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**Ron Gaston**  
Director, Nuclear Licensing

10 CFR 50.90

GNRO-2020/00023

June 26, 2020

ATTN: Document Control Desk  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

Subject: Response to Request for Additional Information - License Amendment  
Request for Permanent Extension of Appendix J Type A Integrated  
Leakage Rate Test Frequencies

Grand Gulf Nuclear Station, Unit 1  
NRC Docket No. 50-416  
Renewed Facility Operating License No. NPF-29

In Reference 1, Entergy Operations, Inc. (Entergy) submitted a request for a proposed amendment to Renewed Facility Operating License (FOL) NPF-29, Appendix A, "Technical Specifications" (TS) for Grand Gulf Nuclear Station, Unit 1 (GGNS). The proposed change, in part, revises TS 5.5.12, "Primary Containment Leakage Rate Testing Program," and TS Surveillance Requirement (SR) 3.6.5.1.1 to allow for the permanent extension of the Type A Integrated Leak Rate Test (ILRT) and drywell bypass leakage rate test (DWBT) interval from 10 years to 15 years.

In Reference 2, the U. S. Nuclear Regulatory Commission (NRC) transmitted a request for additional information (RAI) concerning the proposed license amendment. The Enclosure to this letter provides a response to the NRC RAI.

In Reference 3, the NRC approved Amendment 224 to Renewed FOL NPF-29. This amendment granted a one time extension of the interval to perform the GGNS Type A ILRT and DWBT from 11.5 years to 13.5 years. In the Reference 2 RAI, the NRC also requested revised TS mark-up pages and clean pages as a result of Amendment 224. Attachments 1 and 2 to the Enclosure provide updated versions of TS mark-up pages and clean pages, respectively.

The No Significant Hazards Consideration determination provided in the Reference 1 submittal is not altered by either the RAI responses provided in this letter, or the Reference 3 license amendment.

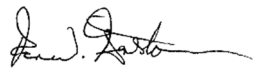
This letter contains no new regulatory commitments.

Should you have any questions or require additional information, please contact Ron Gaston, Director, Nuclear Licensing at 601-368-5138.

In accordance with 10 CFR 50.91, "Notice for public comment; State consultation," paragraph (b), a copy of this application, with attachments, is being provided to the designated State Officials.

I declare under penalty of perjury, the foregoing is true and correct. Executed on June 26, 2020.

Respectfully,



Ron Gaston

RWG/jls

Enclosure: Response to Request for Additional Information

Attachments to Enclosure:

1. Markup of Technical Specification Pages
2. Retyped Technical Specification Pages

- References:
- 1) Entergy Operations, Inc. (Entergy) letter to U. S. Nuclear Regulatory Commission (NRC), "License Amendment Request for Permanent Extension of Appendix J Type A Integrated Leakage Rate Test Frequencies," (ADAMS Accession No. ML20050R656), dated February 19, 2020
  - 2) NRC Electronic mail from S. P. Lingam (NRC) to J. Shaw (Entergy), Subject: "Grand Gulf - Official RAI for LAR Associated with Containment ILRT Interval Change from 10 Years to 15 Years (EPID L-2020-LLA-0027)," (ADAMS Accession No. ML20150A601), dated May 29, 2020
  - 3) NRC letter to Entergy, "Grand Gulf Nuclear Station, Unit 1 – Issuance of Amendment No. 224 Re: One Cycle Extension of Appendix J Integrated Leakage Test and Drywell Bypass Test Interval (Exigent Circumstances) (EPID L-2020-LLA-0060)," (ADAMS Accession No. ML20101G054), dated April 15, 2020.

cc: NRC Region IV Regional Administrator  
NRC Senior Resident Inspector – Grand Gulf Nuclear Station, Unit 1  
State Health Officer, Mississippi Department of Health  
NRC Project Manager - Grand Gulf Nuclear Station, Unit 1

**Enclosure**

**GNRO-2020/00023**

**Response to Request for Additional Information**

## **RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION**

By application dated February 19, 2020 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML20050R656) [Reference 1], Entergy Operation, Inc. (the licensee) submitted a license amendment request (LAR) to revise the Technical Specifications (TSs) for Grand Gulf Nuclear Station, Unit 1 (Grand Gulf). The proposed change revises TS 5.5.12, "10 CFR 50 [Title 10 of the Code of Federal Regulations Part 50], Appendix J, Testing Program," to allow for a permanent extension of the Type A Integrated Leak Rate Testing (ILRT) frequency to 15 years.

Section 10 CFR 50.54(o) requires primary reactor containments for water-cooled power reactors be subject to the requirements of 10 CFR Part 50, Appendix J "Leakage Rate Testing of Containment of Water Cooled Nuclear Power Plants." Appendix J specifies containment leakage testing requirements, including the types required to ensure the leak-tight integrity of the primary reactor containment and systems and components, which penetrate the containment. In addition, Appendix J discusses leakage rate acceptance criteria, test methodology, frequency of testing and reporting requirements for each type of test.

10 CFR 50, Appendix J, Option B requires that test intervals for Type A, Type B, and Type C testing be determined by using a performance-based approach. Performance-based test intervals are based on consideration of the operating history of the component and resulting risk from its failure. The use of the term "performance-based" in 10 CFR 50, Appendix J refers to both the performance history necessary to extend test intervals as well as to the criteria necessary to meet the requirements of Option B.

Section 3.4 "Plant Specific Risk Assessment" of Enclosure to the LAR states the following:

As shown in NUREG-1493, Performance-Based Containment Leak-Test Program [dated January 1995], increasing the test frequency of ILRTs up to a 20-year test interval was found to lead to an imperceptible increase in risk. The estimated increase in risk is very small because ILRTs identify only a few potential containment leakage paths that cannot be identified by Type B or Type C testing. The study also concluded that extending the frequency of Type B tests is possible with no adverse impact on risk as identified leakage through Type B mechanical penetrations are both infrequent and small. Finally, the study concluded that Types B and C tests could identify the vast majority (greater than 95 percent) of all potential leakage paths.

Therefore, from a deterministic perspective, a robust local leak rate testing program with margins between allowable and tested values is an important aspect for extending ILRT test intervals to 15 years. LAR Enclosure Section 3.5 provides non-risk based assessment, with Section 3.5.1 addressing the Type B and Type C tests performed, including as-found and as-left leakage values during refueling (RF) outages RF16 through RF21. However, the licensee also completed additional Type B and Type C testing for Grand Gulf during the current RF22 on-going outage (spring 2020).

**SCPB RAI-1 [Reference 2]**

Provide the latest results of Type B and Type C testing performed during the Cycle 22 Refueling Outage. The updated results and values would be part of the basis in the NRC staff's safety evaluation for the license amendment request.

**Entergy Response**

The following table provides a summary of test results for Type B and Type C Local Leakage Rate Tests (LLRTs) conducted during the Cycle 22 Refueling Outage (RF22) at Grand Gulf Nuclear Station, Unit 1 (GGNS).

RF22 - GGNS Type B and Type C LLRT Results	
AF Min Path (sccm)	34,886
Fraction of La (%)	10.57
AL Max Path (sccm)	113,153
Fraction of La (%)	34.29
AL Min Path (sccm)	61,535
Fraction of La (%)	18.65

### **Additional NRC Request**

Please also include revised Technical Specification mark-up pages and clean pages as a result of NRC-approved Exigent amendment on April 15, 2020 (ADAMS Accession No. ML20101G054) [Reference 3].

### **Entergy Response**

Attachments 1 and 2 to this Enclosure provide updated versions of TS mark-up pages and clean pages, respectively. The following summarizes the changes that were made to the proposed TS mark-up pages as a result of the changes approved in Amendment 224.

TS Page 3.6-2      No change from original submittal

TS Page 3.6-7      No change from original submittal

TS Page 3.6-53      This TS page no longer requires any change from that approved in Amendment 224, and therefore is not included in Attachments 1 and 2.

TS Page 5.5-16      Insert 1 to the TS mark-up page is revised to include the following clause:

*"....except that the next Type A test performed after the October 19, 2008 Type A test shall be performed no later than the plant restart after the End of Cycle 23 Refueling Outage."*

### **REFERENCES**

1. Entergy Operations, Inc. (Entergy) letter to U. S. Nuclear Regulatory Commission (NRC), "License Amendment Request for Permanent Extension of Appendix J Type A Integrated Leakage Rate Test Frequencies," (ADAMS Accession No. ML20050R656), dated February 19, 2020
2. NRC Electronic mail from S. P. Lingam (NRC) to J. Shaw (Entergy), Subject: "Grand Gulf - Official RAI for LAR Associated with Containment ILRT Interval Change from 10 Years to 15 Years (EPID L-2020-LLA-0027)," (ADAMS Accession No. ML20150A601), dated May 29, 2020
3. NRC letter to Entergy, "Grand Gulf Nuclear Station, Unit 1 – Issuance of Amendment No. 224 Re: One Cycle Extension of Appendix J Integrated Leakage Test and Drywell Bypass Test Interval (Exigent Circumstances) (EPID L-2020-LLA-0060)," (ADAMS Accession No. ML20101G054), dated April 15, 2020.

**Enclosure, Attachment 1**

**GNRO-2020/00023**

**Markup of Technical Specification Pages**

**TS Page**

3.6-2

3.6-7

5.0-16 (with insert page)

## SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.6.1.1.1      Perform required visual examinations and leakage rate testing except for primary containment air lock testing, in accordance with 10 CFR 50, Appendix J, as modified by approved exemptions.</p> <p><del>The leakage rate acceptance criterion is <math>\leq 1.0 L_a</math>. However, during the first unit startup following testing performed in accordance with 10 CFR 50, Appendix J, as modified by approved exemptions, the leakage rate acceptance criteria are <math>&lt; 0.6 L_a</math> for the Type B and Type C tests, and <math>&lt; 0.75 L_a</math> for the Type A test.</del></p>	<p>In accordance with 10 CFR 50, Appendix J, Testing Program</p>



SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.6.1.2.1</p> <p>-----NOTES-----</p> <ol style="list-style-type: none"> <li>1. An inoperable air lock door does not invalidate the previous successful performance of the overall air lock leakage test.</li> <li><del>2. Results shall be evaluated against acceptance criteria of SR 3.6.1.1.1 in accordance with 10 CFR 50, Appendix J, as modified by approved exemptions.</del></li> </ol> <p>-----</p> <p>Perform required primary containment air lock leakage rate testing in accordance with 10 CFR 50, Appendix J, as modified by approved exemptions.</p> <p>The acceptance criteria for air lock testing are:</p> <ol style="list-style-type: none"> <li>a. Overall air lock leakage rate is <math>\leq 0.05 L_a</math> when tested at <math>\geq P_a</math>.</li> <li>b. For each door, leakage rate is <math>\leq 0.01 L_a</math> when the gap between the door seals is pressurized to <math>\geq P_a</math>.</li> </ol>	<p>In accordance with 10 CFR 50, Appendix J, Testing Program</p>
<p>SR 3.6.1.2.2</p> <p>Verify primary containment air lock seal air flask pressure is <math>\geq 90</math> psig.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

(continued)

5.5 Programs and Manuals (continued)

5.5.11 Technical Specifications (TS) Bases Control Program

This program provides a means for processing changes to the Bases of these Technical Specifications.

- a. Changes to the Bases of the TS shall be made under appropriate administrative controls and reviews.
- b. Licensees may make changes to Bases without prior NRC approval provided the changes do not require either of the following:
  1. A change in the TS incorporated in the license; or
  2. A change to the updated FSAR or Bases that requires NRC approval pursuant to 10 CFR 50.59.
- c. The Bases Control Program shall contain provisions to ensure that the Bases are maintained consistent with the UFSAR.
- d. Proposed changes that do not meet the criteria of either Specification 5.5.11.b.1 or Specification 5.5.11.b.2 above shall be reviewed and approved by the NRC prior to implementation. Changes to the Bases implemented without prior NRC approval shall be provided to the NRC on a frequency consistent with 10 CFR 50.71(e).

5.5.12 10 CFR 50, Appendix J, Testing Program

Insert 1 → This program establishes the leakage rate testing program of the containment as required by 10 CFR 50.54(e) and 10 CFR 50, Appendix J, Option B, as modified by approved exemptions. This program shall be implemented in accordance with the Safety Evaluation issued by the Office of Nuclear Reactor Regulation dated April 26, 1995 (GNRI-95/00087) as modified by the Safety Evaluation issued for Amendment No. 135 to the Operating License, except that the next Type A test performed after the October 19, 2008 Type A test shall be performed no later than the plant restart after the End of Cycle 23 Refueling Outage. For Type B and Type C local leakage rate testing, this program shall be in accordance with the guidelines contained in NEI 94-01, Revision 3-A, "Industry Guideline for Implementing Performance Based Option of 10 CFR Part 50, Appendix J," dated July 2012. Consistent with standard scheduling practices for Technical Specifications required surveillances, intervals for the recommended surveillance frequency for Type A testing may be extended by up to 25 percent of the test interval, not to exceed 15 months. The calculated peak containment internal pressure for the design basis loss of coolant accident, Pa, is 12.1 psig.

Insert 2 (as new paragraphs) →

(continued)

(continued)

(continued)

Insert paragraph  
break

GRAND GULF

5.0-16

Amendment No.157, 164, 191, 205,  
209, 214, 219

Insert 1

A program shall be established to implement the leakage rate testing of the containment as required by 10 CFR 50.54(o) and 10 CFR 50, Appendix J, Option B, as modified by approved exemptions [except that the next Type A test performed after the October 19, 2008 Type A test shall be performed no later than the plant restart after the End of Cycle 23 Refueling Outage](#). This program shall be in accordance with the guidelines contained in NEI 94-01, Revision 3-A, "Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J," dated July 2012, and the conditions and limitations specified in NEI 94-01, Revision 2-A, Section 4.1, dated October 2008.

Insert 2

The maximum allowable primary containment leakage rate,  $L_a$ , at  $P_a$ , shall be 0.682% of primary containment air weight per day.

The Primary Containment leakage rate acceptance criterion is  $\leq 1.0 L_a$ . During the first unit startup following testing in accordance with this program, the leakage rate acceptance criteria are  $\leq 0.60 L_a$  for the Type B and Type C tests and  $\leq 0.75 L_a$  for Type A tests.

The provisions of SR 3.0.2 do not apply to test frequencies specified in the Primary Containment Leakage Rate Testing Program.

The provisions of SR 3.0.3 are applicable to the Primary Containment Leakage Rate Testing Program.

**Enclosure, Attachment 2**

**GNRO-2020/00023**

**Retyped Technical Specification Pages**

**TS Page**

3.6-2

3.6-7

5.0-16

5.0-16a

5.0-16b<sup>1</sup>

1. Included due to pagination changes only

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.1.1.1	Perform required visual examinations and leakage rate testing except for primary containment air lock testing, in accordance with 10 CFR 50, Appendix J, as modified by approved exemptions.	In accordance with 10 CFR 50, Appendix J, Testing Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.6.1.2.1</p> <p>-----NOTES-----</p> <p>1. An inoperable air lock door does not invalidate the previous successful performance of the overall air lock leakage test.</p> <p>-----</p> <p>Perform required primary containment air lock leakage rate testing in accordance with 10 CFR 50, Appendix J, as modified by approved exemptions.</p> <p>The acceptance criteria for air lock testing are:</p> <p>a. Overall air lock leakage rate is <math>\leq 0.05 L_a</math> when tested at <math>\geq P_a</math>.</p> <p>b. For each door, leakage rate is <math>\leq 0.01 L_a</math> when the gap between the door seals is pressurized to <math>\geq P_a</math>.</p>	<p>In accordance with 10 CFR 50, Appendix J, Testing Program</p>
<p>SR 3.6.1.2.2</p> <p>Verify primary containment air lock seal air flask pressure is <math>\geq 90</math> psig.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

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## 5.5 Programs and Manuals (continued)

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### 5.5.11 Technical Specifications (TS) Bases Control Program

This program provides a means for processing changes to the Bases of these Technical Specifications.

- a. Changes to the Bases of the TS shall be made under appropriate administrative controls and reviews.
- b. Licensees may make changes to Bases without prior NRC approval provided the changes do not require either of the following:
  1. A change in the TS incorporated in the license; or
  2. A change to the updated FSAR or Bases that requires NRC approval pursuant to 10 CFR 50.59.
- c. The Bases Control Program shall contain provisions to ensure that the Bases are maintained consistent with the UFSAR.
- d. Proposed changes that do not meet the criteria of either Specification 5.5.11.b.1 or Specification 5.5.11.b.2 above shall be reviewed and approved by the NRC prior to implementation. Changes to the Bases implemented without prior NRC approval shall be provided to the NRC on a frequency consistent with 10 CFR 50.71(e).

### 5.5.12 10 CFR 50, Appendix J, Testing Program

A program shall be established to implement the leakage rate testing of the containment as required by 10 CFR 50.54(o) and 10 CFR 50, Appendix J, Option B, as modified by approved exemptions except that the next Type A test performed after the October 19, 2008 Type A test shall be performed no later than the plant restart after the End of Cycle 23 Refueling Outage. This program shall be in accordance with the guidelines contained in NEI 94-01, Revision 3-A, "Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J," dated July 2012, and the conditions and limitations specified in NEI 94-01, Revision 2-A, Section 4.1, dated October 2008.

The calculated peak containment internal pressure for the design basis loss of coolant accident,  $P_a$ , is 12.1 psig.

The maximum allowable primary containment leakage rate,  $L_a$ , at  $P_a$ , shall be 0.682% of primary containment air weight per day.

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(continued)

5.5 Programs and Manuals (continued)

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5.5.12 10 CFR 50, Appendix J, Testing Program (continued)

The Primary Containment leakage rate acceptance criterion is  $\leq 1.0 L_a$ . During the first unit startup following testing in accordance with this program, the leakage rate acceptance criteria are  $\leq 0.60 L_a$  for the Type B and Type C tests and  $\leq 0.75 L_a$  for Type A tests.

The provisions of SR 3.0.2 do not apply to test frequencies specified in the Primary Containment Leakage Rate Testing Program.

The provisions of SR 3.0.3 are applicable to the Primary Containment Leakage Rate Testing Program.

5.5.13 Control Room Envelope Habitability Program

A Control Room Envelope (CRE) Habitability Program shall be established and implemented to ensure that CRE habitability is maintained such that, with an OPERABLE Control Room Fresh Air (CRFA) System, CRE occupants can control the reactor safely under normal conditions and maintain it in a safe condition following a radiological event, hazardous chemical release, or a smoke challenge. The program shall ensure that adequate radiation protection is provided to permit access and occupancy of the CRE under Design Basis Accident (DBA) conditions without personnel receiving radiation exposures in excess of 5 rem total effective dose equivalent for the duration of the accident. The program shall include the following elements:

- a. The definition of the CRE and the CRE boundary.
- b. Requirements for maintaining the CRE boundary in its design condition including configuration control and preventive maintenance.
- c. Requirements for (i) determining the unfiltered air inleakage past the CRE boundary into the CRE in accordance with the testing methods and at the Frequencies specified in Sections C.1 and C.2 of Regulatory Guide 1.197, "Demonstrating Control Room Envelope Integrity at Nuclear Power Reactors," Revision 0, May 2003 and (ii) assessing CRE habitability at the Frequencies specified in Sections C.1 and C.2 of Regulatory Guide 1.197, Revision 0.
- d. Since the CRE is at a neutral pressure during isolation mode, the CRE will be maintained, including the following:

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(continued)



## 5.5 Programs and Manuals

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### 5.5.13 Control Room Envelope Habitability Program (continued)

1. Plant maintenance activities such as modifications, rework, and preventive maintenance tasks on components that could affect the CRE shall be controlled under fleet, plant and system specific procedures to ensure that the CRE boundary is not degraded by such activities.
  2. Testing of CRFA system sealing areas shall be performed following maintenance activities (rework and preventative) and periodically to ensure that the areas of negative pressures do not leak bypassing emergency filtration system components.
  3. Fire damper inspection procedures that require opening of duct panels and doors shall ensure that upon restoration no leakage path exists.
  4. The remainder of ducting components such as plenum access doors, duct access doors (rectangular and round), flex connections (ventglass, etc), plugs, and patches will be maintained per paragraph b.
  5. An assessment of the CRE Boundary will be conducted at a frequency in accordance with the Surveillance Frequency Control Program. The results of assessing items 1 through 4 shall be trended and used as part of the assessment of the CRE boundary as indicated in paragraph c.
- e. The quantitative limits on unfiltered air leakage into the CRE. These limits shall be stated in a manner to allow direct comparison to the unfiltered air leakage measured by testing described in paragraph c. The unfiltered air leakage limit for radiological challenges is the leakage flow rate assumed in the licensing basis analyses of DBA consequences. Unfiltered air leakage limits for hazardous chemicals must ensure that exposure of CRE occupants to these hazards will be within the assumptions in the licensing basis.
- f. The provisions of SR 3.0.2 are applicable to the Frequencies for assessing CRE habitability, determining CRE unfiltered leakage, and assessing the CRE boundary as required by paragraphs c and d, respectively.
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