Office of Nuclear Material Safety and Safeguards said in a report. “The staff concluded that Entergy's procedural controls, correctly implemented, would effectively prevent ignition of hydrogen during cask operations.”

The restrictions imposed by the Confirmatory Action Letters affecting Point Beach and Palisades remain in effect pending conclusion of the NRC staff review. The manufacturer of the VSC-24 cask, Sierra Nuclear, has informed the NRC that it is investigating substitute coatings for the interior of the cask that would not generate hydrogen upon contact with water from a spent fuel pool.

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