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10 CFR 72.7

OCAN101901

October 11, 2019

ATTN: Document Control Desk
Director, Spent Fuel Project Office
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT: Request for Exemption from Requirements of 10 CFR 72.212(b)(3)
Arkansas Nuclear One, Units 1 and 2
Docket Nos. 50-313, 50-368, and 72.13
License Nos. DPR-51 and NPF-6

Pursuant to 10 CFR 72.7, "Specific Exemptions," Entergy Operations, Inc. (Entergy) requests an exemption from the requirements of 10 CFR 72.212(b)(3). Specifically, Entergy was not able to perform the initial Aging Management Program (AMP) examinations at Arkansas Nuclear One (ANO) by the date listed in the Energy Solutions' Ventilated Storage Cask (VSC)-24 Certificate of Compliance (CoC) (Certificate Number 72-1007) and Energy Solutions' Final Safety Analysis Report (FSAR).

The timing of the initial examinations required by these tables is within either one year after the twentieth anniversary of the first cask loaded at the site, or two years after the effective date of the CoC renewal, whichever is later. The initial AMP examinations of the VSC-24 casks at ANO were required to be completed by September 20, 2019; the later of the two dates.

By not completing the examinations listed above by the required date, ANO is not in compliance with the VSC-24 CoC condition and, therefore, not in compliance with 10 CFR 72.212(b)(3). This proposed exemption requests extension of the due date to complete these examinations prior to the start-up from the next ANO-2 refueling outage, currently scheduled for Spring 2020, at which time compliance with 10 CFR 72.212(b)(3) will be restored.

This condition has been entered into Entergy's Corrective Action Program.

Entergy requests this exemption be approved by March 1, 2020, to allow for the mobilization of the required equipment and personnel prior to the Spring 2020 ANO-2 refueling outage.

Details of Entergy's needs and justification for the issuance of an exemption are included in Attachment 1. Attachment 2 provides the environmental assessment that is required by 10 CFR 51.60. New commitments contained in this submittal are summarized in Attachment 3.

This request was discussed with the appropriate members of the NRC staff on September 20, 2019.

Sincerely,



Ron Gaston

RWG/rwc

Attachments:

1. Request for Exemption to Complete the Initial Aging Management Program Examinations
2. Environmental Assessment Associated with Exemption Request
3. List of Regulatory Commitments

cc: Regional Administrator, NRC Region IV
NRC Senior Resident Inspector - Arkansas Nuclear One
NRC Senior Project Manager, NRC / NRR/DORL

Attachment 1 to

OCAN101901

**Request for Exemption to Complete the
Initial Aging Management Program Examinations**

Request for Exemption to Complete the Initial Aging Management Program Examinations

1.0 Request for Exemption

Pursuant to 10 CFR 72.7, "Specific Exemptions," Entergy Operations, Inc. (Entergy) requests an exemption from the requirements of 10 CFR 72.212(b)(3). Specifically, Entergy was not able to perform the initial Aging Management Program (AMP) examinations at Arkansas Nuclear One (ANO) by the date listed in the Energy Solutions' Ventilated Storage Cask (VSC)-24 Certificate of Compliance (CoC) (Certificate Number 72-1007) and Energy Solutions' Final Safety Analysis Report (FSAR).

The requirements for these examinations are listed in the VSC-24 FSAR, Table 9.3-5, "Examination of VCC Assembly Exterior;" Table 9.3-7, "Examination of VSC Top End Steel Components;" and Table 9.3-9, "Lead Cask Inspection." The timing of the initial examinations required by these tables is within either one year after the twentieth anniversary of the first cask loaded at the site, or two years after the effective date of the CoC renewal, whichever is later.

The first VSC-24 cask was loaded at ANO on December 18, 1996, which would require completion of initial AMP examinations by December 18, 2017 (i.e., one year after the twentieth anniversary). The renewed CoC was effective September 20, 2017, which would require completion of initial AMP examinations by September 20, 2019 (i.e., two years after the renewed CoC effective date). Therefore, Entergy was required to complete initial AMP examinations of the VSC-24 casks at ANO by September 20, 2019 (i.e., the later of the two potential dates).

By not completing the examinations listed above by the required date, ANO is not in compliance with the VSC-24 CoC condition and, therefore, not in compliance with 10 CFR 72.212(b)(3). This exemption request is to extend the due date to complete these examinations prior to startup from the spring 2020 ANO-2 refueling outage, at which time compliance with 10 CFR 72.212(b)(3) will be restored.

2.0 Background

The VSC-24 system is designed for safe, long-term storage of spent nuclear fuel. The VSC-24 will survive all normal, off-normal, and postulated accident conditions without any uncontrolled release of radioactive material or excessive radiation exposure to workers or members of the general public. The VSCs are designed to be stored outdoors without additional weather protection. Therefore, the cask is designed to withstand the design basis daily and seasonal temperature fluctuation, and tornado, wind, flood, seismic, snow, and ice loads. Additional details of the design and analyses of the VSC are located in Chapters 2 through 7 of the VSC-24 FSAR.

For consistency with the renewed CoC, the FSAR was revised to discuss the Aging Management Review. The review provided an assessment of aging effects that could adversely affect the ability of in-scope systems, structures, and components (SSCs) to perform their intended function during the extended storage period. Aging effects, and the mechanisms that cause them, were evaluated for the combinations of materials and environments identified for

the subcomponent of the in-scope SSCs based upon a comprehensive review of known literature, industry operating experience, and maintenance and inspection records. Aging effects that could adversely affect the ability of the in-scope SSCs to perform their safety function(s) require additional Aging Management Activity to address potential degradation that may occur during the extended storage period. Aging effects that require the aging management activity will be performed either by a Time-Limited Aging Analysis (TLAA) or an Aging Management Program (AMP). The examinations which are the subject of this exemption request are part of the AMP. AMPs that are credited with management of the aging effects during the extended storage period are discussed in Section 9.3.3 of the VSC-24 FSAR. The AMP and lead cask examinations are described in Tables 9.3-5 through 9.3-9 of the FSAR.

The Independent Spent Fuel Storage Installation (ISFSI) pad for the VSC-24 casks stored at ANO is located under the 500 kV output lines from the ANO-2 main generator. These lines are energized during ANO-2 operations. A description of the storage pad is provided in the ANO VSC-24 10 CFR 72.212 report.

The VSC-24s were loaded onto this pad in a 3 X 8 array with the aid of an air pallet. No overhead crane was used in moving these casks to the pad. No overhead lifting device was used to load the VSCs onto the pad. The examinations, for which this exemption is requested, requires the use of overhead lifting devices.

The full extension of the lifting device and the assembly of the lifting device would encroach on the minimum approach distance that is required by the Occupational Safety and Health Administration (OSHA) requirements of 29 CFR 1910.269, "Electrical Power Generation, Transmission, and Distribution." Qualified electrical workers reviewed the planned activity and determined the lifts would be unsafe from a personnel and equipment perspective.

Because of the identified personnel safety issue, Entergy could not complete the assembly of the lifting device or perform the required lifts to perform the aging management examinations.

Additionally, with components of the lifting device staged in the area of the VSC-24s, access to the top of the casks was blocked, thereby preventing the completion of the external examinations.

Based on the results of similar examinations at Palisades Nuclear Plant (Palisades) and Point Beach Nuclear Plant (Point Beach) (i.e., the only other stations that maintain VSC-24 general licensees) and the quarterly radiological surveys of the ANO ISFSI, Entergy has determined that there is no nuclear safety concern related to the delay of these examinations and that there is reasonable assurance that the VSC-24 casks will remain functional during the short delay in performing the initial AMP examinations. The subject examination delay will not endanger life or property of the common defense and security. Entergy expects to achieve results for the initial AMP examinations at ANO similar to the examination results at Palisades and Point Beach. The VSCs have not been moved since they were placed in their current storage locations.

3.0 Technical Considerations

The VSC-24 system is designed to mitigate the effects of design basis accidents that could occur during storage. Design basis accidents account for human-induced events and the most severe natural phenomena reported for the site and surrounding area. Postulated accidents analyzed tornado winds and tornado-generated missiles, the design basis earthquake, the design basis flood, accidental cask drop, lightning effects, fire, and other incidents.

This exemption request does not impact the thermal, shielding, or criticality design functions of the VSC-24s. Although the confinement function could be impacted by the corrosion aging management mechanism, any degradation from this mechanism is relatively slow when compared to the requested delay period (i.e., 0.003 inches a year in a marine environment).

During the assembly of the temporary lifting device, Energy discovered that the top of the gantry crane is approximately 30 feet above grade at the highest lift point. The lowest point of sag on the overhead 500 kV lines was measured to be approximately 49 feet. This would encroach upon the 25-foot minimum approach distance listed in 29 CFR 1926.1408 (Table A).

In accordance with 29 CFR 1910.269, the OSHA online minimum approach distance calculator and Entergy's procedures, a new minimum approach distance of 16 feet, 7 inches was determined. Additional provisions were placed within the Job Safety Hazards Analysis to meet the full intent of 29 CFR 1926.1410, "Power Line Safety – Equipment Operations Closer than the Table A Zone." This allowed for the gantry crane to work within 19 feet of the energized 500 kV lines with approximately 2 feet of margin to the minimum approach distance. However, the qualified electrical workers determined the lifts would be unsafe from a personnel and equipment perspective.

There are no technical issues associated with this request. The request is for an exemption to perform the subject examinations during a time in which the ANO-2 500 kV lines are de-energized due to electrical safety issues for personnel and equipment.

Options that were considered to assist in the performance of these examinations included shutting down ANO-2 and de-energizing the subject power lines prior to the scheduled spring 2020 refueling outage or shuffle/move the VSC-24s such that the minimum approach distance could be maintained. Entergy determined that the risk associated with maneuvering ANO-2 was higher than waiting until the scheduled refueling outage when the lines will be de-energized.

The examinations are to be performed on casks that are in the interior of the 3 X 8 array of the VSCs. ANO does have another ISFSI on site that has empty storage locations on the pads. These pads were built to store the Holtec HI-STORM 100 system casks. However, these pads are not evaluated under the license and design bases for the VSC-24 system and, therefore, cannot currently be used to temporarily store the VSCs. Since the two systems are not compatible under the current design and licenses bases, an additional option would be to construct and install a new system. This option to shuffle/move the VSC-24s was determined to be unfeasible on short notice.

4.0 Regulatory Considerations

10 CFR 72.212(b)(3) states

Ensure that each cask used by the general licensee conforms to the terms, conditions, and specifications of a CoC or an amended CoC listed in § 72.214.

Certificate Number 72-1007 is listed in 10 CFR 72.214.

In Section 5, "RENEWAL," of the renewed Energy Solutions CoC (Certificate Number 72-1007), Item iii, "Operating Procedures for Systems in Service Longer than 20 Years," states in part:

The general licensee (i.e., the user) that operates VSC-24 storage system SSCs for more than 20 years shall establish, implement, and maintain written procedures for each aging management program (AMP), including the lead cask inspection program, described in Section 9.3.3, "Aging Management Program" of the FSAR.

Section 9.3.3 of the FSAR references tables that provide the requirements for the aging management examinations, including when the initial examination was to be performed. The timing of the initial examinations required by these tables is within either one year after the twentieth anniversary of the first cask loaded at the site, or two years after the effective date of the CoC renewal, whichever is later.

The first VSC-24 cask was loaded at ANO on December 18, 1996, which would require completion of initial AMP examinations by December 18, 2017 (i.e., one year after the twentieth anniversary). The renewed CoC was effective September 20, 2017, which would require completion of initial AMP examinations by September 20, 2019 (i.e., two years after the renewed CoC effective date). Therefore, to maintain compliance, Entergy would be required to complete the initial AMP examinations of the VSC-24 casks at ANO by September 20, 2019 (i.e., the later of the two potential dates).

Entergy reviewed the FSAR AMP examination requirements and developed and issued the appropriate procedures. Entergy was preparing to perform those examinations during the week of September 15, 2019. During the assembly of the lifting device, Entergy identified an electrical safety issue for personnel and equipment associated with close proximity to the ANO-2 main generator 500 kV output lines. The identification of the issue and efforts to mitigate the consequences of the condition resulted in the inability to complete the examinations by the VSC-24 CoC and FSAR required due date.

As a result of not completing these examinations by the due date in which these examinations were required to be performed, Entergy decided to pursue an exemption to extend the due date until the next scheduled ANO-2 refueling outage. The 500 kV lines would be de-energized during the refueling outage and eliminate the electrical safety hazard during that time.

While this condition is not reportable under the requirements of 10 CFR 72.45, Entergy did inform management members of the NRC on September 20, 2019.

The specific requirements for granting exemptions to 10 CFR Part 72 licensing requirements are set forth in 10 CFR 72.7, "Specific Exemptions," which reads as follows:

The Commission may, upon application by any interested person or upon its own initiative, grant such exemptions from the requirements of the regulations in this part as it determines are authorized by law and will not endanger life or property or the common defense and security and are otherwise in the public interest.

a. The proposed exemption is authorized by law.

This proposed exemption will extend the due date to perform the CoC-required initial AMP examinations of the VSC-24 casks until the spring 2020 ANO-2 refueling outage.

The NRC issued 10 CFR 72.7 under the authority granted to it under Section 133 of the Nuclear Waste Policy Act of 1982, as amended, 42 U.S.C. §10153. Section 72.7 allows the NRC to grant exemptions from the requirements of 10 CFR Part 72. Granting the proposed exemption provides adequate protection to public health and safety, and the environment. As described below, the proposed exemption will not endanger life or property, or the common defense and security, and is otherwise in the public interest. Therefore, the exemption is authorized by law.

b. The proposed exemption will not endanger life or property or the common defense and security.

Based on the results of similar examinations at Palisades and Point Beach (i.e., the only other stations that maintain VSC-24 general licensees) and the quarterly radiological surveys of the ISFSI, there is reasonable assurance that the VSC-24 casks will remain functional during the short delay in performing the initial AMP examinations. Entergy expects to achieve results consistent with the Palisades and Point Beach examinations. Thus, the proposed exemption will not endanger life or property or the common defense and security. In addition, Entergy has determined that the proposed action will not have an adverse impact to the environment, as described in Attachment 2.

c. The proposed exemption is otherwise in the public interest.

While 10 CFR 72.7 does not specify a presentation of "special circumstance" similar to those required for 10 CFR 50 exemptions, the impact of the proposed exemption on the public interest can be elucidated by using two of the special circumstance identified in 10 CFR 50.12. The applicable special circumstances are discussed below:

10 CFR 50.12(a)(2)(iii) – Compliance would result in undue hardship or other costs that are significantly in excess of those contemplated when the regulation was adopted, or those incurred by others similarly situated.

To perform the required examinations in a safe manner would require de-energizing the 500 kV output lines from the ANO-2 main generator. To de-energize these lines would require ANO-2 to shut down or significantly down power the reactor to trip the turbine. The next scheduled down power for ANO-2 is in the spring of 2020 for a refueling outage.

10 CFR 50.12(a)(2)(v) – The exemption would provide only temporary relief from the applicable regulation and the licensee or applicant has made good faith efforts to comply with the regulation

This exemption is to complete the required examinations in the spring of 2020 instead of September 20, 2019. The electrical safety issue was not identified until the lift rig that is required for the examinations was being erected on September 18, 2019.

Pursuant to 10 CFR 51.60, an environmental report is required to be submitted with an exemption request. The required environmental report is provided in Attachment 2 of this submittal.

5.0 Summary

In conclusion, Entergy requests an exemption from the requirements for completion of the initial AMP examinations at ANO. The requirements are listed in VSC-24 FSAR Tables 9.3-5, 9.3-7; and 9.3-9. Entergy has determined that delaying the required examinations to prior to the startup from the ANO-2 refueling outage in the spring of 2020 is prudent and provides for the safety of the individuals performing the examinations and the associated equipment. As discussed previously, this delay in performing the examinations has low nuclear safety significance and, therefore, will not endanger life or property of the common defense and security.

Entergy requests this exemption be approved by March 1, 2020, to allow for the required rigging and other preparations to be completed to support performing the examinations during the stated refueling outage.

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Environmental Assessment Associated with Exemption Request

Environmental Assessment Associated with Exemption Request

Pursuant to 10 CFR 51.60, an environmental assessment for the schedular exemption request discussed above is provided below.

Purpose of Environmental Report

The purpose of this assessment is to evaluate the environmental impacts of the proposed exemption request as required by 10 CFR 51.60(b)(1)(iii) with information outlined in 10 CFR 51.45. This information contained in this assessment is intended to aid the NRC staff in performing an environmental assessment.

Environmental Impact of the Proposed Action

The Arkansas Nuclear One (ANO) Independent Spent Fuel Storage Installation (ISFSI) in which the Ventilated Stage Casks (VSCs) are located is in a radiologically controlled, Protected Area beneath the energized ANO-2 output 500 kV lines. The exemption request is to extend the scheduled due date to perform the renewed Energy Solutions' required Certificate of Compliance (CoC) (Certificate Number 1007) and Final Safety Analysis Report (FSAR) initial aging management examinations.

The interaction of the VSCs with the environment is through the shielding, confinement, and thermal design functions. The VSCs will remain in their current storage location. The VSCs have not been moved since they were placed in their current storage location. The VSCs will remain in these locations during the examinations as well. The shielding design function will continue to limit external dose to levels bounded by the Energy Solutions' FSAR. The thermal analysis is not impacted by the exemption request either. The examinations in part verify that the containment has not been breached due to aging effects. Entergy expects to obtain results consistent with the same VSC-24 examinations performed at Palisades and Point Beach. The additional time that is requested is short enough that if there is any containment effects from the aging mechanism, required actions could be taken prior to containment breach. Based on the above, all VSC design functions impacting the interaction with the environment are and will remain unaffected during the time until the examinations are complete.

The VSC-24 system is designed to mitigate the effects of design basis accidents that could occur during storage. Design basis accidents account for human-induced events and the most severe natural phenomena reported for the site and the surrounding area. Postulated accidents analyzed include tornado winds and tornado generated missiles, the design basis earthquake, the design basis flood, accidental cask drop, lightning effects, fire, and other incidents. Considering the specific design requirements for each accident condition, the design of the VSC system would prevent loss of containment, loss of shielding, and criticality. This exemption request does not impact any of the design basis accidents or the design of the system.

Based on the above, all VSC design functions impacting the interaction with the environment are and will continue to be bounded by the Energy Solutions' FSAR evaluations. Entergy concludes that there are no gaseous, liquid, or solid effluent (radiological or non-radiological) radiological exposures (worker or member of the public) beyond the current storage of the VSCs

associated with the proposed action. Therefore, approval of the requested schedular exemption to allow the examinations to be performed in the spring of 2020 has no impact on the environment.

Adverse Environmental Effect Which Cannot be Avoided Should the Exemption be Approved

As noted previously, there are no environmental impacts associated with the approval of this exemption. Therefore, there are no adverse environmental effects which cannot be avoided should the exemption request be approved.

Alternatives to the Proposed Action

An alternative to the proposed exemption would be to down power ANO-2 to the point that the turbine could be tripped in which the 500 kV lines would be de-energized.

Another alternative would be to move multiple Holtec's HI-STORM 100 casks and VSC-24 to allow enough distance from the lift device and the 500 kV lines to perform the examinations in a safe manner. Sufficient pad space to accommodate the Holtec casks necessary to empty the pad does not currently exist.

A third alternative would require that an additional pad or an extension to an existing pad be constructed. This would require evaluations associated with rainfall runoff from this additional pad.

Environmental Impact of the Alternatives to the Proposed Action

There are no environmental impacts due to the first alternative. However, the potential alternatives would cause unanticipated costs and undue hardship to ANO and Entergy. The lead cask cannot not be moved to perform the examinations without having to shuffle several casks due to the location of the cask on the pad. This would require additional activities beyond the additional pad or extension of a pad that could have additional environmental risk.

Analysis

Entergy's request for the exemption from the due date for performing the examinations required by the VSC-24 CoC and FSAR has no adverse impact to the environment. Approval of the exemption request would allow the examinations to be performed in a manner such that the electrical safety risk is eliminated when the overhead 500 kV lines are de-energized. The VSCs will continue to perform all design functions from the time of the required due date (September 20, 2019) until the spring of 2020 when the examinations will be performed. There is no technical or safety reason to require unloading and reloading the affected VSC(s). The proposed action would not result in an adverse impact to the environment, unanticipated expenditures, or other uncertainties or risk associated with the alternatives to the proposed action as discussed below.

The alternatives to the proposed exemption would require taking ANO-2 off line or building additional pads to move both Holtec and VSC-24 casks such that the examination could be performed in a safe manner. The first alternative would cause undue hardship on ANO-2 and Entergy. The ANO-1 refueling outage scheduled between September 20, 2019, and the spring of 2020 when ANO-2 is scheduled to begin a refueling outage. This alternative would also incur unanticipated expenditures.

Another alternative requires the construction of either an additional pad or an extension to an existing pad. This alternative would also incur unanticipated expenditures and would extend the amount of time before the required examinations could be performed.

As a result of this environmental assessment, Entergy concludes that the proposed action, which will allow the VSC required examinations to be performed in a safe manner, is in the public's interest in that it avoids the adverse environmental, radiological, and financial effects associated with the alternatives to the proposed action.

Status of Compliance

As of September 20, 2019, ANO is not in compliance with the Energy Solutions' renewed CoC (Certificate Number 1007) and FSAR requirements to perform certain aging management examinations and will remain in non-compliance until the examinations can be performed.

Neither the proposed exemption as described in the environmental assessment nor the alternatives to the proposed exemption require any additional Federal permits, licenses, or other entitlements.

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List of Regulatory Commitments

List of Regulatory Commitments

The following table identifies those actions committed to by Entergy in this document. Any other statements in this submittal are provided for information purposes and are not considered to be regulatory commitments.

COMMITMENT	TYPE (Check One)		SCHEDULED COMPLETION DATE (If Required)
	ONE TIME ACTION	CONTINUING COMPLIANCE	
Complete the VSC-24 AMP initial examinations as listed in the Energy Solution's FSAR Tables 9.3-5; 9.3-7, and 9.3-9.	X		Prior to startup from the ANO-2 refueling outage in the spring of 2020.