Entergy

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GNRO-2012/00089

August 13, 2012

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

SUBJECT: Response to Request for Additional Information (RAI) Set 27 dated July 17, 2012
Grand Gulf Nuclear Station, Unit 1
Docket No. 50-416
License No. NPF-29

REFERENCE: NRC Letter, "Requests for Additional Information for the Review of the Grand Gulf Nuclear Station, License Renewal Application," dated July 17 24, 2012 (GNRI-2012/00148) (ML12188A706)

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 an updated listing of regulatory commitments for license renewal that includes revised commitments 5 and 12 required in response to RAI's in 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 13th day of August, 2012.

Sincerely,

MP/jas

Attachment(s): (see next page)

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

cc: with Attachments

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Attachment 1 to

GNRO-2012/00089

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 background, issue and request subparts. This is followed by the Grand Gulf Nuclear Station (GGNS) RAI response to the individual question.

RAI B.1.5-4a

Background. The response to request for additional information (RAI) B.1.5-4 states that there are two in-scope buried stainless steel pipe lines that are routed in close proximity to each other neither of which is coated, there is no soil testing data to demonstrate that the soil does not contain deleterious compounds that could degrade the stainless steel material, and one visual inspection will be conducted in the 10-year period prior to the period of extended operation to determine if additional inspections are required.

Footnote 3 of Aging Management Program (AMP) XI.M41, related to stainless steel piping, states, "[c]oatings are provided based on environmental conditions (e.g., stainless steel in chloride containing environments). If coatings are not provided, a justification is provided in the LRA."

Issue. The staff has insufficient information to evaluate the proposal to conduct one inspection of the buried uncoated in-scope stainless piping in the 10-year period prior to the period of extended operation in order to determine if additional inspections are required. Given that the preventive action recommendation of Generic Aging Lessons Learned (GALL) Report AMP XI.M41 is not met (i.e., no coating, no soil analyses), the staff does not agree with conducting the minimum number of inspections recommended in GALL Report AMP XI.M41. The staff believes that additional actions are needed such as: (a) additional inspections to ensure that a representative sample of the piping is conducted, (b) a demonstration that one inspection is sufficiently representative of the total length of all in-scope buried uncoated stainless steel piping, or (c) soil testing with possible augmented inspections prior to the period of extended operation.

Request. For the Buried Piping and Tanks Inspection Program, include a method to determine the condition of the buried uncoated in-scope stainless steel piping prior to the period of extended operation, or include soil testing with possible augmented inspections prior to and during the period of extended operation. Otherwise, propose an alternative approach that will ensure that the piping will meet its intended function(s) throughout the period of extended operation.

Revise the Updated Final Safety Analysis Report (UFSAR) Supplement, as necessary, to reflect the plant-specific approach to buried uncoated in-scope stainless piping.

RAI B.1.5-4a RESPONSE

GGNS will perform soil testing prior to the period of extended operation to demonstrate that the soil in the area of the stainless steel piping is not corrosive to the stainless steel material. Soil testing will be performed at two locations near the stainless steel piping and include parameters of soil resistivity, bacteria, pH, moisture, chlorides and redox potential. If the soil is determined to be corrosive then the number of inspections will be increased from one to two prior to and during the period of extended operation. LRA Appendix A.1.5 is revised to include the following. Additions are shown with underline.

A.1.5 Buried Piping and Tanks Inspection Program

The Buried Piping and Tanks Inspection Program manages loss of material for the external surfaces of buried and underground piping and tanks composed of any material through preventive, mitigative, and inspection activities. Cathodic protection is used for additional protection of buried piping and tanks. The cathodic protection system is monitored and trended annually in accordance with NACE standards SP-0169 and RP-0285. Soil testing will be performed at two locations near the stainless steel condensate storage system piping that is subject to aging management review. Measured parameters will include soil resistivity, bacteria, pH, moisture, chlorides and redox potential. If the soil is determined to be corrosive then the number of inspections will be increased from one to two prior to and during the period of extended operation.

This program will be implemented prior to the period of extended operation.

RAI B.1.5-6a

Background. The response to RAI B.1.5-6, in regard to the 100 mV of cathodic polarization criterion, states:

> Adequacy of polarization can be indicated by both the 100mV polarization criterion as well as the 850mV instant "off' polarized criterion. Ohm's law dictates that polarization at the cathode of a CP system circuit must occur, although possibly at different levels, simultaneously everywhere in the circuit. This means that the potentials measured at the ground surface for both the 100mV and the 850mV criteria are representative of what is taking place at all locations on the bare surfaces of the buried piping and structures. Thus, any singular 100mV polarization indication ensures that the most active buried piping material has achieved protection, as would be the case for a singular 850mV polarized half-cell reading.

NACE SP0169-2007 Section 6.2.2.1.3 states, "[a] minimum of 100 mV of cathodic polarization between the structure surface and a stable reference electrode contacting the electrolyte. The formation or decay of polarization can be measured to satisfy this criterion.

Section 5.3.2.2 of ISO 15589-1, "Petroleum and natural gas industries – Cathodic protection of pipeline transportation systems – Part 1: On-land pipelines," in regard to the 100 mV polarization criteria states, "[f]urthermore, the criteria shall not be used in case of pipelines connected to or consisting of mixed metal components."

Issue. The staff believes that a 100 mV cathodic polarization will reduce corrosion compared to the no-polarization level for the steel components. However, the effectiveness of the 100 mV criterion could be compromised when mixed metals (i.e., two different metallic components electrically connected) come into contact in a common environment (i.e., soil) resulting in formation of a galvanic cell in which the cell potential might exceed 100 mV, thus, negating the effect of 100 mV cathodic polarization for the most anodic component.

The response was insufficient in demonstrating that the most active (e.g., most anodic) buried in-scope piping material has achieved a 100 mV polarization in that it did not address the mixed metal environment of the buried piping. For example, the following was not provided:

- evidence or proposed future evidence (e.g., buried test coupons) to ensure that 100 mV criterion was providing sufficient protection for the mixed metal environment as defined previously,
- evidence that even while utilizing a 100 mV criterion, local soil-to-pipe potential were close to -850 mV, or
- the basis for using the 100 mV criterion.

Request. In light of the in-scope buried piping being within a mixed metal environment:

a. State why a 100 mV polarization is adequate to protect steel and stainless steel buried components when there is a nearby bare wire copper grid.
b. If a 100 mV polarization criterion cannot be demonstrated to provide adequate protection to the piping, propose and provide the basis for an alternative criterion.
c. Describe the testing methodology which verifies adequate level of polarization for the steel and stainless steel buried piping.

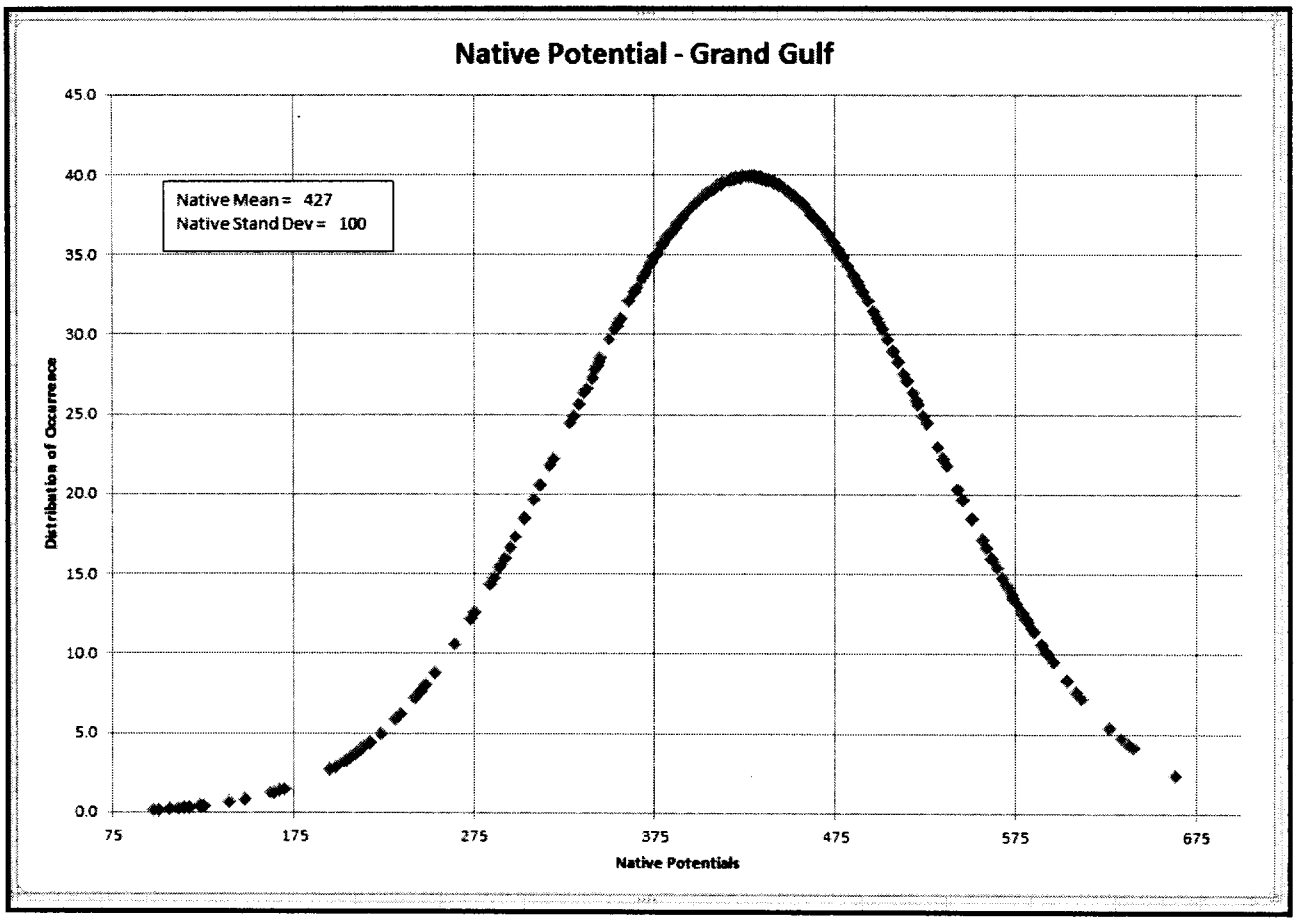
RAI B.1.5-6a RESPONSE

a. A three part response provides the necessary evidence that the 100mV polarization criterion is adequate to protect the steel and stainless steel buried components.

   1) When establishing criteria for cathodic protection, NACE Corrosion Engineer's Reference Handbook specifies for Steel and Cast Iron "... A minimum of 100mV of cathodic protection between the structure and a stable reference anode." For Copper, the handbook specifies "A minimum of 100mV of cathodic protection between the structure and a stable reference anode." This guidance confirms that the criterion of 100mV polarization is adequate to protect both steel and copper, and with the CP system raising the piping and grounding grid to an equipotential voltage of 100mV, galvanic action is nullified.

   2) For the design of a CP system, the NACE Corrosion Engineer's Reference Handbook specifies that a target current density of 0.1 mA/ft^2 to 0.2 mA/ft^2 should be applied to the system to ensure adequate protection. The protected area at GGNS is approximately 22.175 acres, and the applied current from all rectifier units was last measured at 214.65 amperes giving an average current density of 9.68 amperes per acre or 0.2 mA/ft^2 which meets the target current density specified above and confirms that adequate protection is being provided to the affected structures by the 100mV criteria.

   3) If the piping was near bare wire copper grounding grid cable, there would be a general reduction of the overall half-cell potential of steel from the couple with the copper. This would be apparent in a plot of native potential data that would show the mean for the plot being close to 350 mV. As shown on the figure below, this is not the case at GGNS as the mean is 427mV which provides evidence that piping is not near bare wire copper grounding grids or mixed metal couples that would affect the ability of the 100 mV polarization to protect the piping.



b. As noted in (a.) above, the 100mV polarization criteria has been demonstrated to provide adequate protection to the buried piping.

c. The method used at GGNS to verify an adequate level of polarization of the buried piping is an area potential and earth current (APEC) survey. In this process, a computer based data logger is used to collect Cu/CuSO4 reference cell potentials at various areas of the plant, while at the same time dual earth current voltage gradients are collected in a rectangular co-ordinate "normal" X-Y grid. After processing, this APEC data is integrated for evaluation into a geographic information system (GIS) in relation to the location of all buried plant assets. The APEC survey provides an extensive data set that enables this specialized indirect inspection survey method to provide the information necessary to 1) define significantly active corrosion cells, 2) determine the plant piping coating condition, and 3) evaluate the performance of all influencing CP systems from a detailed graphical representation. The information provided by the APEC survey as discussed above ensures that an adequate level of polarization is achieved for the carbon steel and stainless steel buried components.

RAI B.1.20-2a

Background. In RAI B.1.20-2 the staff requested that the applicant provide an aging management review (AMR) item for the fire suppression system outdoor CO_2 tank (License Renewal Drawing 35E, location H3) and explain how the tank will be managed for aging. The response to RAI B.1.20-2 states that the outdoor CO_2 tank is included in the AMR item for carbon steel tank exposed to air indoor uncontrolled in LRA Table 3.3.2-13. The RAI response also states that the environment is considered air indoor uncontrolled because the tank is inside an enclosure and is insulated. The response further states that the area around the tank inside the enclosure that is accessible will be monitored for moisture or rust stains emanating from the insulation using the Fire Protection Program in order to manage loss of material. The applicant revised the Fire Protection Program to include an enhancement to visually inspect the external surfaces of the CO_2 tank for signs of corrosion at least once every fuel cycle.

The GALL Report defines "air - indoor uncontrolled" as indoor air associated with systems whose temperatures are above the dew point such that condensation can occur, but only rarely. The GALL Report defines "air – outdoor" as outdoor air associated with components exposed to atmospheric air, ambient temperatures, humidity, and weather, including precipitation and wind.

Issue. The CO_2 tank is located outdoors surrounded by insulation and a metal housing. While the metal housing will protect the CO_2 tank from precipitation and wind, the metal housing will not protect the CO_2 tank from humidity or the temperature extremes experienced outdoors. It is unclear to the staff how the environment inside the metal housing can be evaluated as uncontrolled indoor air because the environment inside the enclosure is not consistent with the GALL Report definition of "air-indoor uncontrolled."

During the staff's walk down of the outdoor CO_2 tank, there did not appear to be any accessible portions of the tank or its foundation since the metal housing surrounding the tank does not have any access ports and covers the base of the tank. It is unclear to the staff what portion of the tank will be made accessible for visual inspection or how an inspection for moisture or rust stains emanating from the tank is sufficient to detect loss of material from the tank prior to loss of intended function given that rust stains may not appear until the pressure integrity of the tank is challenged.

Request.

a. State whether there are any other components identified in the license renewal application (LRA) which are located outdoors in a similar environment to the CO_2 tank (i.e. surrounded by an enclosure) which have been evaluated as being exposed to an indoor air environment instead of an environment that includes exposure to moisture, such as outdoor air, condensation, or raw water.
b. For all of the items identified in (a), state the basis for why the item does not require evaluation for exposure to moisture.
c. State what portion of the CO_2 tank will be made accessible for visual inspection (e.g., physical location on tank, percentage of bare metal exposure of the external surface of the tank)? If the surface of the CO_2 tank will not be made accessible for visual inspection, state how an inspection for moisture or rust stains emanating from the tank insulation or metal housing is sufficient to detect loss of material from the tank prior to loss of intended function.

RAI B.1.20-2a RESPONSE

a. The insulated CO_2 tank is surrounded by a sealed enclosure. While the enclosure is outdoors, the tank is indoors inside the enclosure. A three-foot diameter bolted access cover in the end of the enclosure is used for access. The environment for the tank is "air-indoor uncontrolled" due to the lack of exposure to precipitation. Consistent with NUREG-1801 Table IX.D, the air-indoor uncontrolled environment is not humidity controlled.

   There are no components identified in the LRA that are located outdoors with an environment of "air-indoor uncontrolled."

b. No other components were identified.

c. Visual inspection of the CO_2 tank is performed by removing the access cover from the end of the enclosure. The enhancement for visual inspection of the CO_2 system described in LRA B.1.20 will provide an opportunity for inspection techniques commonly used for confined spaces, such as mirrors and borescopes which provide access to a wide surface area. Bare metal inspection of the tank is performed when the insulation is removed during maintenance. This is consistent with staff guidance provided in NUREG-1801, Section XI.M36, External Surfaces Monitoring of Mechanical Components. Loss of material from the tank external surface would also be indicated by corrosion stains on the insulation as described in NUREG-1801 Section XI.M36.

RAI B.1.21-2a

Background. In RAI B.1.21-2, the staff requested that the applicant provide AMR items for sprinkler heads that reference the Fire Water System Program to manage aging, or provide justification for why no program will be used to manage aging. The response to RAI B.1.21-2 dated May 15, 2012, states that sprinklers are described as nozzles in the LRA and that nozzles are listed in LRA Table 3.3.2-12 as being managed by the Fire Water System and Selective Leaching programs. However, the only nozzle AMR items in LRA Table 3.3.2-12 that reference the Fire Water System Program to manage aging are for nozzles exposed to water. LRA Section 2.3.3.12 states that the applicant's fire water system includes both wet-pipe and dry-pipe sprinkler systems. Sprinkler heads exposed to both air and water are included within the scope of GALL Report AMP XI.M27, "Fire Water System."

Issue. The AMR items in LRA Table 3.3.2-12 for nozzles exposed indoor air state that the components have no aging effects requiring management and no AMP is proposed. It is unclear to the staff why the nozzles exposed to air do not require aging management using the Fire Water System Program.

Request. State the basis for why the nozzles exposed to indoor air do not require aging management.

RAI B.1.21-2a RESPONSE

No aging effects requiring management are identified for the copper alloy nozzles exposed to air-indoor (internal and external) described in LRA Table 3.3.2-12, and thus no AMP is identified. This is consistent with NUREG-1801 item VII.J.AP-144.

However, as described in LRA Appendix B.1.21 the Fire Water System Program will be enhanced to ensure that before the end of 50 years of service, sprinklers are replaced or representative samples from one or more sample areas are tested. Test procedures will be repeated at 10-year intervals during the period of extended operation. NFPA-25 defines a representative sample of sprinklers to consist of a minimum of not less than four sprinklers or one percent of the number of sprinklers per individual sprinkler sample, whichever is greater. Thus, this aging management program activity will be applied to all sprinklers that are in the scope of license renewal and subject to aging management review regardless of the fact that no aging effects were identified in LRA Table 3.3.2-12 for the copper alloy nozzles.

RAI B.1.21-3a

Background. In RAI B.1.21-3, the staff requested that the applicant clarify whether the visual inspections that will be performed as part of the enhancement to the Fire Water System Program to perform visual inspections of the internal surfaces of fire protection piping will be performed periodically during the period of extended operation. The staff also requested that the applicant state the basis for the frequency of inspections. The response to RAI B.1.21-3 dated May 15, 2012, states that the periodicity of the visual inspections is tied to the need for routine or corrective maintenance and that the basis for the frequency is a past maintenance history demonstrating that inspections have been performed on a representative number of locations. The RAI response also states that additional inspections will be performed as needed to obtain the representative sample prior to the period of extended operation.

Issue. The response to RAI B.1.21-3 states that the inspection frequency is based on the need for component maintenance, which implies that the inspection frequency is purely opportunistic. GALL Report AMP XI.M27 states that inspections may be performed concurrent with component maintenance; however, it recommends that plant-specific inspection intervals be determined by engineering evaluation of the fire water piping to ensure degradation is detected prior to loss of intended function. The RAI response did not state the frequency at which the visual inspections will be performed or include an acceptable basis for the frequency of inspections. It is unclear to the staff what the inspection frequency will be and how the inspection frequency discussed in the enhancement to the Fire Water System Program is consistent with the guidance in GALL Report AMP XI.M27.

Request. State the basis for the frequency of the visual inspections that will be performed during the period of extended operation as part of the enhancement to the Fire Water System Program to perform visual inspections of the internal surfaces of fire protection piping.

RAI B.1.21-3a RESPONSE

The enhancement identified in LRA Sections A.1.21 and B.1.21 is revised to add that during the period of extended operation, the periodicity of inspections will be based on an engineering evaluation of the operating experience gained from the results of previous inspections of fire water piping. LRA Section A.1.21 and B.1.21 enhancement is revised as shown below with additions underlined.

A.1.21 Fire Water System Program

The Fire Water System Program will be enhanced as follows.

- Include periodic visual inspection of spray and sprinkler system internals for evidence of degradation. Acceptance criteria will be enhanced to verify no unacceptable degradation.

- Include periodic inspection of hose reels for degradation. Acceptance criteria will be enhanced to verify no unacceptable degradation.

- Include one of the following options.

  (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 periodically 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.

  OR

  (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. The periodicity of inspections during the period of extended operation will be determined through an engineering evaluation of the operating experience gained from the results of previous inspections of fire water piping.

B.1.21 FIRE WATER SYSTEM

Enhancements

Elements Affected	Enhancements
4. Detection of Aging Effects (cont.)	The Fire Water System Program will be enhanced to include one of the following options. (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 periodically 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. OR (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 performed as needed to obtain this representative sample prior to the period of extended operation. The periodicity of inspections during the period of extended operation will be determined through an engineering evaluation of the operating experience gained from the results of previous inspections of fire water piping.

RAI B.1.26-1a

Background. In RAI B.1.26-1, the staff requested that the applicant fully describe the environments that are applied to the Internal Surfaces in Miscellaneous Piping and Ducting Components program. The applicant's response to RAI B.2.26-1, dated May 9, 2012, states that the environments within the program are specified in LRA Section 3. The revised LRA UFSAR Supplement section omits a complete description of the program's environments.

The staff reviewed this response and found it unacceptable because it is inconsistent with the minimum UFSAR Supplement description for this program recommended in the SRP-LR, Table 3.0-1.

Issue. The revised UFSAR Supplement does not fully describe the program's environments and is inconsistent with the minimum description for this program recommended in the SRP-LR, Table 3.0-1.

Request. Revise LRA Section A.1.26 to be consistent with the standard review plan – license renewal (SRP-LR) and fully describe the program's environments, or justify why this description is not required.

RAI B.1.26-1a RESPONSE

As stated in LRA Section B.1.26, this new program is consistent with the GALL Report AMP XI.M38 without exception, and therefore the GGNS components' environments shall be as indicated in the GALL Report AMP XI.M38. LRA Section A.1.26 is revised to state the program's environments, with additions shown underlined.

A.1.26 Internal Surfaces in Miscellaneous Piping and Ducting Components Program

The Internal Surfaces in Miscellaneous Piping and Ducting Components Program manages the effects of aging using opportunistic visual inspections of the internal surfaces of metallic piping, piping components, ducting, elastomeric components, and other components during periodic surveillances or maintenance activities when the surfaces are accessible for visual inspection. The program inspections ensure that environmental conditions are not causing material degradation that could result in a loss of the component's intended function. For metallic components, visual inspection will be used to detect loss of material and fouling. For elastomeric components, visual inspections will be used to detect cracking and change in material properties. Visual examinations of elastomeric components are accompanied by physical manipulation such that changes in material properties are readily observable. The sample area subject to manipulation of flexible elastomeric components is at least 10 percent of the available surface area. The program manages the effects of aging for piping and components exposed to environments of air - indoor, air - outdoor, condensation, exhaust gas, lube oil, raw water, waste water, and treated water.

This program will be implemented prior to the period of extended operation.

RAI B.1.28-1a

Background. LRA Section B.1.28 states that the Non-EQ Cable Connections Program is consistent with GALL Report AMP XI.E6. The GALL Report AMP under "parameter monitored/inspected" program element recommends that connection type be considered for sampling basis. During the audit, the staff reviewed the Grand Gulf basis document GGNS-EP-08-LRD08, Revision 1, and noted that the "parameters monitored or inspected" program element does not consider or address connection type as one of sample selection criteria. The staff requested the applicant clarify how the applicant's Non-EQ Cable Connection Program (basis document) is consistent with GALL Report AMP XI.E6 with respect to sample selection criteria including connection type. In response to the staff's request, in a letter dated May 25, 2012, the applicant stated that LRA Section B.1.28 is consistent with the program as described in NUREG-1801, Section XI.E6, Electrical Cable Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirement, without exception. The applicant also stated that as described in LRA Section B.1.28, connection type is a factor that will be considered in sample selection.

Issue. The basis document under "parameter monitored/inspected" program element is not consistent with those in GALL AMP XI.E6 because it does not consider connection type as sampling basis.

Request. Revise the basis document to include connection type as sampling basis or explain how the "parameter monitored/inspection" program element is consistent with those in GALL AMP XI.E6.

RAI B.1.28-1a RESPONSE

The GGNS aging management program evaluation report (basis document) for the Non-EQ Cable Connections Program was revised to indicate that connection type will be considered a factor in sample selection.

Attachment 2 to

GNRO-2012/00089

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	Enhance the Bolting Integrity Program for GGNS to clarify the prohibition on use of lubricants containing MoS_2 for bolting, and to specify that proper gasket compression will be visually verified following assembly. 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. 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.	Prior to November 1, 2024	GNRO-2011/00093	B.1.3

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
4	Enhance the Boraflex Monitoring Program for GGNS to perform periodic surveillances of the boraflex neutron absorbing material in the spent fuel pool and upper containment pool at least once every 5 years using Boron-10 Areal Density Gage for Evaluating Racks (BADGER) testing. 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.	Prior to November 1, 2024	GNRO-2011/00093 GNRO-2012-00077	B.1.4 / RAI B.1.4-1
5	Implement the Buried Piping and Tanks Inspection Program for GGNS as described in LRA Section B.1.5. Soil testing will be performed at two locations near the stainless steel condensate storage system piping that is subject to aging management review. Measured parameters will include soil resistivity, bacteria, pH, moisture, chlorides and redox potential. If the soil is determined to be corrosive then the number of inspections will be increased from one to two prior to and during the period of extended operation.	Prior to November 1, 2024	GNRO-2011/00093 GNRO-2012/00089	B.1.5/ RAI B.1.5-4a

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
6	Enhance the Boiling Water Reactor (BWR) Vessel Internals Program for GGNS as follows. (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). (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.	Prior to November 1, 2024	GNRO-2011/00093	B.1.11

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
7	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. 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. • Automatic Depressurization System (ADS) air • Division 1 Diesel Generator Starting Air (D1DGSA) • Division 2 Diesel Generator Starting Air (D2DGSA) • Division 3 Diesel Generator Starting Air (D3DGSA), also known as the HPCS Diesel Generator • Instrument Air (IA)	Prior to November 1, 2024	GNRO-2011/00093	B.1.12/RAI B.1.12-1

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
8	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. 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.	Prior to November 1, 2024	GNRO-2011/00093	B.1.16
9	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. Enhance the External Surfaces Monitoring Program as follows. 1. Underground components within the scope of this program will be clearly identified in program documents. 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.	Prior to November 1, 2024	GNRO-2011/00093	B.1.18

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
10	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). 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. 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_{en} 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. 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.	Two years prior to November 1, 2024	GNRO-2011/00093 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	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. 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. 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. 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.	Prior to November 1, 2024	GNRO-2011/00093 GNRO-2012/00042	B.1.20/ RAI B.1.20-2

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
12	Enhance the Fire Water Program to include inspection of hose reels for degradation. Acceptance criteria will be enhanced to verify no unacceptable degradation. Enhance the Fire Water Program to include one of the following options. (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. OR (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 performed as needed to obtain this representative sample prior to the period of extended operation. The periodicity of inspections during the period of extended operation will be determined through an engineering evaluation of the operating experience gained from the results of previous inspections of fire water piping.	Prior to November 1, 2024	GNRO-2011/00093 GNRO-2012/00089	B.1.21/RAI B.1.21-5, B.1.21-3a

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
12 (cont.)	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. 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. 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.		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 B.1.24-1

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
14 (cont.)	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. Enhance the Inservice Inspection - IWF Program to clarify that detection of aging will include: 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. 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.			

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
14 (cont.)	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. Enhance the Inservice Inspection - IWF Program acceptance criteria to include the following as unacceptable conditions. a) Loss of material due to corrosion or wear, which reduces the load bearing capacity of the component support; 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 c) Cracked or sheared bolts, including high strength bolts, and anchors.		GNRO-2012/00055 GNRO-2011/00093	
15	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. 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.	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	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. Enhance the Masonry Wall Program to clarify that detection of aging effects require masonry walls to be inspected every 5 years.	Prior to November 1, 2024	GNRO-2011/00093	B.1.27/ RAI 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	Enhance the Non environmentally Qualified (Non-EQ) Inaccessible Power Cables (400V to 35kV) Program to include low-voltage (400V to 2kV) power cables. 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. 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.	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	Enhance the Oil Analysis Program to provide a formalized analysis technique for particulate counting. Enhance the Oil Analysis Program to include piping and components within the main generator system (N41) with an internal environment of lube oil.	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	Enhance the Protective Coating Program to include parameters monitored or inspected by the program per the guidance provided in ASTM D5163-08. 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. Enhance the Protective Coating Program to include acceptance criteria per ASTM D 5163-08.	Prior to November 1, 2024	GNRO-2011/00093	B.1.36
27	Ensure that the additional requirements of the ISP(E) specified in BWRVIP-86, Revision 1, including the conditions of the final NRC safety evaluation for BWRVIP-116 incorporated in BWRVIP-86, Revision 1 will be addressed before the period of extended operation. Ensure that new fluence projections through the period of extended operation and the latest vessel beltline ART Tables are provided to the BWRVIP prior to the period of extended operation.	Prior to November 1, 2024	GNRO-2011/00093 GNRO-2012/00081 GNRO-2012/00081	B.1.38 / RAI B.1.38-1, B.1.38-4

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
28	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. 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. 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.	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	Enhance the Structures Monitoring Program to clarify that the scope includes the following: a) In-scope structures and structural components. • Containment Building (GGN 2) • Control House – Switchyard • Culvert No. 1 and drainage channel • Manholes and Ductbanks • Radioactive Waste Building Pipe Tunnel • Auxiliary Building (GGN2) • Turbine Building (GGN2) b) In-scope structural components • Anchor bolts • Anchorage / embedments • Base plates • Basin debris screen and grating • Battery racks • Beams, columns, floor slabs and interior walls • Cable tray and cable tray supports • Component and piping supports • Conduit and conduit supports • Containment sump liner and penetrations	Prior to November 1, 2024	GNRO-2011/00093 GNRO-2012/00074	B.1.42/ RAI B.1.42-3, B.1.42-5, 2.1-4, 3.5.1.33-2

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
30 (cont)	• Containment sump structures • Control room ceiling support system • Cooling tower drift eliminators • Cooling tower fill • CST/RWST retaining basin (wall) • Diesel fuel tank access tunnel slab • Drainage channel • Drywell floor slab (concrete) • Drywell wall (concrete) • Ductbanks • Electrical and instrument panels and enclosures • Equipment pads/foundations • Exterior walls • Fan stack grating • Fire proofing • Flood curbs • Flood retention materials (spare parts) • Flood, pressure and specialty doors • Floor slab • Foundations • HVAC duct supports • Instrument line supports • Instrument racks, frames and tubing trays • Interior walls • Main steam pipe tunnel • Manholes • Manways, hatches, manhole covers, and hatch covers • Metal siding • Missile shields • Monorails • Penetration sealant (flood, radiation) • Penetration sleeves (mechanical/ electrical not penetrating primary containment boundary) • Pipe whip restraints • Pressure relief panels • Reactor pedestal • Reactor shield wall (steel portion) • Roof decking • Roof hatches • Roof membrane • Roof slabs • RPV pedestal sump liner and penetrations • Seals and gaskets (doors, manways and hatches)			

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
30 (cont)	• Seismic isolation joint • Stairway, handrail, platform, grating, decking, and ladders • Structural bolting • Structural steel, beams columns, and plates • Sumps and Sump liners • Support members: welds; bolted connections; support anchorages to building structure • Support pedestals • Transmission towers (see Note 1) • Upper containment pool floor and walls • Vents and louvers 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. c) Clarify the term "significant degradation" to include "that could lead to loss of structural integrity". 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. Enhance the Structures Monitoring Program to clarify that parameters monitored or inspected include: a) inspection for missing nuts for structural connections. 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. 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. Enhance the Structures Monitoring Program to			

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
30 (cont.)	clarify that detection of aging effects will: 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. 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. 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. 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-2012/00054 GNRO-2011/00093 GNRO-2012/00054 GNRO-2012/00054 GNRO-2012/00076 GNRO-2011/00093	

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
31	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. 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. 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. 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.	Prior to November 1, 2024	GNRO-2011/00093 GNRO-2012/00049	B.1.44/ RAI B.1.44-1, B.1.44-2

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
31 (cont.)	Enhance the Water Chemistry Control – Closed Treated Water Program to conduct inspections whenever a boundary is opened for the following systems. • Drywell chilled water (DCW – system P72) • Plant chilled water (PCW – system P71) • Diesel generator cooling water subsystem for Division I and II standby diesel generators • Diesel engine jacket water for engine-driven fire water pump • Diesel generator cooling water subsystem for Division III (HPCS) diesel generator • Turbine building cooling water (TBCW– system P43) • Component cooling water (CCW – system P42) 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.			

#	COMMITMENT	IMPLEMENTATION SCHEDULE	SOURCE	RELATED LRA SECTION / AUDIT ITEM
31 (cont.)	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. • Drywell chilled water (DCW – P72) • Plant chilled water (PCW – P71) • Diesel generator cooling water subsystem for Division I and II standby diesel generators • Diesel engine jacket water for engine-driven fire water pump • Diesel generator cooling water subsystem for Division III (HPCS) diesel generator • Turbine building cooling water (TBCW – P43) • Component cooling water (CCW – P42) 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.			
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 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 B.1.8-1