

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
BEFORE THE COMMISSION

In the Matter of)	
)	
Northern States Power Company)	Docket No. 72-10-ISFSI-2
)	
Prairie Island Nuclear Generating Plant)	
)	
(Independent Spent Fuel Storage))	

DECLARATION OF JOHN T. GREEVES

1. My name is John T. Greeves. I am currently an environmental and regulatory consultant. The Prairie Island Indian Community in the State of Minnesota has retained me as a consultant with respect to the above-captioned proceeding. I hold a Bachelor of Science in Civil Engineering from the University of Maryland. I have also engaged in graduate studies in groundwater analysis at the University of Maryland and business management at Golden State University.

2. I have forty years of nuclear safety experience, including: senior level management of licensing, inspection, construction and regulation development applied to management and disposal of low level and high-level nuclear waste; licensing of nuclear fuel cycle facilities; and siting, design, construction and decommissioning of nuclear reactors.

3. My activities and experiences include managing and participating in:

- a. Development of the NRC's regulatory program for disposal of spent fuel and high-level waste, including regulation development and

interactions with US DOE; principal manager in charge of the Yucca Mountain Project and development of the NRC's high-level waste disposal regulation, 10 CFR Part 63;

- b. Development of the NRC's activities required under the Low-Level Radioactive Waste policy Amendments Act of 1985, including development of NRC's Standard Review Plan for LLW license applications;
- c. Development of the NRC's decommissioning program for complex facilities including nuclear reactors, large materials facilities, both Title I (DOE) and Title II commercial uranium recovery mill tailings sites; and
- d. Coordination with federal and state representatives under the West Valley Demonstration Act (WVDA), regarding removal of high level waste and decontamination and decommissioning of the site.

4. I retired from the United States Nuclear Regulatory Commission (NRC) in 2004 after 30 years of Federal Service. Since 2004, I have been a consultant to industry and government entities on environmental risk management and regulatory issues, including as an expert consultant for the United States Department of Energy (DOE).

5. My career at the NRC included a broad range of positions of increasing responsibility covering most aspects of the NRC's program for licensing, inspection, and regulation to assure safety and quality associated with the management, treatment, and commercial disposal of low-level nuclear waste (LLW), high level waste disposal (HLW) and material facility and power reactor decommissioning.

6. From 1995 until my retirement in 2004, I served as the NRC's Director of Division of Waste Management and Environmental Protection. In that position, I directed the NRC's program for licensing, inspection, and regulation to assure safety and quality associated with the management, treatment, and commercial disposal of LLW,

HLW and material facility and power reactor decommissioning. I developed, implemented and evaluated safety and environmental policies and long-range goals for these activities. I was responsible for developing the regulations and NRC staff review plans for the Yucca Mountain project and the NRC staff review plans for complex decommissioning activities including Nuclear Reactors.

7. From 1993-1995, I served as the Director of Division of Low Level Waste Management and Decommissioning. In that position I directed the NRC's waste management program for licensing, inspection, and regulation to assure safety for medical, industrial and fuel cycle regulated facilities. I also developed and implemented safety and inspection policies and long-range goals for these activities.

8. From 1987-1993, I directed the NRC's program for licensing, inspection, and regulation to assure safety and quality associated with the management, treatment, and commercial disposal of LLW, Uranium Recovery (UR) mill tailings sites remediation, material facility and power reactor decommissioning. I coordinated within NRC so that consistent criteria were developed for acceptable radioactive waste disposal, UR activities, and decommissioning.

9. From 1980-87, as manager of the NRC's Engineering Branch, I was responsible for all engineering support for both the High Level Waste Program and the Low Level Waste programs required by the Low Level Waste Amendments Act of 1985 and the Nuclear Waste Policy act of 1982. I was responsible for developing, implementing, and evaluating safety and environmental policies and long-range goals for these activities.

10. From 1974-1980, I conducted NRC's civil engineering reviews of new applications for construction of nuclear power plants and conducted inspections of existing power plants and plants under construction.

11. Prior to joining the AEC/NRC in 1974, I worked for Bechtel Power Corporation on the design and construction of nuclear power plants, dams and other large construction projects.

12. I have also served on a number of national and international panels regarding waste management activities. I Co-Chaired the U.S. Interagency Steering Committee on Radiation Standards (ISCORS) from 1995 to 2004. I was the U.S. government's representative to the IAEA Waste Safety Standards Committee (WASSC), and have participated extensively in the development of the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management. I served as the NRC management representative to the first Joint Convention review meeting in Vienna Austria (November, 2003). I have also consulted for numerous foreign governments including: Canada, France, Japan, Romania, Ukraine, Russia, China, Spain, Italy, United Kingdom, Germany, South Africa, Philippines and Mexico.

13. I have reviewed Northern State Power Company, a Minnesota Corporation, d/b/a Xcel Energy's ("NSPM") application for renewal of its license to operate the Prairie Island Independent Spent Fuel Storage Installation ("PI ISFSI"). In my opinion, and as I explain more fully below, the NRC should grant a hearing to determine whether significant omissions in NSPM's license renewal application should be addressed before the NRC makes a final determination on the application.

14. 10 CFR Section 72.122 (h) (4) requires that storage confinement systems must have the capability for continuous monitoring in a manner such that the licensee will be able to determine when corrective action needs to be taken to maintain safe storage conditions.

15. The components and supporting materials that are incorporated into the container designs for the purpose of monitoring cask systems should be classified as “important to safety” or at the very least, as not Important to Safety but its failure could prevent fulfillment of a function that is important to safety, or its failure as a support Systems, Structures and Containment (“SSC”) could prevent fulfillment of a function that is important to safety. Monitoring of casks, and stored fuel, during the long-term storage proposed by the applicant is extremely important to determine the condition and the possible need for corrective action for stored fuel and casks. The monitoring system for TN-40 and TN-40HT casks supports maintaining a critical pressure boundary system including seals needed to confine radioactive releases.

16. NUREG 1927, the Standard Review plan for the renewal of dry cask storage system licenses, provides a citation to NUREG/CR-6407 “Classification of Transportation packaging and Dry Spent Fuel Storage System Components According to Importance to Safety” as containing guidance on SSCs that may be included within the scope of license renewal. NUREG/CR-6407 defines items which have a major impact on safety. Such items include systems whose failure or malfunction could indirectly result in a condition adversely affecting public health and safety. The failure of such a system in conjunction with the failure of an additional item could result in an unsafe condition. The pressure monitoring system should fall directly within that definition, and therefore should be an SSC that is within the scope of license renewal. Table 3 of the NUREG includes “operations support, e.g., monitoring, as a primary

function. Section 2.4.3 of NUREG 1927 further identifies examples of items that are not important to safety and may be eliminated from the scope of license renewal. None of the examples given would encompass the pressure monitoring system.

17. There are at least two significant examples, at two different sites, where the pressure monitoring system was critical for identifying a seal leak. These leaks turned out to be an industry-wide problem. On July 8, 2011, the NRC Region I office issued NRC ISFSI (INSPECTION REPORT No. 05000277/2010) for Peach Bottom Atomic Power Station, Unit 2. This inspection report (on page 4) included a review of activities during a routine spent fuel storage campaign and the troubleshooting, unloading, root cause evaluation, and corrective action development of a loaded spent fuel storage cask that had developed a helium leak in the main lid seal. On July 12, 2000, the NRC completed an inspection (INSPECTION REPORT NO. 72-002/2000-06) at the Surry Power Station Independent Spent Fuel Storage Installation (ISFSI). On page 4 of this report NRC noted that a low pressure alarm was received at the Surry ISFSI for the Transnuclear (TN-32) cask number TN-32-01 at ISFSI pad location 2-3. The cask was returned to the station, it was determined that a seal leak did exist and the licensee made a four-hour notification. Upon lid removal, corrosion was found on the cask lid and body extending to the point of the secondary seal. An examination of the cask seal found that a preliminary cause of the secondary seal failure was corrosion.

18. Neither of these two leaks would have been discovered if the management of the aging of the pressure monitoring system was outside the scope of license renewal. As noted earlier, the monitoring of the pressure system is required by Section 72.122 (h) (4), which requires that storage confinement systems must have the capability for continuous monitoring to

store the spent fuel safely. This monitoring system should be included within the scope of the NSPM ISFSI Aging Management Program.

19. Based on the history of defects that have caused leaks to occur in TN casks used for spent fuel storage and transportation it can reasonably be anticipated that over a 60-year license period one or more TN casks will experience confinement failure, which can lead to offsite dose to members of the public. However, NSPM in its license renewal application only addresses gamma and neutron doses, which are direct radiation doses. It concludes, at page E-50, that there will be no effluent releases. Thus, the applicant essentially dismisses, without any basis for doing so, the possibility of effluents resulting from degraded materials and seals from normal operation of the ISFSI over the extended period of storage that is proposed here.

20. The Final Safety Analysis for the ISFSI, Rev. 13, at page 8.2-13, Rev 11 recognizes that the maximum individual whole body dose for loss on fuel cask confinement is determined to be 0.15 rem. The applicant refers to the 5 rem limit in 10 CFR Section 72.106(b). Section 72.106 (b) refers to a design basis accident. Leaking casks are not a design basis accident. There is no initiating event. This loss of confinement occurs as a result of degradation and wear of engineering materials over a long period of time, and can be reasonably anticipated during the term of the license. We contend that this design basis accident limit does not apply to reasonably anticipated, operational releases. This dose exceeds the limits in 10 CFR part 20 and 10 CFR Part 72 for operational releases. Given the extensive history of leaking seals for TN casks, well

documented by the nuclear industry,¹ it is reasonable to anticipate loss of confinement occurrences over a 60 year period for multiple casks and degradation of the barriers to effluent leakage that will occur over the extended period of this license application.

21. NSPM has failed to adequately address and provide for the safe performance of spent fuel, particularly the high burn-up spent fuel, under the longer term (up to 60 years) dry storage conditions that are proposed in this license renewal application. The potential effects of longer term storage on spent fuel storage performance is uncertain and must be better understood and predicted before storage for a total of 60 years is authorized.

I declare under penalty of perjury that the foregoing is true and correct.

Executed this 24th day of August, 2012, at Frederick, Maryland.

/Executed by John T. Greeves in Accord with 10 C.F.R. 2.304(d)/

John T. Greeves
209 Rockwell Terrace
Frederick, MD 21701
Phone: 301-452-3511
Email: greevesj@aol.com

State of Maryland
County of Frederick

¹ See NWTRB report page 69 item d.