

## NATIONAL TRANSPORTATION SAFETY BOARD

### Sunshine Act Meeting Notice

**TIME AND DATE:** 9:30 a.m., Tuesday, September 17, 2002.

**PLACE:** NTSB Conference Center, 429 L'Enfant Plaza SW., Washington, DC 20594.

**STATUS:** The three items are Open to the Public.

**MATTERS TO BE CONSIDERED:**

- 7493—Marine Accident Report—Grounding of the Small Passenger Vessel *Finest*, Sandy Hook, New Jersey, January 4, 2001.
- 7494—Marine Accident Report—Fire On Board the Small Passenger Vessel *Seastreak New York*, Sandy Hook, New Jersey, September 28, 2001.
- 7371A—Hazardous Materials Accident Report—Release and Ignition of Hydrogen Following the Collision Between a Tractor/Semitrailer with Horizontally Mounted Cylinders and a Pickup Truck near Ramona, Oklahoma, May 1, 2001.

*News Media Contact:* Telephone: (202) 314-6100.

Individuals requesting specific accommodations should contact Ms. Carolyn Dargan at (202) 314-6305 by Friday, September 13, 2002.

**FOR MORE INFORMATION CONTACT:** Vicky D'Onofrio, (202) 314-6410.

Dated: September 6, 2002.

**Vicky D'Onofrio,**

*Federal Register Liaison Officer.*

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## NUCLEAR REGULATORY COMMISSION

[Docket No. 50-339]

### Virginia Electric and Power Company, North Anna Power Station, Unit 2; Exemption

#### 1.0 Background

The Virginia Electric and Power Company (the licensee) is the holder of Facility Operating License No. NPF-7, which authorizes operation of the North Anna Power Station, Unit 2. The license provides, among other things, that the facility is subject to all rules, regulations, and orders of the U.S. Nuclear Regulatory Commission (NRC, the Commission) now or hereafter in effect.

The facility consists of a one pressurized-water reactor located in Louisa County in the Commonwealth of Virginia.

#### 2.0 Request/Action

Title 10 of the Code of Federal Regulations (10 CFR), part 50, Section 50.44 requires reactors fueled with Zircaloy or ZIRLO cladding to control any hydrogen gas that may be generated after a postulated loss-of-coolant accident (LOCA). 10 CFR 50.46 identifies design requirements for calculating the performance of the emergency core cooling system (ECCS) for reactors containing fuel with Zircaloy or ZIRLO cladding. Finally, Appendix K to 10 CFR part 50 requires the Baker-Just equation, which is only applicable for fuels using Zircaloy cladding, be used to predict the rates of energy release, hydrogen concentration, and cladding oxidation from the metal water reaction.

By letter dated February 11, 2002, as supplemented by letter dated May 16, 2002, the licensee submitted a request for a license amendment to irradiate a Framatome lead test assembly during Cycle 16 at North Anna, Unit 2. The lead test assembly to be used is one of four lead test assemblies that have been used for the past three operating cycles at North Anna, Unit 1. Included in this proposed license amendment was a request for an exemption from the requirements of 10 CFR 50.44, 50.46, and Appendix K to 10 CFR part 50 that would allow the licensee to use a lead test assembly that consisted of two advanced zirconium-based alloys, M4 and M5, for the fuel rod cladding. The licensee included the following license condition in its submittal:

Virginia Electric and Power Company may operate one lead test assembly containing advanced zirconium-based alloys for one cycle, to a lead rod burnup not exceeding 75,000 MWD/MTU.

#### 3.0 Discussion

Pursuant to 10 CFR 50.12, the Commission may, upon application by any interested person or upon its own initiative, grant exemptions from the requirements of 10 CFR part 50 when (1) the exemptions are authorized by law, will not present an undue risk to public health or safety, and are consistent with the common defense and security; and (2) when special circumstances are present. In accordance with 10 CFR 50.12(a)(2)(ii), special circumstances exist whenever an application of a particular regulation under the circumstances is not necessary to achieve the underlying purpose of the rule.

The underlying purpose of 10 CFR 50.44 is to ensure that means are provided for the control of hydrogen gas

that may be generated following a LOCA. The licensee has provided means for controlling hydrogen gas and has previously considered the potential for hydrogen gas generation stemming from a metal-water reaction. The chemical similarity of the lead test assembly containing advanced zirconium-based cladding with that of the Zircaloy cladding ensures that previous calculations of hydrogen production resulting from a metal-water reaction would not be significantly changed. As such, the licensee has achieved the underlying purpose of 10 CFR 50.44.

The underlying purpose of 10 CFR 50.46 and 10 CFR part 50, Appendix K, is to establish requirements for the calculation of ECCS performance. The licensee has performed a calculation demonstrating adequate ECCS performance for North Anna, Unit 2, and has shown that the lead test assembly does not have a significant impact upon the calculation. The peak cladding temperature of the lead test assembly was significantly lower than the resident Westinghouse fuel. Using the Baker-Just equation, the result conservatively predicted local cladding oxidation of the lead test assembly of only a few percent. Also, the maximum hydrogen generation was unchanged with the inclusion of the lead test assembly. Therefore, the coolable geometry was maintained following a LOCA.

Paragraph I.A.5 of Appendix K to 10 CFR part 50 states that the rates of energy, hydrogen concentration, and cladding oxidation from the metal-water reaction shall be calculated using the Baker-Just equation. Since the Baker-Just equation presumes the use of Zircaloy clad fuel, strict application of the rule would not permit use of the equation for advanced zirconium-based alloys for determining acceptable fuel performance. The underlying intent of this portion of the Appendix, however, is to ensure that analysis of fuel response to LOCAs is conservatively calculated. Due to the similarities in the chemical composition of the advanced zirconium-based alloys and Zircaloy, the application of the Baker-Just equation in the analysis of advanced zirconium-based clad fuel is justified and will conservatively bound all post-LOCA scenarios. Thus the underlying purpose of the rule will be met, and special circumstances exist, allowing the staff to grant an exemption from Appendix K to 10 CFR Part 50 that would allow the licensee to apply the Baker-Just equation to advanced zirconium-based alloys.

The staff confirmed that the licensee used approved LOCA methods to