UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

In the Matter of	)	
	)	Docket No. 72-10-ISFSI-2
Northern States Power Co.	)	
	)	
(Prairie Island Nuclear Generating Plant, Independent Spent Fuel Storage Installation)	)	ASLBP No. 12-922-01-ISFSI-MLR-BRD01

DECLARATION OF TERRY A. PICKENS

Terry A. Pickens states as follows under penalties of perjury:

I. PROFESSIONAL QUALIFICATIONS

1. My name is Terry A. Pickens. I am a mechanical engineer with nearly thirty-nine years of experience in the nuclear industry. I am the Director of Nuclear Regulatory Policy for Xcel Energy. I worked for Xcel Energy, the parent company of Northern States Power Company – Minnesota ("NSPM"), Nuclear Management LLC, in which NSPM was a partner, and directly for NSPM for a combined total of thirty two years. My professional qualifications are provided in Enclosure 1. As Xcel Energy's Director of Nuclear Regulatory Policy, I am responsible for interfacing with organizations outside of Xcel Energy that influence, or otherwise make decisions regarding, policy issues that can impact Xcel Energy's nuclear operations. Since 2001, I have been involved with policy issues related to the long-term disposition of spent nuclear fuel produced at our Prairie Island and Monticello nuclear generating plants. In my role, I interface with various organizations working on spent fuel issues, including the US Department of Energy ("DOE"), US Nuclear Regulatory Commission ("NRC"), Nuclear Waste Strategy Coalition ("NWSC"), Nuclear Energy Institute ("NEI"), and the Electric Power Research Institute ("EPRI"). I am currently a member of NEI's Integrated Used Nuclear Fuel Working Group, NEI's Dry Storage Task Force, and EPRI's Used Fuel and High Level Waste Technical

Advisory Committee. As a member of these groups, I am able to ensure that Xcel Energy's projects incorporate the latest knowledge on storage of used nuclear fuel. As such, I have been directly involved in developing the Prairie Island Independent Spent Fuel Storage Installation ("PI ISFSI") Aging Management Program ("AMP") for high burnup spent nuclear fuel.[1] As further described in Section III, DOE has contracted with EPRI to manage the "High Burnup Fuel Cask Research and Development Project" (the "DOE Cask Demonstration Project"). I currently serve as a member of the Industry Review Team ("IRT") that works with EPRI to ensure that the DOE Cask Demonstration Project objectives are met and remain consistent with industry, and more specifically, Prairie Island's needs.

II. BACKGROUND AND ISSUES RAISED IN CONTENTION 6 (HIGH BURNUP FUEL)

A. BACKGROUND

2. I am providing this Declaration in support of Northern States Power Company's Motion for Summary Disposition of the Prairie Island Indian Community's Contention 6 (High Burnup Fuel).

3. By application dated October 20, 2011, and supplemented by letters dated February 29, 2012, and April 26, 2012, NSPM requested renewal of Materials License No. SNM-2506 for the Prairie Island ISFSI (the "Application"). On August 24, 2012, the Prairie Island Indian Community ("PIIC" or the "Community") submitted its Request for Hearing and Petition to Intervene in License Renewal Proceeding for the Prairie Island Independent Spent Fuel Storage Installation (the "Petition" or "Pet."). In preparing this Declaration, I reviewed relevant pleadings of the parties in that proceeding.

[1] High burnup fuel is defined as fuel assemblies with average burnups exceeding 45 GWd/MTU.

4. I understand that the Petition included Contention 6 alleging that "NSPM's license renewal application is deficient because it did not adequately address the potential degradation of high burnup fuel due to aging during storage, subsequent handling, and transportation." Pet. at 52. PIIC alleged that, therefore, "NSPM has failed to demonstrate that the requirements of 10 CFR § 72.122 to protect spent fuel from significant degradation during the proposed extended storage period will be satisfied." *Id*. at 54. The Petition relied on NRC, DOE and Nuclear Waste Technology Review Board ("NWTRB") documents that identify potential degradation mechanisms affecting the fuel cladding during extended storage and the need for additional data regarding the behavior of high burnup fuel during dry storage. Pet. at 52-54. PIIC alleged that NSPM has "not adequately addressed potential fuel cladding degradation from hydriding effects, oxidation, clad creep, embrittlement, and thermal-driven cracking and leakage." Pet. at 54. The Petition asserted that the uncertainties in data "compel the implementation of efforts and development of a rigorous plan to address the gaps and uncertainties before an additional 40 years of storage is finally authorized." *Id.*

5. I further understand that, in its Order of December 20, 2012, the Atomic Safety and Licensing Board admitted Contention 6 as follows:

> PIIC has raised a genuine dispute that Northern States' application did not sufficiently consider the uncertainties associated with long-term dry storage of high-burnup fuel.

Northern States Power Co. (Prairie Island Nuclear Generating Plant Independent Spent Fuel Storage Installation), LBP-12-24, 76 N.R.C. 505, 528 (2012). My Declaration and NSPM's Motion demonstrate that NSPM has supplemented its Application to address PIIC's contention regarding the potential degradation of high burnup fuel and PIIC's contention that a rigorous

plan must be developed to address gaps and uncertainties in data associated with the performance of high burnup fuel during the extended license period.

6. On January 31, 2013, the NRC Staff issued a set of requests for additional information ("RAIs"), which included RAI 3-2 related to the storage of high burnup fuel beyond twenty years. The NRC Staff issued a revised RAI 3-2 on June 5, 2013. In sum, this revised RAI requested that NSPM "[p]rovide justification for the acceptability of the storage of high burnup (HBU) fuel by providing a strategy that includes an aging management program (AMP) to demonstrate that HBU fuel is protected against possible degradation that may lead to gross ruptures for periods beyond 20 years and potential operational safety issues during removal from storage." *See* Enclosure 2 at 3. The RAI further stated that "[t]he strategy should address reasonable and known physical or degradation phenomena associated with storage periods from 20 to 60 years, such as embrittlement of cladding from the ductile to brittle transition from hydride reorientation in the radial direction in HBU fuel." *Id.* The RAI also stated that the strategy "may define an alternative, optional program to periodically review and use surrogate information from other confirmatory programs in the U.S. with similar type of HBU fuel." *Id.* I reviewed this revised RAI and assisted with preparing NSPM's response, which was submitted on July 26, 2013. NSPM's response to RAI 3-2 is provided in Enclosure 2. *Id* at 3-4.

7. NSPM responded that it intended to rely on the DOE Cask Demonstration Project, described further in Section III, to provide confirmatory data that NSPM will use in its aging management program for high burnup fuel. *Id.* NSPM also stated that it participates in the IRT program overseeing the demonstration project. *Id*. at 4. As previously stated, I am NSPM's representative on the IRT.

8. On May 27, 2014, the NRC Staff issued a second set of RAIs, which included RAI-12. RAI-12 requested that NSPM provide an Aging Management Program ("AMP") for high burnup fuel that addresses the required ten elements in NUREG-1927, *Standard Review Plan for Renewal of Spent Fuel Dry Cask Storage System Licenses and Certificates of Compliance* (March 2011) ("NUREG-1927"). Enclosure 3 at 5. RAI-12 stated that, because NSPM intended to rely on the DOE Cask Demonstration Project, its AMP should be consistent with the DOE Cask Demonstration Project test plan and Interim Staff Guidance-24, *The Use of a Demonstration Program as a Surveillance Tool for Confirmation of Integrity for Continued Storage of High Burnup Fuel Beyond 20 Years* ("ISG-24") (included as Enclosure 6). I assisted in the preparation of the response to RAI-12, which is included in Enclosure 3.

B. REQUIREMENTS FOR LONG TERM STORAGE OF HIGH BURNUP FUEL

9. NRC regulations at 10 C.F.R. § 72.122(h)(1) require that spent fuel cladding be protected during storage against degradation that leads to gross ruptures, or the fuel must be otherwise confined such that the fuel degradation will not pose operational safety problems with respect to its removal from storage. Additionally, storage systems must be designed to allow ready retrieval of the spent fuel for further processing or disposal. 10 C.F.R. § 72.122(l). The NRC has developed the following guidance that addresses how applicants can demonstrate compliance with 10 C.F.R. §§ 72.122(h)(1) and 72.122(l) in support of an ISFSI license renewal application.

10. NUREG-1927 provides guidance for the NRC's safety review of applications to renew site specific dry cask storage facilities. NUREG-1927 provides that applicants must identify whether structures, systems, and components ("SSC") within the scope of the license renewal

are subject to an aging effect. If the SSC is subject to an aging effect, there are two methods for addressing that effect - an AMP or a Time Limited Aging Analysis ("TLAA"). NUREG-1927 at 19. A TLAA is an analysis meeting certain criteria in NUREG-1927, including that it provides the basis for conclusions related to whether an SSC can perform its intended function for the duration of the license. NUREG-1927 at xii. An AMP is used to prevent, mitigate, monitor for, or identify aging effects during the extended license period. *Id.* at ix. An AMP must address the following ten elements: (1) scope of the program; (2) preventive actions; (3) parameters to be monitored or inspected; (4) detection of aging effects; (5) monitoring and trending; (6) acceptance criteria; (7) corrective actions; (8) confirmation process; (9) administrative controls; and (10) operating experience. NUREG-1927 at 23-24.

11. With respect to identifying aging effects for high burnup fuel, NUREG-1927 states that the NRC Staff should assess whether the applicant has considered the most recent revision of Interim Staff Guidance-11 ("ISG-11"), *Cladding Considerations for the Transportation and Storage of Spent Fuel*, Revision 3 (November 2003) (included as Enclosure 5), and research results into this area. NUREG-1927 at 20. ISG-11 specifies the acceptance criteria needed to provide reasonable assurance that commercial spent fuel is maintained in the configuration that is analyzed in the Safety Analysis Reports ("SAR") for spent fuel storage and thus meets the requirements of 10 C.F.R. § 72.122. *See* Enclosure 5 at 1-3. Certification and licensing high burnup fuel for storage has been permitted for an initial 20-year term using the guidance contained in ISG-11. Enclosure 6 at 1. ISG-11 provides temperature limits on the calculated maximum fuel cladding temperature that will prevent "potential" detrimental effects such as cladding creep and hydriding. *Id.* at 1-2. In its Application, NSPM demonstrated that it met these temperature limits. Application at 3-13. Thus, NSPM concluded that there are no aging

effects/mechanisms that require management for the spent fuel assemblies stored in the inert environment provided by the cask. *Id.*

12. Since the issuance of ISG-11, the NRC Staff has taken the position that, because ISG-11 was based on short term laboratory tests and analysis, the guidance in this document may not be applicable beyond twenty years of storage. Enclosure 6 at 1. Although there is no evidence to suggest that high burnup fuel cannot be stored safely beyond twenty years, ISG-24 states that "additional confirmatory data or a commitment to obtain data on [high burnup fuel] and taking appropriate steps in a learning AMP will provide further information that will be useful in assuring the storage and retrievability of [high burnup fuel] for periods beyond 20 years." *Id.* A learning AMP is one that is periodically updated to incorporate the current state of knowledge. *Id.* at 5. As a result of this position, NRC Staff issued the previously described RAI 3-2 and RAI-12 requesting that NSPM provide an AMP for high burnup fuel for periods beyond twenty years of storage.

13. ISG-24 provides guidance for determining whether a demonstration project, such as the DOE Cask Demonstration Project, has the necessary properties to qualify as a method to demonstrate the integrity of high burnup fuel for continued storage. Enclosure 6 at 1. This guidance provides eight conditions that a demonstration project must meet. *See id.* at 3-5. In sum, if an applicant intends to rely on a demonstration project, ISG-24 provides that the following conditions must be met: (1) the fuel in the demonstration project should be representative of the applicant's fuel in terms of burnup and type of fuel cladding; (2) the temperatures in the application must be bounded by the temperatures in the demonstration project or the models used to predict temperatures in the application must be benchmarked against the temperatures in the demonstration project; (3) the interior of the demonstration cask

should be quantitatively monitored for moisture, oxygen, and fission gas if the applicant intends to rely on gas analysis to establish the condition of the fuel; (4) demonstration cask internal temperature monitoring should be conducted at a frequency that is suitable for determining a temperature profile over the duration of the demonstration project; (5) when the demonstration cask is opened, some population of rods should be examined to determine the properties of rods that affect degradation, such as cladding creep, fission gas release, hydride reorientation, cladding oxidation, and cladding mechanical properties; (6) the demonstration program should include at least two full fuel assemblies; (7) data from the demonstration program must be indicative of a storage duration long enough to justify extrapolation to the total storage time requested, but no less than 10 years; and (8) a learning AMP should be periodically re-evaluated, given the current state of knowledge regarding the ability of high burnup fuel to meet the regulatory requirements while in dry cask storage. The NRC has found that the AMP for high burnup fuel stored at the Calvert Cliffs Nuclear Power Plant ISFSI, which relies on the DOE Cask Demonstration Project, conforms to the requirements of ISG-24. *See* Enclosure 7 at 3-19.

III. NSPM'S HIGH BURNUP FUEL AGING MANAGEMENT PLAN AND THE DOE CASK DEMONSTRATION PROJECT

14. Like Calvert Cliffs, NSPM submitted an AMP for high burnup fuel that relies on the DOE's Cask Demonstration Project and addresses the ten elements for AMPs required by NUREG-1927. *See* Enclosure 3 at 7-13. The high burnup fuel AMP also provides for the use of an alternative program that meets the ISG-24 criteria in the event that NSPM cannot rely on the DOE Cask Demonstration Project. *Id*. at 7. The following paragraphs describe the ten "elements" of NSPM's high burnup fuel AMP. These paragraphs also describe how the eight

"conditions" in ISG-24 for relying on a demonstration project are addressed by NSPM's AMP and the DOE Cask Demonstration Project.

15. The scope of NSPM's high burnup fuel AMP, Element 1, includes use of data from DOE's Cask Demonstration Project, or an alternative program meeting ISG-24 criteria, as a surrogate program to monitor the condition of the high burnup fuel licensed to be stored in the PI ISFSI. NSPM is licensed to store fuel with an average assembly burnup of up to 60 GWd/MTU in TN-40HT casks in a dry helium environment. *Id.* at 8. However in practice, to provide margin, NSPM typically removes fuel from use at lower burnup levels. The cladding materials for the Prairie Island high burnup fuel are Zircaloy-4 and Zirlo™. NSPM first placed high burnup fuel into dry storage on the PI ISFSI on April 4, 2013, and is currently storing nine casks containing high burnup fuel (identified as Casks 30 through 38). The cladding material for the high burnup fuel currently in storage is Zirlo™. The highest burnup fuel assembly in Casks 30 through 38 is 54.1 GWd/MTU.

16. The High Burnup Dry Storage Cask Research and Development Project Final Test Plan ("Test Plan") is included in Enclosure 4. DOE's Cask Demonstration Project is designed to collect data from a spent nuclear fuel storage system containing high burnup fuel in a dry helium environment. Enclosure 4 at 3-1. The North Anna Power Station will be the host facility for the project and the source of the spent nuclear fuel. *Id.* at 3-3. The project entails loading and storing a TN-32 bolted lid cask with intact high burnup spent nuclear fuel. The Test Plan identifies the types and quantities of fuel available at the North Anna Power Station. However, as noted in the test plan, selection of the actual fuel to be used in the DOE Cask Demonstration Project has not been finalized. Enclosure 4 at 3-6. The fuel will include four different kinds of cladding – Zircaloy-4, low-tin Zircaloy-4, Zirlo™, and M5™. Once the fuel

used in the DOE Cask Demonstration Project is confirmed, NSPM will confirm that the fuel is representative of the fuel stored at the PI ISFSI, as required by ISG-24 condition 1. ISG-24 provides that, if the fuel in the application is higher burnup than that in the demonstration project, the applicant must demonstrate, through evidence based on testing, that the fuel in the demonstration project is representative of the applicant's fuel. The demonstration fuel selection has been tentatively agreed to and will include 32 fuel assemblies, far greater than that required by ISG-24 condition 6. Currently, the highest burnup fuel assembly selected for the project with Zirlo^{TM} cladding is 55.5 GWd/MTU, which is above the burnup level of the highest burnup fuel currently stored at the PI ISFSI. If the DOE's Cask Demonstration Project will not provide data necessary to predict degradation of high burnup fuel stored at the PI ISFSI, NSPM's AMP also allows for the use of alternative program that meets ISG-24. Enclosure 3 at 7. Since the demonstration project fuel selection will be known in the near future, NSPM will be aware, far in advance of when its high burnup fuel has been stored for twenty years, of whether its high burnup fuel will be bounded by the DOE Cask Demonstration Project fuel or whether it will need to rely on an alternative program.

17. Element 2, preventive actions, of NSPM's high burnup AMP relies on condition monitoring of the high burnup fuel in the DOE Cask Demonstration Project to confirm that there is no loss of intended function, and it relies on the cask design and technical specifications that ensure that the high burnup fuel is stored in a dry, inert environment. *Id*. at 8. Long-term integrity of the fuel cladding depends on storage in an inert atmosphere because this prevents clad degradation due to oxidation mechanisms (i.e., corrosion). This protective environment is accomplished by removing water from the cask cavity and backfilling the cavity with an inert gas. After loading the cask with spent nuclear fuel, the interior of the cask is vacuum dried and

pressurized with helium above atmospheric pressure. The vacuum drying removes the air and oxidizing gases and the helium provides the inert environment. The PI ISFSI Technical Specifications provide a pressure limit that the pressure in the cask cavity must be below (i.e., a high vacuum level) following vacuum drying to ensure that all water has been removed from the cask cavity. *See* Enclosure 8 at Technical Specification 3.1.1. The PI ISFSI Technical Specifications also provide a cask helium pressure limit that ensures that the cask is backfilled with helium, thus providing the inert environment. *Id.* at Technical Specification 3.1.2. Technical Specification 3.1.2 also ensures that the peak cladding temperature remains below the limit specified in ISG-11 that prevents degradation due to cladding creep and hydriding (i.e., 400^{o}C (752^{o}F)) by limiting the amount of time for establishing a helium environment. Helium is a better heat conductor than air; thus use of helium results in lower temperatures for the stored fuel. During the vacuum drying process and until the cask is backfilled with helium, the fuel is cooled by air. For conditions of normal operation, peak cladding temperatures occur during this time period when the fuel is being cooled by air. Thermal performance analyses contained in the ISFSI Safety Analysis Report calculate how long the fuel can be cooled by air before the temperature limits in ISG-11, which mitigate degradation due to cladding creep and hydriding, are exceeded. *See* Prairie Island Independent Spent Fuel Storage Installation Safety Analysis Report ("PI ISFSI SAR") at A3.3.2.2.5.1. The SAR thermal performance analysis shows that the 400^{o}C (752^{o}F) temperature limit is not exceeded until after 35 hours of vacuum drying. Id at Figure A3.3-26. The ISFSI Technical Specifications require that a helium environment be established before exceeding this time. *Id.* at SR 3.1.2.1; Enclosure 3 at 8. In NSPM's experience with loading high burnup fuel in the TN-40HT, the longest vacuum drying

time has been 28 hours and seven of the nine currently loaded casks have taken under 24 hours for vacuum drying.

18. Elements 3, 4 and 5 of the high burnup fuel AMP rely on the data gathered from the DOE Cask Demonstration Project. The AMP also provides that NSPM will monitor, evaluate, and trend data from other sources through its Operating Experience ("OE") Program and Corrective Action Program ("CAP"). The DOE Cask Demonstration Project will collect information from an instrumented cask under conditions that replicate the actual loading, drying, and storage conditions experienced by high burnup fuel. Enclosure 4 at 3-1. The cask will be instrumented with thermocouples at various locations to allow for continuous monitoring of fuel cladding temperature (ISG-24 condition 4) and periodic cavity gas monitoring for fission gases, cavity pressure, moisture, hydrogen, and oxygen will be performed using a vent port cover in cask lid (ISG-24 condition 3). Enclosure 4 at 3-9 to 3-14. As a result, temperature data will be gathered during the vacuum drying process, which is the time when cladding temperatures reach their peak. *Id.* at 3-11 to 3-12. Cavity gas monitoring will also be performed during the initial loading, which is scheduled for 2017. Thus, as required by ISG-24 condition 2, initial data will be available to NSPM to benchmark its temperature models used to perform the temperature calculations required to demonstrate that the limits in ISG-11 are met. Periodic fission gas sampling will also be performed throughout the storage period to provide indication of cladding degradation. Enclosure 9 at 18. The plan is for the demonstration cask to remain in storage at the North Anna ISFSI for ten years or longer, equal to greater than the minimum specified by ISG-24 condition 7. Enclosure 4 at ES-4. At that point, the cask will be transported to a facility capable of handling the fuel in the cask in dry conditions and performing the testing necessary

to determine the aging effects specified in ISG-24 Condition 5. This testing will include destructive ("DE") and non-destructive testing ("NDE") of the high burnup fuel cladding.

19. NSPM's high burnup fuel AMP provides a series of "Toll Gates" at which point formal evaluations will be performed of the data from the DOE Cask Demonstration Project and any other available source of data regarding the behavior of high burnup fuel. The first Toll Gate for an assessment at Prairie Island will be in 2028. Although the first Toll Gate assessment is not until 2028, data from the DOE Cask Demonstration Project will start to be available in 2017, when the fuel is loaded in the demonstration cask. As provided above, gas sampling and temperature data will be measured during the initial loading, with additional gas sampling data available approximately every three years and temperature data available quarterly over the next ten years of storage. This gas sampling and temperature data, along with any other high burnup fuel data gathered through NSPM's OE program, will be formally evaluated at the first Toll Gate to determine whether the high burnup fuel cladding continues to perform its intended function and has not been compromised by creep or hydriding. If for any reason data from the DOE Cask Demonstration Project is not available, NSPM will be required to provide evidence that no more than one percent of the high burnup fuel has failed. Because data should be available beginning in 2017 and quarterly thereafter, NSPM will have sufficient notice, should the DOE Demonstration Project not move forward, that it needs to obtain the evidence necessary to demonstrate that no more than one percent of the high burnup fuel has failed.

20. The high burnup fuel at the PI ISFSI will not exceed twenty years of storage, until April 4, 2033. Thus, the monitoring and evaluation of data during the initial loading of the demonstration cask through the first Toll Gate assessment in 2028 will allow sufficient time to address any issues identified prior to exceeding the initial twenty year storage period of high

burnup fuel at the PI ISFSI. Provided that the first Toll Gate assessment confirms that there are no signs of high burnup fuel cladding degradation due to creep or hydriding, this assessment provides the technical basis for the continued storage of high burnup fuel until additional confirmatory data is obtained at the second Toll Gate.

21. The second Toll Gate assessment is scheduled for 2038 and will evaluate the destructive and non-destructive testing results from the DOE Cask Demonstration Project. Enclosure 3 at 10. If this Toll Gate assessment confirms the ability of the high burnup fuel cladding to continue to perform its intended function, then subsequent assessments are discontinued. If the DE and NDE data is unavailable by 2038, then NSPM must provide evidence that the fuel meets the performance criteria specified in AMP Element 6, either by opening a cask or by performing single effects surrogate experiments. *Id.* Planning and funding for the DOE Cask Demonstration Project will be completed years in advance of the high burnup fuel being shipped to a facility for testing and inspection. If the DOE Cask Demonstration Project is not moving forward, NSPM, through participation in the IRT, EPRI and NEI, will know in sufficient time to determine the best method for meeting the requirements in the second Toll Gate.

22. Element 6 of the AMP provides acceptance criteria for demonstrating the performance of the high burnup fuel in terms of cladding creep, hydrogen content of the cover gas, moisture content in the cask, and fuel rod breach as measured by fission gas in the cask. Enclosure 3 at 10-11. If any of these criteria are exceeded, NSPM must take corrective action. As provided in AMP Element 11, the corrective action will depend on the specific degradation experienced. *Id.* at 11.

23. AMP Elements 8, 9, and 10 rely on established processes, such as the CAP, the Quality Assurance Program, and the OE Program, to ensure that available data is trended and that effective, timely corrective actions are taken when issues are identified. NSPM's reliance on these established programs to monitor and evaluate data associated with high burnup fuel and the specific Toll Gate assessments identified in the AMP meet ISG-24 condition 8 for having a "learning AMP" that periodically evaluates the current state of knowledge regarding high burnup fuel.

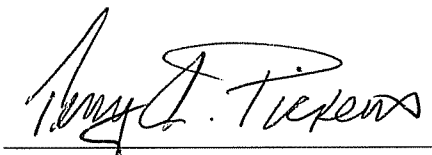
24. The NRC Staff prepared a draft renewed license, included as Enclosure 10, containing a license condition requiring NSPM to submit the evaluation of the results of the first Toll Gate assessment by April 4, 2028 to serve as confirmation that the high burnup fuel continues to perform as expected per ISG-11. Enclosure 10 at ¶ 26. The license condition specifies that the evaluation shall include an assessment of the ability of stored high burnup fuel assemblies and their cladding to continue to perform their intended function(s). The license condition also provides that, if the assessment concludes that the high burnup fuel cladding is unable to perform its intended function(s), NSPM must cease use of such cask or submit a license amendment request to modify this license condition. The approved and issued renewed license for the Calvert Cliffs ISFSI, included as Enclosure 11, contains substantially the same license condition. Enclosure 11 at ¶ 22.

IV. CONCLUSION

25. In conclusion, NSPM has addressed the potential aging degradation mechanisms associated with high burnup fuel by submitting an AMP that addresses the ten elements in NUREG-1927. NSPM's high burnup fuel AMP is a "learning AMP" that relies on the data obtained from the DOE Cask Demonstration Project and any other available data related to high

burnup fuel to confirm that the high burnup fuel cladding continues to fulfill its intended function during long term storage beyond the initial twenty year period. NSPM's high burnup fuel AMP, in combination with the DOE Cask Demonstration Project, meets the conditions provided in ISG-24 for reliance on a demonstration project. The license condition in the PI ISFSI draft renewed license requiring NSPM to submit its first Toll Gate assessment in 2028 ensures that the high burnup fuel is behaving as expected prior to exceeding the first twenty year storage period. The NRC has approved and issued the Calvert Cliffs renewed ISFSI license, which relies on the DOE Cask Demonstration Project and contains substantially the same license condition as the draft PI ISFSI renewed license.

I, Terry A Pickens, swear under penalties of perjury that the foregoing Declaration is true and correct to the best of my knowledge and belief.



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