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GNRO-2012/00077

July 23, 2012

U.S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555

**SUBJECT:** Response to Requests for Additional Information (RAI) Set 22 dated June 22, 2012  
Grand Gulf Nuclear Station, Unit 1  
Docket No. 50-416  
License No. NPF-29

**REFERENCE:** 1. NRC Letter, "Requests for Additional Information for the Review of the Grand Gulf Nuclear Station, License Renewal Application," dated June 22, 2012 (GNRI-2012/00138) (ML12152A345)  
2. Grand Gulf Nuclear Station, Unit 1 Letter (GNRO-2012/00064), "Response to Request for Additional Information (RAI) set 17 dated May 24, 2012", dated June 22, 2012

Dear Sir or Madam:

Entergy Operations, Inc. is providing, in Attachment 1, the response to the referenced Request for Additional Information (RAI). Attachment 2 includes a correction to the response provided to RAI 3.3.2.16-1 in letter GNRO-2012/00064. Attachment 3 contains an updated listing of regulatory commitments for license renewal that includes the revision to commitment 4 required by this letter.

This letter contains no new commitments. If you have any questions or require additional information, please contact Christina L. Perino at 601-437-6299.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 23rd day of July, 2012.

Sincerely,  
A handwritten signature in black ink, appearing to read "M. Perito".

MP/jas

Attachment(s): (see next page)

Attachment(s):   1. Response to Request for Additional Information (RAI)  
                      2. Correction to Response to RAI 3.3.2.16-1  
                      3. List of Regulatory Commitments

cc: with Attachment(s)

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**Attachment 1 to**

**GNRO-2012/00077**

**Response to Request for Additional Information (RAI)**

The format for the RAI responses below is as follows. The Request for Additional Information (RAI) is listed in its entirety as received from the Nuclear Regulatory Commission (NRC) with a background, issue and request subparts. This is followed by the Grand Gulf Nuclear Station (GGNS) RAI response to the individual question.

#### **RAI B.1.4-1**

Background GALL Report AMP XI.M22, "Boraflex Monitoring," states:

For Boraflex panels in spent fuel storage racks, gamma irradiation and long-term exposure to the wet fuel pool environment causes shrinkage resulting in gap formation, gradual degradation of the polymer matrix, and the release of silica to the spent fuel storage pool water. This results in the loss of boron carbide in the neutron absorber sheets. A monitoring program for the Boraflex panels in the spent fuel storage racks is implemented to assure that no unexpected degradation of the Boraflex material compromises the criticality analysis in support of the design of spent fuel storage racks. This aging management program (AMP) relies on periodic inspection, testing, monitoring, and analysis of the criticality design to assure that the required 5% subcriticality margin is maintained. Therefore, this AMP includes: (a) completing sampling and analysis for silica levels in the spent fuel pool water on a regular basis, such as monthly, quarterly, or annually (depending on Boraflex panel condition), and trending the results by using the EPRI RACKLIFE predictive code or its equivalent; and (b) performing neutron attenuation testing or blackness testing to determine gap formation in Boraflex panels or measuring boron areal density by techniques such as the BADGER device.

Issue The license renewal application (LRA) states that "the Boraflex Monitoring Program, with enhancements, is consistent with the program described in NUREG-1801, Section XI.22, Boraflex Monitoring." In order to obtain the information necessary to verify whether these program elements are consistent with the corresponding program elements of the GALL Report AMP with enhancements, the following requests for information are needed.

#### Request

- a. Clarify whether the "scope of the program" includes the Boraflex in the upper containment pool.
- b. The Boraflex Monitoring Program implementing procedures describe the use of a coupon monitoring technique. Clarify whether GGNS still uses the coupon monitoring technique, and whether this coupon monitoring technique will be performed in the period of extended operation. Also, if the coupon monitoring technique will be relied upon in the period of extended operation, state how many coupons are left and at what frequency will they be monitored.
- c. The Boraflex Monitoring Program basis documentation references, which describe the "detection of aging effects" and "monitoring and trending" program elements, state that monitoring will be done by the use of RACKLIFE on a frequency of 1 year. The enhancement states that "RACKLIFE analysis will continue to be performed each cycle." The staff notes that each cycle is about 1.5-2 years.

1. Clarify if the RACKLIFE will be performed every year or every cycle.
2. Due to GGNS operating experience with Boraflex degradation, provide justification for the frequency of the RACKLIFE predictions.

#### RAI B.1.4-1 RESPONSE

- a. As described in LRA Section 2.3.3.6, the fuel pool cooling and cleanup (FPCC) system (system codes G41, G46) includes the upper containment pool. Thus, the Boraflex Monitoring Program includes the Boraflex in upper containment pool. For clarity, LRA Sections A.1.4 and B.1.4 are revised to state that the program will include the upper containment pool. In addition, the frequency specified in the enhancement is clarified with an editorial change. License Renewal Application changes are shown below. Additions are underlined and deletions are shown with strikethrough.

#### A.1.4 Boraflex Monitoring Program

The Boraflex Monitoring Program manages the change in material properties (neutron-absorbing capacity) in the Boraflex material affixed to spent fuel racks using silica sampling, areal testing activities, and other monitoring activities. Inspection frequency and acceptance criteria are based on the GGNS response to NRC Generic Letter 96-04 and the GGNS technical specifications.

The Boraflex Monitoring Program will be enhanced as follows.

- GGNS will perform periodic surveillances of the Boraflex neutron absorbing material in the spent fuel pool and upper containment pool ~~on at least a five-year frequency~~ once every 5 years using Boron-10 Areal Density Gage for Evaluating Racks (BADGER) testing.

Section B.1.4, Boraflex Monitoring, enhancement for elements 3, 4, and 5 is revised to read as follows.

#### Enhancements

The following enhancement will be implemented prior to the period of extended operation.

| Elements Affected   | Enhancement   |
|---|---|
| 3. Parameters Monitored or Inspected<br>4. Detection of Aging Effects<br>5. Monitoring and Trending | <p>GGNS will perform periodic surveillances of the Boraflex neutron absorbing material <u>in the spent fuel pool and upper containment pool</u> <del>on at least a five-year frequency</del> <u>once every 5 years</u> using Boron-10 Areal Density Gage for Evaluating Racks (BADGER) testing.</p> <p>RACKLIFE analysis will continue to be performed each cycle. This analysis will include a comparison of the RACKLIFE predicted silica to the plant measured silica. This comparison will determine if adjustments to the RACKLIFE loss coefficient are merited. The analysis will include</p> |

|  |   |
|--|---|
|  | projections to the next planned RACKLIFE analysis date to ensure current Region I storage locations will not need to be reclassified as Region II storage locations in the analysis interval. |
|--|---|

- b. GGNS still uses the coupon monitoring technique. However, there are only four coupons left. Coupons are removed in pairs. The schedule calls for the last pair to be removed in 2026. Since the GGNS period of extended operation (PEO) spans 2024-2044, the coupon monitoring technique will not be relied upon in the PEO. During the PEO, the Boraflex Monitoring Program will rely upon the Racklife analysis which predicts material losses and BADGER testing which is performed at least once every 5 years.
- c.1. As described in letter GNRO-2011/00104 dated November 21, 2011, the Racklife analysis update is performed each cycle as part of the Boraflex Monitoring Program.
- c.2. The justification for the frequency of the Racklife predictions is provided in letter GNRO-2011/00104 dated November 21, 2011. The Racklife analysis update is performed each cycle as part of the Boraflex Monitoring Program. This update incorporates information obtained since the last update, such as additional chemistry data and additional fuel moves. As a part of this update, the Racklife model escape coefficients are adjusted, as needed, to bound the plant data. The adjusted escape coefficients are conservative and apply to several subsequent operating cycles. The update also includes conservative predictions of rack performance until the next planned update. The predictions are based on conservative fuel performance characteristics, such as core burnup and bundle power. Based on these predictions, restrictions on storage locations for freshly discharged fuel are implemented. Updating the Racklife model once each cycle is sufficient as the Boraflex degradation is a slowly varying, long-term process. While the maximum boron loss rate is increasing over time as expected, it is still relatively low at less than 1% per year. Thus, performing Racklife evaluations once per cycle is acceptable.

#### **RAI B.1.16-1**

Background The Updated Final Safety Analysis Report (UFSAR) Supplement description contained in the Standard Review Plan for License Renewal (SRP-LR) provides an acceptable program description for the GALL Report AMP XI.M30, "Fuel Oil Chemistry," which includes the specific ASTM Standards used for monitoring and control of fuel oil contamination to maintain fuel oil quality. LRA Section A.1.16, "Diesel Fuel Monitoring Program," states, "[t]he Diesel Fuel Monitoring Program manages loss of material and fouling in piping and components exposed to an environment of diesel fuel oil by verifying the quality of fuel oil and controlling fuel oil contamination as well as periodic draining, cleaning, and inspection of tanks. Applicable industry standards and guidance documents are used to delineate the program." The program description found in LRA AMP B.1.16 does not include the industry standards (e.g., ASTM) used in the program.

Issue The LRA does not specify the industry standards used for this program. Specifying the applicable industry standards used in the program ensures that there is adequate description of the program to provide assurance that it will be properly executed during the period of extended

operation. The UFSAR supplement and program description for the Diesel Fuel Monitoring Program do not include the specific industry standards used for the program.

Request Justify the absence of the above mentioned industry standards in the UFSAR supplement and the program description in LRA Appendix B for the Diesel Fuel Monitoring Program. Alternatively, provide a revision to your UFSAR supplement and AMP program description to include the specific industry standards used for the program.

## **RAI B.1.16-1 RESPONSE**

The program description in NUREG-1801 Section XI.M30 states, "Fuel oil quality is maintained by monitoring and controlling fuel oil contamination in accordance with the plant's technical specifications." As stated under the acceptance criteria element, "acceptance criteria for fuel oil quality parameters are as invoked or referenced in a plant's technical specifications." The standards in the GGNS technical specifications are not the same as those referenced in the Updated Final Safety Analysis Report (UFSAR) Supplement description contained in the Standard Review Plan for License Renewal (SRP-LR). Accordingly, it would be inappropriate to cite the SRP-LR standards in the GGNS UFSAR supplement and the LRA Appendix B program description for the Diesel Fuel Monitoring Program. LRA Sections A.1.16 and B.1.16 are revised to include the following statement. "Acceptance criteria for fuel oil quality parameters are specified in the GGNS technical specifications." Additions are shown with underline.

LRA Section A.1.16 is revised to state:

### **A.1.16 Diesel Fuel Monitoring Program**

The Diesel Fuel Monitoring Program manages loss of material and fouling in piping and components exposed to an environment of diesel fuel oil by verifying the quality of fuel oil and controlling fuel oil contamination as well as periodic draining, cleaning, and inspection of tanks. Applicable industry standards and guidance documents are used to delineate the program. Acceptance criteria for fuel oil quality parameters are specified in the GGNS technical specifications.

LRA Section B.1.16 is revised to state:

### **B.1.16 DIESEL FUEL MONITORING**

#### **Program Description**

The Diesel Fuel Monitoring Program is an existing program that manages loss of material and fouling in piping and components exposed to an environment of diesel fuel oil by verifying the quality of fuel oil and controlling fuel oil contamination as well as periodic draining, cleaning, and inspection of tanks. Applicable industry standards and guidance documents are used to delineate the program. Acceptance criteria for fuel oil quality parameters are specified in the GGNS technical specifications

## **RAI B.1.16-2**

Background The GALL Report recommends draining and cleaning of diesel fuel oil tank internal surfaces at least once every 10 years during the period of extended operation. Periodic draining and cleaning of diesel fuel oil tanks is performed so that internal surfaces can be visually and volumetrically inspected allowing for detection of corrosion and other degradation inside the tanks. LRA AMP B.1.16, "Diesel Fuel Monitoring Program," states that the program will be enhanced to include a 10-year periodic cleaning and internal visual inspection of the fire water fuel oil tanks, the diesel fuel oil day tanks, and the diesel fuel oil drip tanks in scope of the program.

Issue The LRA AMP does not include the procedures for performing cleaning and inspection of the above mentioned tanks. That is, the staff is not clear on the cleaning and inspection approach for these tanks.

Request Provide a summary of the process for performing cleanings and internal visual inspections of the fire water fuel oil tanks, the diesel fuel oil day tanks, and the diesel fuel oil drip tanks in scope of the program.

## **RAI B.1.16-2 RESPONSE**

To clean and inspect each diesel fuel oil tank, the tank is first emptied. Any sediment or sludge is removed. The tank internal surfaces are cleaned to provide a surface capable of visual inspection by qualified personnel. Cleaning solutions may be used to aid in obtaining a clean surface. The tank internal surfaces are visually inspected for rust deposits, corrosion, or any obvious physical defects such as blisters, peeling, or pinholes. The location and extent of physical defects are documented. If evidence of degradation is observed during inspection, the affected area of the diesel fuel tank is volumetrically inspected. If visual inspection is not possible, the diesel fuel tank is volumetrically inspected.



**Attachment 2 to**

**GNRO-2012/00077**

**Correction to Response to RAI 3.3.2.16-1**

In the response to RAI 3.3.2.16-1 it was stated that "Based on review of new more detailed vendor information, LRA Table 3.3.2-16 is revised to delete stainless steel subcomponents and add carbon steel subcomponents for the HPCSDG turbocharger." However the change to the table did not show the stainless steel components as being deleted with strikethrough, but instead showed them with underline as an addition to the table. A revised Table 3.3.2-16 is provided below with the stainless steel items being shown as deleted with use of strikethrough.

| <b>Table 3.3.2-16 HPCS Diesel Generator System</b> |                          |                        |                           |  |   |                        |                     |              |
|--|--------------------------|------------------------|---------------------------|--|---|------------------------|---------------------|--------------|
| <b>Component Type</b>                              | <b>Intended Function</b> | <b>Material</b>        | <b>Environment</b>        | <b>Aging Effect Requiring Management</b> | <b>Aging Management Program</b>   | <b>NUREG-1801 Item</b> | <b>Table 1 Item</b> | <b>Notes</b> |
| <u>Expansion joint</u>                             | <u>Pressure boundary</u> | <u>Stainless steel</u> | <u>Exhaust gas (int)</u>  | <u>Cracking</u>                          | <u>Internal Surfaces in Miscellaneous Piping and Ducting Components</u> | <u>VII.H2.AP-128</u>   | <u>3.3.1-83</u>     | <u>A</u>     |
| <u>Turbocharger</u>                                | <u>Pressure boundary</u> | <u>Carbon steel</u>    | <u>Air - indoor (ext)</u> | <u>Loss of material</u>                  | <u>External Surfaces Monitoring</u>                                     | <u>VII.I.A-77</u>      | <u>3.3.1-78</u>     | <u>C</u>     |
| <u>Turbocharger</u>                                | <u>Pressure boundary</u> | <u>Carbon steel</u>    | <u>Exhaust gas (int)</u>  | <u>Loss of material</u>                  | <u>Internal Surfaces in Miscellaneous Piping and Ducting Components</u> | <u>VII.H2.AP-104</u>   | <u>3.3.1-88</u>     | <u>C</u>     |
| <u>Turbocharger</u>                                | <u>Pressure boundary</u> | <u>Carbon steel</u>    | <u>Exhaust gas (int)</u>  | <u>Cracking - fatigue</u>                | <u>TLAA – metal fatigue</u>   | <u>--</u>              | <u>--</u>           | <u>H</u>     |
| <u>Turbocharger</u>                                | <u>Pressure boundary</u> | <u>Stainless steel</u> | <u>Air – indoor (ext)</u> | <u>None</u>                              | <u>None</u>   | <u>VII.J.AP-123</u>    | <u>3.3.1-120</u>    | <u>A</u>     |
| <u>Turbocharger</u>                                | <u>Pressure boundary</u> | <u>Stainless steel</u> | <u>Exhaust gas (int)</u>  | <u>Loss of material</u>                  | <u>Internal Surfaces in Miscellaneous Piping and Ducting Components</u> | <u>VII.H2.AP-128</u>   | <u>3.3.1-83</u>     | <u>C</u>     |
| <u>Turbocharger</u>                                | <u>Pressure boundary</u> | <u>Stainless steel</u> | <u>Exhaust gas (int)</u>  | <u>Cracking – fatigue</u>                | <u>TLAA – metal fatigue</u>   | <u>--</u>              | <u>--</u>           | <u>H</u>     |

**Attachment 3 to**

**GNRO-2012/00077**

**List of Regulatory Commitments**

### List of Regulatory Commitments

The following table identifies those actions committed to by Entergy in this document. Additions are shown with underline and deletions with strikethrough.

| # | COMMITMENT  | IMPLEMENTATION SCHEDULE   | SOURCE          | RELATED LRA SECTION / AUDIT ITEM |
|---|---|---------------------------|-----------------|----------------------------------|
| 1 | Implement the 115 kilovolt (KV) Inaccessible Transmission Cable Program for Grand Gulf Nuclear Station (GGNS) as described in License Renewal Application (LRA) Section B.1.1   | Prior to November 1, 2024 | GNRO-2011/00093 | B.1.1                            |
| 2 | Implement the Aboveground Metallic Tanks Program for GGNS as described in LRA Section B.1.2   | Prior to November 1, 2024 | GNRO-2011/00093 | B.1.2                            |
| 3 | <p>Enhance the Bolting Integrity Program for GGNS to clarify the prohibition on use of lubricants containing MoS<sub>2</sub> for bolting, and to specify that proper gasket compression will be visually verified following assembly.</p> <p>Enhance the Bolting Integrity Program to include consideration of the guidance applicable for pressure boundary bolting in Regulatory Guide (NUREG) 1339, Electric Power Research Institute (EPRI) NP-5769, and EPRI TR-104213.</p> <p>Enhance the Bolting Integrity Program to include volumetric examination per American Society of Mechanical Engineers (ASME) Code Section IX, Table IWB-2500-1, Examination Category B-G-1, for high-strength closure bolting regardless of code classification.</p> | Prior to November 1, 2024 | GNRO-2011/00093 | B.1.3                            |

| # | COMMITMENT   | IMPLEMENTATION SCHEDULE   | SOURCE   | RELATED LRA SECTION / AUDIT ITEM         |
|---|--|---------------------------|--|--|
| 4 | <p>Enhance the Boraflex Monitoring Program for GGNS to perform periodic surveillances of the boraflex neutron absorbing material <u>in the spent fuel pool and upper containment pool</u> <del>on</del> at least <del>a five-year frequency</del> <u>once every 5 years</u> using Boron-10 Areal Density Gage for Evaluating Racks (BADGER) testing.</p> <p>RACKLIFE analysis will continue to be performed each cycle. This analysis will include a comparison of the RACKLIFE predicted silica to the plant measured silica. This comparison will determine if adjustments to the RACKLIFE loss coefficient are merited. The analysis will include projections to the next planned RACKLIFE analysis date to ensure current Region I storage locations will not need to be reclassified as Region II storage locations in the analysis interval.</p> | Prior to November 1, 2024 | <p>GNRO-2011/00093</p> <p><u>GNRO-2012-00077</u></p> | <p>B.1.4 / RAI</p> <p><u>B.1.4-1</u></p> |
| 5 | Implement the Buried Piping and Tanks Inspection Program for GGNS as described in LRA Section B.1.5.   | Prior to November 1, 2024 | GNRO-2011/00093                                      | B.1.5                                    |

| # | COMMITMENT   | IMPLEMENTATION SCHEDULE   | SOURCE          | RELATED LRA SECTION / AUDIT ITEM |
|---|--|---------------------------|-----------------|----------------------------------|
| 6 | <p>Enhance the Boiling Water Reactor (BWR) Vessel Internals Program for GGNS as follows.</p> <p>(a) Evaluate the susceptibility to neutron or thermal embrittlement for reactor vessel internal components composed of CASS, X-750 alloy, precipitation-hardened (PH) martensitic stainless steel(e.g., 15-5 and 17-4 PH steel), and martensitic stainless steel (e.g., 403, 410 and 431 steel).</p> <p>(b) Inspect portions of the susceptible components determined to be limiting from the standpoint of thermal aging susceptibility, neutron fluence, and cracking susceptibility (i.e., applied stress, operating temperature, and environmental conditions). The inspections will use an inspection technique capable of detecting the critical flaw size with adequate margin. The critical flaw size will be determined based on the service loading condition and service-degraded material properties. The initial inspection will be performed either prior to or within 5 years after entering the period of extended operation. If cracking is detected after the initial inspection, the frequency of re-inspection will be justified based on fracture toughness properties appropriate for the condition of the component. The sample size will be 100% of the accessible component population, excluding components that may be in compression during normal operations.</p> | Prior to November 1, 2024 | GNRO-2011/00093 | B.1.11                           |

| # | COMMITMENT   | IMPLEMENTATION SCHEDULE   | SOURCE          | RELATED LRA SECTION / AUDIT ITEM |
|---|--|---------------------------|-----------------|----------------------------------|
| 7 | <p>Enhance the Compressed Air Monitoring Program for GGNS to apply a consideration of the guidance of ASME OM-S/G-1998, Part 17; ANSI/ISA-S7.0.01-1996; EPRI NP-7079; and EPRI TR-108147 to the limits specified for air system contaminants.</p> <p>Enhance the Compressed Air Monitoring Program to include periodic and opportunistic inspections of accessible internal surfaces of piping, compressors, dryers, aftercoolers, and filters to apply consideration of the guidance of ASME OM-S/G-1998, Part 17 for inspection frequency and inspection methods of these components in the following compressed air systems.</p> <ul style="list-style-type: none"> <li>• Automatic Depressurization System (ADS) air</li> <li>• Division 1 Diesel Generator Starting Air (D1DGSA)</li> <li>• Division 2 Diesel Generator Starting Air (D2DGSA)</li> <li>• Division 3 Diesel Generator Starting Air (D3DGSA), also known as the HPCS Diesel Generator</li> <li>• Instrument Air (IA)</li> </ul> | Prior to November 1, 2024 | GNRO-2011/00093 | B.1.12/RAI<br>B.1.12-1           |

| # | COMMITMENT   | IMPLEMENTATION SCHEDULE   | SOURCE          | RELATED LRA SECTION / AUDIT ITEM |
|---|--|---------------------------|-----------------|----------------------------------|
| 8 | <p>Enhance the Diesel Fuel Monitoring Program to include a ten-year periodic cleaning and internal inspection of the fire water pump diesel fuel oil tanks, the diesel fuel oil day tanks for Divisions I, II, III, and the diesel fuel oil drip tanks for Divisions I, II. These cleanings and internal inspections will be performed at least once during the 10-year period prior to the period of extended operation and at succeeding 10-year intervals. If visual inspection is not possible, a volumetric inspection will be performed.</p> <p>Enhance the Diesel Fuel Monitoring Program to include a volumetric examination of affected areas of the diesel fuel tanks if evidence of degradation is observed during visual inspection. The scope of this enhancement includes the diesel fuel oil day tanks (Divisions I, II, III), the diesel fuel oil storage tanks (Divisions I, II, III), the diesel fuel oil drip tanks (Divisions I, II), and the diesel fire pump fuel oil storage tanks, and is applicable to the inspections performed during the 10-year period prior to the period of extended operation and at succeeding 10-year intervals.</p> | Prior to November 1, 2024 | GNRO-2011/00093 | B.1.16                           |
| 9 | <p>Enhance the External Surfaces Monitoring Program to include instructions for monitoring of the aging effects for flexible polymeric components through manual or physical manipulation of the material, including a sample size for manipulation of at least 10 percent of available surface area.</p> <p>Enhance the External Surfaces Monitoring Program as follows.</p> <ol style="list-style-type: none"> <li>1. Underground components within the scope of this program will be clearly identified in program documents.</li> <li>2. Instructions will be provided for inspecting all underground components within the scope of this program during each 10-year period, beginning 10 years prior to entering the period of extended operation.</li> </ol>  | Prior to November 1, 2024 | GNRO-2011/00093 | B.1.18                           |



| #  | COMMITMENT  | IMPLEMENTATION SCHEDULE             | SOURCE   | RELATED LRA SECTION / AUDIT ITEM |
|----|---|-------------------------------------|--|----------------------------------|
| 10 | <p>Enhance the Fatigue Monitoring Program to monitor and track all critical thermal and pressure transients for all components that have been identified to have a fatigue Time Limited Aging Analysis (TLAA).</p> <p>Enhance the Fatigue Monitoring Program to perform a review of the GGNS high energy line break analyses and the corresponding tracking of associated cumulative usage factors to ensure the GGNS program adequately manages fatigue usage for these locations.</p> <p>Fatigue usage calculations that consider the effects of the reactor water environment will be developed for a set of sample reactor coolant system components. This sample set will include the locations identified in NUREG/CR-6260 and additional plant-specific component locations in the reactor coolant pressure boundary if they are found to be more limiting than those considered in NUREG/CR-6260. F<sub>en</sub> factors will be determined using the formulae sets listed in Section 4.3.3. If necessary following this analysis, revised cycle limits will be incorporated into the Fatigue Monitoring Program documentation.</p> <p>Enhance the Fatigue Monitoring Program to provide updates of the fatigue usage calculations on an as-needed basis if an allowable cycle limit is approached, or in a case where a transient definition has been changed, unanticipated new thermal events are discovered, or the geometry of components have been modified. The program revision will include providing for the consideration of the recirculation pump fatigue analysis exemption validity if cycles that were input into the exemption evaluation exceed their limits.</p> | Two years prior to November 1, 2024 | GNRO-2011/00093<br><br><br><br><br><br><br><br><br><br>GNRO-2012/00063 | B.1.19/ RAI B.1.19-1, RAI 4.3-11 |

| #  | COMMITMENT  | IMPLEMENTATION SCHEDULE   | SOURCE  | RELATED LRA SECTION / AUDIT ITEM |
|----|---|---------------------------|---|----------------------------------|
| 11 | <p>Enhance the Fire Protection Program to require visual inspections of the Halon/CO2 fire suppression system at least once every fuel cycle to examine for signs of corrosion.</p> <p>Enhance the Fire Protection Program to require visual inspections of fire damper framing at least once every fuel cycle to check for signs of degradation.</p> <p>Enhance the Fire Protection Program to require visual inspection of concrete curbs, manways, hatches, manhole covers, hatch covers, and roof slabs at least once every fuel cycle to confirm that aging effects are not occurring.</p> <p>Enhance the Fire Protection Program to require an external visual inspection of the CO2 tank at least once every fuel cycle to examine for signs of corrosion.</p> | Prior to November 1, 2024 | <p>GNRO-2011/00093</p> <p>GNRO-2012/00042</p> | B.1.20/<br>RAI B.1.20-2          |

| #  | COMMITMENT  | IMPLEMENTATION<br>SCHEDULE | SOURCE          | RELATED<br>LRA SECTION<br>/ AUDIT ITEM |
|----|---|----------------------------|-----------------|--|
| 12 | <p>Enhance the Fire Water Program to include inspection of hose reels for degradation. Acceptance criteria will be enhanced to verify no unacceptable degradation.</p> <p>Enhance the Fire Water Program to include one of the following options.</p> <p>(1) Wall thickness evaluations of fire protection piping using non-intrusive techniques (e.g., volumetric testing) to identify evidence of loss of material will be performed prior to the period of extended operation and at periodic intervals thereafter. Results of the initial evaluations will be used to determine the appropriate inspection interval to ensure aging effects are identified prior to loss of intended function.</p> <p><u>OR</u></p> <p>(2) A visual inspection of the internal surface of fire protection piping will be performed upon each entry to the system for routine or corrective maintenance. These inspections will be capable of evaluating (a) wall thickness to ensure against catastrophic failure and (b) the inner diameter of the piping as it applies to the design flow of the fire protection system. Maintenance history shall be used to demonstrate that such inspections have been performed on a representative number of locations prior to the period of extended operation. A representative number is 20% of the population (defined as locations having the same material, environment, and aging effect combination) with a maximum of 25 locations. Additional inspections will be performed as needed to obtain this representative sample prior to the period of extended operation.</p> | Prior to November 1, 2024  | GNRO-2011/00093 | B.1.21/RAI<br>B.1.251-5                |

| #             | COMMITMENT   | IMPLEMENTATION SCHEDULE   | SOURCE          | RELATED LRA SECTION / AUDIT ITEM |
|---------------|--|---------------------------|-----------------|----------------------------------|
| 12<br>(cont.) | <p>Enhance the Fire Water Program to include a visual inspection of a representative number of locations on the interior surface of below grade fire protection piping in at least one location at a frequency of at least once every 10 years during the period of extended operation. A representative number is 20% of the population (defined as locations having the same material, environment, and aging effect combination) with a maximum of 25 locations. Acceptance criteria will be revised to verify no unacceptable degradation.</p> <p>Enhance the Fire Water Program to test or replace sprinkler heads. If testing is chosen a representative sample of sprinkler heads will be tested before the end of the 50-year sprinkler head service life and at 10-year intervals thereafter during the period of extended operation. Acceptance criteria will be no unacceptable degradation. NFPA-25 defines a representative sample of sprinklers to consist of a minimum of not less than 4 sprinklers or 1 percent of the number of sprinklers per individual sprinkler sample, whichever is greater. If replacement of the sprinkler heads is chosen, all sprinklers that have been in service for 50 years will be replaced.</p> <p>Enhance the Fire Water Program to include visual inspection of spray and sprinkler system internals for evidence of degradation. Acceptance criteria will be enhanced to verify no unacceptable degradation.</p> |                           | GNRO-2012-00064 |                                  |
| 13            | Enhance the Flow-Accelerated Corrosion Program to revise program documentation to specify that downstream components are monitored closely to mitigate any increased wear when susceptible upstream components are replaced with resistant materials, such as high Cr material.  | Prior to November 1, 2024 | GNRO-2011/00093 | B.1.22                           |
| 14            | Enhance the Inservice Inspection - IWF Program to address inspections of accessible sliding surfaces.  | Prior to November 1, 2024 | GNRO-2011/00093 | B.1.24/ RAI<br>B.1.24-1          |

| #             | COMMITMENT  | IMPLEMENTATION<br>SCHEDULE | SOURCE | RELATED<br>LRA SECTION<br>/ AUDIT ITEM |
|---------------|---|----------------------------|--------|--|
| 14<br>(cont.) | <p>Enhance the Inservice Inspection - IWF Program to; clarify that parameters monitored or inspected will include corrosion; deformation; misalignment of supports; missing, detached, or loosened support items; improper clearances of guides and stops; and improper hot or cold settings of spring supports and constant load supports. Accessible areas of sliding surfaces will be monitored for debris, dirt, or indications of excessive loss of material due to wear that could prevent or restrict sliding as intended in the design basis of the support. Elastomeric vibration isolation elements will be monitored for cracking, loss of material, and hardening. Structural bolts will be monitored for corrosion and loss of integrity of bolted connections due to self-loosening and material conditions that can affect structural integrity. High-strength structural bolting (actual measured yield strength greater than or equal to 150 ksi or 1,034 MPa in sizes greater than 1 inch nominal diameter) susceptible to stress corrosion cracking (SCC) will be monitored for SCC.</p> <p>Enhance the Inservice Inspection - IWF Program to clarify that detection of aging will include:</p> <p>a) Monitoring structural bolting (American Society for Testing Materials (ASTM) A-325, ASTM F1852, and ASTM A490 bolts) and anchor bolts will be monitored for loss of material, loose or missing nuts, loss of pre-load and cracking of concrete around the anchor bolts.</p> <p>b) Volumetric examination comparable to that of ASME Code Section XI, Table IWB-2500-1, Examination Category B-G-1 should be performed for high strength structural bolting to detect cracking in addition to the VT-3 examination. This volumetric examination may be waived with adequate plant-specific justification.</p> |                            |        |  |

| #             | COMMITMENT   | IMPLEMENTATION SCHEDULE   | SOURCE  | RELATED LRA SECTION / AUDIT ITEM |
|---------------|--|---------------------------|---|----------------------------------|
| 14<br>(cont.) | <p>c) Identification of component supports that contain high strength bolting (actual measured yield greater than or equal to 150 ksi) in sizes greater than 1 inch nominal diameter. The extent of examination for support types that contain high-strength bolting will be as specified in ASME Code Section XI, Table IWF-2500-1. GGNS will examine high-strength structural bolting on the frequency specified in ASME Code Section XI, Table IWF-2500-1.</p> <p>Enhance the Inservice Inspection - IWF Program acceptance criteria to include the following as unacceptable conditions.</p> <p>a) Loss of material due to corrosion or wear, which reduces the load bearing capacity of the component support;</p> <p>b) Debris, dirt, or excessive wear that could prevent or restrict sliding of the sliding surfaces as intended in the design basis of the support; and</p> <p>c) Cracked or sheared bolts, including high strength bolts, and anchors.</p> |                           | <p>GNRO-2012/00055</p> <p>GNRO-2011/00093</p> |                                  |
| 15            | <p>Enhance the Inspection of Overhead Heavy Load and Light Load Handling Systems Program to include monitoring of rails in the rail system for the aging effect "wear", and structural connections/bolting for loose or missing bolts, nuts, pins or rivets. Additionally, the program will be clarified to include visual inspection of structural components and structural bolts for loss of material due to various mechanisms and structural bolting for loss of preload due to self-loosening.</p> <p>Enhance the Inspection of Overhead Heavy Load and Light Load Handling Systems Program acceptance criteria to state that any significant loss of material for structural components and structural bolts, and significant wear of rails in the rail system, is evaluated according to ASME B30.2 or other applicable industry standard in the ASME B30 series.</p>  | Prior to November 1, 2024 | GNRO-2011/00093                               | B.1.25                           |

| #  | COMMITMENT   | IMPLEMENTATION SCHEDULE   | SOURCE          | RELATED LRA SECTION / AUDIT ITEM |
|----|--|---------------------------|-----------------|----------------------------------|
| 16 | Implement the Internal Surfaces in Miscellaneous Piping and Ducting Components Program as described in LRA Section B.1.26.   | Prior to November 1, 2024 | GNRO-2011/00093 | B.1.26                           |
| 17 | <p>Enhance the Masonry Wall Program to clarify that parameters monitored or inspected will include monitoring gaps between the supports and masonry walls that could potentially affect wall qualification.</p> <p>Enhance the Masonry Wall Program to clarify that detection of aging effects require masonry walls to be inspected every 5 years.</p>  | Prior to November 1, 2024 | GNRO-2011/00093 | B.1.27/<br>B.1.27-1              |
| 18 | Implement the Non-EQ Cable Connections Program as described in LRA Section B.1.28  | Prior to November 1, 2024 | GNRO-2011/00093 | B.1.28                           |
| 19 | <p>Enhance the Non environmentally Qualified (Non-EQ) Inaccessible Power Cables (400V to 35kV) Program to include low-voltage (400V to 2kV) power cables.</p> <p>Enhance the Non-EQ Inaccessible Power Cables (400V to 35kV) Program to include condition-based inspections of manholes not automatically dewatered by a sump pump being performed following periods of heavy rain or potentially high water table conditions, as indicated by river level.</p> <p>Enhance the Non-EQ Inaccessible Power Cables (400V to 35kV) Program to clarify that the inspections will include direct observation that cables are not wetted or submerged, that cables/splices and cable support structures are intact, and that dewatering/drainage systems (i.e., sump pumps) and associated alarms if applicable operate properly.</p> | Prior to November 1, 2024 | GNRO-2011/00093 | B.1.29                           |
| 20 | Implement the Non-EQ Instrumentation Circuits Test Review Program as described in LRA Section B.1.30.  | Prior to November 1, 2024 | GNRO-2011/00093 | B.1.30                           |
| 21 | Implement the Non-EQ Insulated Cables and Connections Program as described in LRA Section B.1.31.  | Prior to November 1, 2024 | GNRO-2011/00093 | B.1.31                           |

| #  | COMMITMENT   | IMPLEMENTATION SCHEDULE                       | SOURCE          | RELATED LRA SECTION / AUDIT ITEM |
|----|--|---|-----------------|----------------------------------|
| 22 | <p>Enhance the Oil Analysis Program to provide a formalized analysis technique for particulate counting.</p> <p>Enhance the Oil Analysis Program to include piping and components within the main generator system (N41) with an internal environment of lube oil.</p>   | Prior to November 1, 2024                     | GNRO-2011/00093 | B.1.32                           |
| 23 | Implement the One-Time Inspection Program as described in LRA Section B.1.33.  | Within the 10 years prior to November 1, 2024 | GNRO-2011/00093 | B.1.33                           |
| 24 | Implement the One-Time Inspection – Small Bore Piping Program as described in LRA Section B.1.34.  | Within the 6 years prior to November 1, 2024  | GNRO-2011/00093 | B.1.34                           |
| 25 | Enhance the Periodic Surveillance and Preventive Maintenance Program to include all activities described in the table provided in LRA Section B.1.35 program description.  | Prior to November 1, 2024                     | GNRO-2011/00093 | B.1.35                           |
| 26 | <p>Enhance the Protective Coating Program to include parameters monitored or inspected by the program per the guidance provided in ASTM D5163-08.</p> <p>Enhance the Protective Coating Monitoring and Maintenance Program to provide for inspection of coatings near sumps or screens associated with the Emergency Core Cooling System.</p> <p>Enhance the Protective Coating Program to include acceptance criteria per ASTM D 5163-08.</p> | Prior to November 1, 2024                     | GNRO-2011/00093 | B.1.36                           |
| 27 | Enhance the Reactor Vessel Surveillance Program to ensure that the additional requirements specified in the final NRC safety evaluation for BWRVIP-86 Revision 1 are addressed before the period of extended operation.  | Prior to November 1, 2024                     | GNRO-2011/00093 | B.1.38                           |



| #  | COMMITMENT  | IMPLEMENTATION SCHEDULE   | SOURCE  | RELATED LRA SECTION / AUDIT ITEM                              |
|----|---|---------------------------|---|---|
| 28 | <p>Enhance the Regulatory Guide (RG) 1.127, Inspection of Water-Control Structures Associated With Nuclear Power Plant Program to clarify that detection of aging effects will monitor accessible structures on a frequency not to exceed 5 years consistent with the frequency for implementing the requirements of RG 1.127.</p> <p>Enhance the RG 1.127, Inspection of Water-Control Structures Associated With Nuclear Power Plant Program to perform periodic sampling, testing, and analysis of ground water chemistry for pH, chlorides, and sulfates on a frequency of at least every 5 years.</p> <p>Enhance the RG 1.127, Inspection of Water-Control Structures Associated With Nuclear Power Plant Program acceptance criteria to include quantitative acceptance criteria for evaluation and acceptance based on the guidance provided in ACI 349.3R.</p>  | Prior to November 1, 2024 | GNRO-2011/00093                               | B.1.39  |
| 29 | Implement the Selective Leaching Program as described in LRA Section B.1.40.  | Prior to November 1, 2024 | GNRO-2011/00093                               | B.1.40  |
| 30 | <p>Enhance the Structures Monitoring Program to clarify that the scope includes the following:</p> <p>a) In-scope structures and structural components.</p> <ul style="list-style-type: none"> <li>• Containment Building (GGN 2)</li> <li>• Control House – Switchyard</li> <li>• Culvert No. 1 and drainage channel</li> <li>• Manholes and Ductbanks</li> <li>• Radioactive Waste Building Pipe Tunnel</li> <li>• Auxiliary Building (GGN2)</li> <li>• Turbine Building (GGN2)</li> </ul> <p>b) In-scope structural components</p> <ul style="list-style-type: none"> <li>• Anchor bolts</li> <li>• Anchorage / embedments</li> <li>• Base plates</li> <li>• Basin debris screen and grating</li> <li>• Battery racks</li> <li>• Beams, columns, floor slabs and interior walls</li> <li>• Cable tray and cable tray supports</li> <li>• Component and piping supports</li> <li>• Conduit and conduit supports</li> <li>• Containment sump liner and penetrations</li> </ul> | Prior to November 1, 2024 | <p>GNRO-2011/00093</p> <p>GNRO-2012/00074</p> | B.1.42/ RAI<br>B.1.42-3,<br>B.1.42-5,<br>2.1-4,<br>3.5.1.33-2 |

| #            | COMMITMENT  | IMPLEMENTATION<br>SCHEDULE | SOURCE | RELATED<br>LRA SECTION<br>/ AUDIT ITEM |
|--------------|---|----------------------------|--------|--|
| 30<br>(cont) | <ul style="list-style-type: none"> <li>• Containment sump structures</li> <li>• Control room ceiling support system</li> <li>• Cooling tower drift eliminators</li> <li>• Cooling tower fill</li> <li>• CST/RWST retaining basin (wall)</li> <li>• Diesel fuel tank access tunnel slab</li> <li>• Drainage channel</li> <li>• Drywell floor slab (concrete)</li> <li>• Drywell wall (concrete)</li> <li>• Ductbanks</li> <li>• Electrical and instrument panels and enclosures</li> <li>• Equipment pads/foundations</li> <li>• Exterior walls</li> <li>• Fan stack grating</li> <li>• Fire proofing</li> <li>• Flood curbs</li> <li>• Flood retention materials (spare parts)</li> <li>• Flood, pressure and specialty doors</li> <li>• Floor slab</li> <li>• Foundations</li> <li>• HVAC duct supports</li> <li>• Instrument line supports</li> <li>• Instrument racks, frames and tubing trays</li> <li>• Interior walls</li> <li>• Main steam pipe tunnel</li> <li>• Manholes</li> <li>• Manways, hatches, manhole covers, and hatch covers</li> <li>• Metal siding</li> <li>• Missile shields</li> <li>• Monorails</li> <li>• Penetration sealant (flood, radiation)</li> <li>• Penetration sleeves (mechanical/ electrical not penetrating primary containment boundary)</li> <li>• Pipe whip restraints</li> <li>• Pressure relief panels</li> <li>• Reactor pedestal</li> <li>• Reactor shield wall (steel portion)</li> <li>• Roof decking</li> <li>• Roof hatches</li> <li>• Roof membrane</li> <li>• Roof slabs</li> <li>• RPV pedestal sump liner and penetrations</li> <li>• Seals and gaskets (doors, manways and hatches)</li> </ul> |                            |        |  |

| #            | COMMITMENT   | IMPLEMENTATION<br>SCHEDULE | SOURCE | RELATED<br>LRA SECTION<br>/ AUDIT ITEM |
|--------------|--|----------------------------|--------|--|
| 30<br>(cont) | <ul style="list-style-type: none"> <li>• Seismic isolation joint</li> <li>• Stairway, handrail, platform, grating, decking, and ladders</li> <li>• Structural bolting</li> <li>• Structural steel, beams columns, and plates</li> <li>• Sumps and Sump liners</li> <li>• Support members: welds; bolted connections; support anchorages to building structure</li> <li>• Support pedestals</li> <li>• Transmission towers (see Note 1)</li> <li>• Upper containment pool floor and walls</li> <li>• Vents and louvers</li> </ul> <p>Note 1: The inspections of these structures may be performed by the transmission personnel. However, the results of the inspections will be provided to the GGNS Structures Monitoring Program owner for review.</p> <p>c) Clarify the term “significant degradation” to include “that could lead to loss of structural integrity”.</p> <p>d) Include guidance to perform periodic sampling, testing, and analysis of ground water chemistry for pH, chlorides, and sulfates on a frequency of at least every 5 years.</p> <p>Enhance the Structures Monitoring Program to clarify that parameters monitored or inspected include:</p> <p>a) inspection for missing nuts for structural connections.</p> <p>b) monitoring sliding/bearing surfaces such as Lubrite plates for loss of material due to wear or corrosion, debris, or dirt. The program will be enhanced to include monitoring elastomeric vibration isolators and structural sealants for cracking, loss of material, and hardening.</p> <p>c) Include periodically inspecting the leak chase system associated with the upper containment pool and spent fuel pool to ensure the tell-tales are free of significant blockage. The inspection will also inspect concrete surfaces for degradation where leakage has been observed, in accordance with this Program.</p> <p>Enhance the Structures Monitoring Program to</p> |                            |        |  |

| #             | COMMITMENT   | IMPLEMENTATION SCHEDULE | SOURCE          | RELATED LRA SECTION / AUDIT ITEM |
|---------------|--|-------------------------|-----------------|----------------------------------|
| 30<br>(cont.) | clarify that detection of aging effects will:  |                         | GNRO-2012/00054 |                                  |
|               | a) include augmented inspections of vibration isolators by feel or touch to detect hardening if the vibration isolation function is suspect.   |                         |                 |                                  |
|               | b) Require inspections every 5 years for structures and structural components within the scope of license renewal unless technical justification is provided to extend the inspection to a period not to exceed 10 years.  |                         |                 | GNRO-2011/00093                  |
|               | c) Require direct visual examinations when access is sufficient for the eye to be within 24-inches of the surface to be examined and at an angle of not less than 30° to the surface. Mirrors may be used to improve the angle of vision and accessibility in constricted areas.   |                         |                 |                                  |
|               | d) Specify that remote visual examination may be substituted for direct examination. For all remote visual examinations, optical aids such as telescopes, borescopes, fiber optics, cameras, or other suitable instruments may be used provided such systems have a resolution capability at least equivalent to that attainable by direct visual examination.             |                         |                 | GNRO-2012/00054                  |
|               | e) Include instructions to augment the visual examinations of roof membranes, and seals and gaskets (doors, manways, and hatches) with physical manipulation of at least 10 percent of available surface area.   |                         |                 | GNRO-2012/00054                  |
|               | Enhance the Structures Monitoring Program acceptance criteria by prescribing acceptance criteria based on information provided in industry codes, standards, and guidelines including NEI 96-03, ACI 201.1R-92, ANSI/ASCE 11-99 and ACI 349.3R-96. Industry and plant-specific operating experience will also be considered in the development of the acceptance criteria. |                         |                 | GNRO-2012/00076                  |
|               |  |                         |                 | GNRO-2011/00093                  |

| #  | COMMITMENT   | IMPLEMENTATION SCHEDULE   | SOURCE  | RELATED LRA SECTION / AUDIT ITEM     |
|----|--|---------------------------|---|--------------------------------------|
| 31 | <p>Enhance the Water Chemistry Control – Closed Treated Water Program to provide a corrosion inhibitor for the engine jacket water on the engine-driven fire water pump diesel in accordance with industry guidelines and vendor recommendations.</p> <p>Enhance the Water Chemistry Control – Closed Treated Water Program to provide periodic flushing of the engine jacket water and cleaning of heat exchanger tubes for the engine-driven fire water pump diesel in accordance with industry guidelines and vendor recommendations.</p> <p>Enhance the Water Chemistry Control – Closed Treated Water Program to provide testing of the engine jacket water for the engine-driven fire water pump diesels at least annually.</p> <p>Enhance the Water Chemistry Control – Closed Treated Water Program to revise the water chemistry procedure for closed treated water systems to align the water chemistry control parameter limits with those of EPRI 1007820.</p> | Prior to November 1, 2024 | <p>GNRO-2011/00093</p> <p>GNRO-2012/00049</p> | B.1.44/ RAI<br>B.1.44-1,<br>B.1.44-2 |

| #             | COMMITMENT  | IMPLEMENTATION<br>SCHEDULE | SOURCE | RELATED<br>LRA SECTION<br>/ AUDIT ITEM |
|---------------|---|----------------------------|--------|--|
| 31<br>(cont.) | <p>Enhance the Water Chemistry Control – Closed Treated Water Program to conduct inspections whenever a boundary is opened for the following systems.</p> <ul style="list-style-type: none"> <li>• Drywell chilled water (DCW – system P72)</li> <li>• Plant chilled water (PCW – system P71)</li> <li>• Diesel generator cooling water subsystem for Division I and II standby diesel generators</li> <li>• Diesel engine jacket water for engine-driven fire water pump</li> <li>• Diesel generator cooling water subsystem for Division III (HPCS) diesel generator</li> <li>• Turbine building cooling water (TBCW– system P43)</li> <li>• Component cooling water (CCW – system P42)</li> </ul> <p>These inspections will be conducted in accordance with applicable ASME Code requirements, industry standards, and other plant-specific inspection and personnel qualification procedures that are capable of detecting corrosion or cracking.</p> |                            |        |  |

| #             | COMMITMENT  | IMPLEMENTATION SCHEDULE   | SOURCE          | RELATED LRA SECTION / AUDIT ITEM |
|---------------|---|---------------------------|-----------------|----------------------------------|
| 31<br>(cont.) | <p>Enhance the Water Chemistry Control – Closed Treated Water Program to inspect a representative sample of piping and components at a frequency of once every ten years for the following systems.</p> <ul style="list-style-type: none"> <li>• Drywell chilled water (DCW – P72)</li> <li>• Plant chilled water (PCW – P71)</li> <li>• Diesel generator cooling water subsystem for Division I and II standby diesel generators</li> <li>• Diesel engine jacket water for engine-driven fire water pump</li> <li>• Diesel generator cooling water subsystem for Division III (HPCS) diesel generator</li> <li>• Turbine building cooling water (TBCW – P43)</li> <li>• Component cooling water (CCW – P42)</li> </ul> <p>Components inspected will be those with the highest likelihood of corrosion or cracking. A representative sample is 20% of the population (defined as components having the same material, environment, and aging effect combination) with a maximum of 25 components. The inspection methods will be in accordance with applicable ASME Code requirements, industry standards, or other plant specific inspection and personnel qualification procedures that ensure the capability of detecting corrosion or cracking.</p> |                           |                 |                                  |
| 32            | Enhance the BWR CRD Return Line Nozzle Program to include inspection of the CRD return line nozzle inconel end cap to carbon steel safe end dissimilar metal weld once prior to the period of extended operation and every 10 years thereafter.   | Prior to November 1, 2024 | GNRO-2012/00029 | B.1.6 / RAI<br>B.1.6-1           |
| 33            | Enhance the BWR Penetrations Program to include that site procedures which implement the guidelines of BWRVIP-47-A will be clarified to indicate that the guidelines of BWRVIP-47-A apply without exceptions.   | Prior to November 1, 2024 | GNRO-2012/00029 | B.1.8 / RAI<br>B.1.8-1           |