

**U.S. NUCLEAR REGULATORY COMMISSION**  
**DOCKET NO. 72-2**  
**VIRGINIA ELECTRIC AND POWER COMPANY (DOMINION)**  
**NOTICE OF ISSUANCE OF ENVIRONMENTAL ASSESSMENT**  
**AND**  
**FINDING OF NO SIGNIFICANT IMPACT**  
**FOR LICENSE RENEWAL OF THE SURRY**  
**INDEPENDENT SPENT FUEL STORAGE INSTALLATION**

**ACTION:** Environmental Assessment

**FOR FURTHER INFORMATION CONTACT:** Mary Jane Ross-Lee, Senior Project Manager, Spent Fuel Project Office, Office of Nuclear Materials Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555. Telephone: (301) 415-3781; fax number: (301) 415-8555; e-mail [mjr2@nrc.gov](mailto:mjr2@nrc.gov).

**SUPPLEMENTARY INFORMATION:**

The U.S. Nuclear Regulatory Commission (NRC or the Commission) is considering renewing Virginia Electric and Power Company's (Dominion's) (the applicant's) License No. SNM-2501 under the requirements of Title 10 of the Code of Federal Regulations, Part 72 (10 CFR Part 72) authorizing the continued operation of the Surry Independent Spent Fuel Storage Installation (ISFSI) located at the Surry Power Station in Surry County, Virginia. The Commission's Office of Nuclear Material Safety and Safeguards has completed its review of the environmental report submitted by the applicant on April 29, 2002, in support of its application for a renewed materials license. The staff's "Environmental Assessment related to the renewal of the Surry Independent Spent Fuel Storage Installation" has been issued in accordance with 10 CFR Part 51.

## **I. SUMMARY OF ENVIRONMENTAL ASSESSMENT (EA)**

Description of the Proposed Action: The proposed licensing action would authorize the applicant to continue operating a dry storage ISFSI at the Surry site. The purpose of the ISFSI is to allow for interim spent fuel storage and, indirectly, power generation capability, beyond the term of the current ISFSI license to meet future power generation needs. The current license will expire July 31, 2006. The renewed ISFSI license would permit 40 additional years of storage beyond the current license period. The current ISFSI employs five different cask systems licensed for the Surry ISFSI. These cask systems include the General Nuclear Systems, Inc., (GNSI) CASTOR V/21 and CASTOR X/33, the Westinghouse MC-10, the NAC INTACT 28 S/T, and the Transnuclear, Inc., TN-32. Currently, the facility is licensed to store spent fuel storage casks on three reinforced concrete pads that are 230 feet long, 32 feet wide, and 3 feet thick. Two of the three storage pads have been built. Each pad is designed to accommodate 28 casks.

Need for the Proposed Action: The Surry ISFSI is needed to provide continued spent fuel storage capacity so that the Surry Power Station can continue to generate electricity. This renewal is needed to provide an option that allows for interim spent fuel storage and, indirectly, power generation capability, beyond the term of the current ISFSI license to meet future system generating needs. The renewed ISFSI license would permit 20 additional years of storage beyond the current license period. An exemption would allow 20 years of storage beyond the renewal period.

Environmental Impacts of the Proposed Action: The NRC staff has concluded that the license renewal of the Surry ISFSI will not result in a significant impact to the environment. The Surry ISFSI will require one additional storage pad during the license renewal term. The pad would be built on previously disturbed ground adjacent to the existing pads. Construction impacts of the third storage pad of the ISFSI will be minor, and limited to the approximately 800 feet by 800 feet ISFSI site. No areas designated by the U. S. Fish and Wildlife Service as "critical habitat" for endangered species exist at the site. The only terrestrial community at the site consist of remnants of mixed pine-hardwood forest that were used for timber production prior to the site's acquisition by Dominion. Thus, the staff does not expect the ISFSI to impact

any threatened or endangered species. The Environmental Assessment for the ISFSI construction acknowledged that although the station was located in a historic region, no historical resources were identified within the boundaries of the site. During the Surry Power Station license renewal process, Dominion commissioned a cultural resource survey of the property. The survey identified one previously recorded archaeological site on the west side of the property and classified the remainder of the property into one of three categories, based on the potential for archaeological resources. The ISFSI, because it rests on previously disturbed land, was classified as having no potential for cultural resources.

There will be no significant radiological or non-radiological environmental impacts from routine operation of the ISFSI. The staff evaluated radiological impacts from operations to ensure that the radiation dose to both workers and the public is as low as reasonably achievable (ALARA). The Surry Power Station ALARA program, including ISFSI operations, complies with 10 CFR Part 20, Radiation Protection Programs, and is consistent with Regulatory Guide 8.8, "Information Relevant to Ensuring That Occupational Radiation Exposures at Nuclear Power Stations Will Be As Low As Reasonably Achievable."

There are several parks and preserves in Surry County, primarily along the south bank of the James River. Immediately adjacent to the Surry Power Station is the Hog Island tract of Hog Island Wildlife Management Area (HIWMA) (zoned A-R), at the north end of the peninsula on which the Surry Power Station is located. In addition, south of the Surry Power Station are the Carlisle and Stewart tracts of HIWMA. West of the Surry Power Station, bordering the James River, is Chippokes Plantation State Park, and further west are Swanns Point and Pipsico Reservations.

The ISFSI licensing basis for the annual dose to the nearest permanent resident, located 1.53 miles from the ISFSI, was based on 84 GNSI CASTOR V/21 casks. The annual dose calculated for that case was  $6.0 \times 10^{-5}$  mrem, which is well below the 10 CFR 72.104 and 10 CFR 20.1101 limits. The revised calculations based on 84 TN-32 casks results in a dose of  $5.6 \times 10^{-5}$  mrem per year, which is less than the original licensing basis. The staff reviewed the calculations and assumptions provided by Dominion. Based on these results, normal ISFSI operations will not have a significant offsite radiological impact and will remain well within the 10 CFR 20.1101 and 72.104 limits. The staff also evaluated radiological consequences of a

release of the entire gaseous inventory of a cask and found that Dominion's calculated dose to an individual at the nearest site boundary is 84 mrem, which is well within the 5 rem criteria of 10 CFR 72.106.

The annual collective dose from 84 TN-32 casks to 48 residents within a two-mile radius of the ISFSI is calculated to be  $2.7 \times 10^{-6}$  person-rem, which is several orders of magnitude less than the collective dose from natural background radiation.

Radiological decommissioning of the ISFSI would be complete when the last cask is removed from the site. Small occupational exposures to workers could occur during decontamination activities, but these exposures would be much less than those associated with cask loading and transfer operations. Due to the design of the sealed surface storage casks, no residual contamination is expected to be left behind on the concrete base pad. The base pad, fence, and peripheral utility structures are defacto decommissioned when the last cask is removed.

Alternatives to the Proposed Action: The applicant's Environmental Report and the staff's EA discuss several alternatives to the proposed ISFSI license renewal. These alternatives include shipment of spent fuel off-site, and other methods to increase on-site spent fuel storage capacity, as well as the no action alternative. In the first category, the alternatives of shipping spent fuel from Surry to a permanent Federal Repository, to a reprocessing facility, or to a privately owned spent fuel storage facility were determined to be non-viable alternatives, as no such facilities are currently available in the United States, and shipping the spent fuel to other power stations is impractical because the receiving utility would have to be licensed to store the Surry spent fuel, and it is unlikely that another utility would be willing to accept it, in light of their own limitations on spent fuel storage capacity. Another off-site alternative is to construct an ISFSI at a site away from the Surry Power Station. However, it was concluded that this alternative does not offer net environmental benefits

Other on-site storage alternatives considered by the applicant included increasing the capacity of the existing spent fuel pools by re-racking or spent fuel rod consolidation, or construction of a new spent fuel storage pool. Dominion has already increased the original capacity of the existing pool and cannot increase it further. Although the applicant could

construct an additional spent fuel pool, the high cost associated with constructing and maintaining such a facility and all of the necessary support equipment, coupled with the significant occupational exposures resulting from the extensive fuel handling operations, make this alternative impractical. Modifying operations of the plants was also considered such as extending fuel burnup or operating at reduced power. However, such operational changes may alter the amount of fuel to be stored, but they do not eliminate the need for storage. Also, consideration of researching other technologies for interim disposal was determined non-viable because of additional doses associated with repackaging.

The no action alternative could result in the extended or permanent shutdown of the Surry Power Station. The fuel currently stored would have to be removed. The electrical generation capacity lost would likely negatively impact the local economy and infrastructure of the area. For these reasons, the “no action” alternative is not considered a practical alternative.

As discussed in the EA, the Commission has concluded that there are no significant environmental impacts associated with renewing the license of the Surry ISFSI, and other alternatives were not pursued because of significantly higher costs, additional occupational exposures, and the unavailability of offsite storage options.

Agencies and Persons Contacted: Officials from the Virginia Department of Emergency Services, the Virginia Department of Historic Resources, the U.S. Fish and Wildlife Service, and the Virginia Department of Environmental Quality, were contacted in preparing the staff’s environmental assessment. The conclusions by all agencies consulted were consistent with the staff’s conclusions.

## **II. FINDING OF NO SIGNIFICANT IMPACT**

The staff has reviewed the environmental impacts of renewing the Surry ISFSI license relative to the requirements set forth in 10 CFR Part 51, and has prepared an EA. Based on the EA, the staff concludes that there are no significant radiological or non-radiological impacts associated with the proposed action and that issuance of renewal of the license for the interim storage of spent nuclear fuel at the Surry ISFSI will have no significant impact on the quality of

the human environment. Therefore, pursuant to 10 CFR 51.31 and 51.32, a finding of no significant impact is appropriate and an environmental impact statement need not be prepared for the renewal of the materials license for the Surry ISFSI.

Supporting documentation is available for inspection at NRC's Public Electronic Reading Room at: <http://www.nrc.gov/reading-rm/ADAMS.html>. A copy of the license application, dated April 29, 2002 as supplemented October 6, 2003, and the staff's EA, dated February 2005, can be found at this site using the ADAMS accession numbers ML021290068, ML032900118, and ML040560156. Any questions should be referred to Mary Jane Ross-Lee, Spent Fuel Project Office, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Mailstop O13D13, telephone (301) 415-3781; fax number (301) 415-8555.

Dated at Rockville, Maryland, this 11th day of February 2005.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

/RA/

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