NRC AMP Audit - All Items (Open and Closed)

Item	Request	Response
50	AMP B.1.1-1 Buried Piping and Tanks Inspection LRA Section B.1.1, "Program Description," states that the program includes preventive measures to mitigate corrosion. Please discuss the specific preventive measures used at JAFNPP to mitigate corrosion of buried components, including the types of materials used for any coatings, wrappings, or linings.	This program is a new program that will be consistent with GALL AMP XI.M34 including the use of preventive measures such as coatings. The preventive measures used at JAFNPP include bituminous coatings such as coal tar epoxy or enamel that are applied in accordance with industry standards and site specifications.
51	AMP B.1.1-2 Buried Piping and Tanks Inspection With regard to AMP B.1.1 described in LRA Section B.1.1, please discuss a) the aggressiveness of the soil at the JAFNPP site as it relates to degradation of each of the material-environment combinations of the buried components identified, b) how soil aggressiveness is determined at JAFNPP, and c) the variation in soil aggressiveness at the different locations containing buried components on the JAFNPP site.	Buried components at JAFNPP are coated with materials that were selected during original design and construction to provide protection from the potential adverse conditions of the soil (i.e., groundwater). The buried piping and tanks inspection program will perform inspections that will confirm that the buried components and their coatings are adequate to ensure that the components are able to perform their intended functions for the period of extended operation. For information concerning the aggressiveness of ground water, see the response to audit question 201.
52	AMP B.1.1-3 Buried Piping and Tanks Inspection LRA Section B.1.1, "Program Description," states that a focused inspection will be performed within the first ten years of the period of extended operation, unless an opportunistic inspection occurs within this ten-year period. Please confirm that an inspection, either focused or opportunistic, will also be performed during the ten-year period immediately prior to entering the period of extended operation, as recommended in NUREG-1801. Also, please revise the FSAR supplement for AMP B.1.1 to reflect this inspection.	This statement was meant to indicate verification that an inspection occurred within the ten years prior to entering the period of extended operation. If an opportunistic inspection did not occur, a focused inspection would be performed prior to the period of extended operation. This point will be clarified by inserting the following after the third sentence of Section 3.1.B.4.b of JAF-RPT-05-LRD02. "If an inspection did not occur, a focused inspection will be performed prior to the period of extended operation." The FSAR supplement for AMP B.1.1 will be clarified to reflect this inspection. This requires a LRA amendment.

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54	AMP B.1.1-5 Buried Piping and Tanks Inspection With regard to AMP B.1.1 described in LRA Section B.1.1, please confirm that any coating and wrapping degradations are reported and evaluated according to site corrective actions procedures in accordance with 10 CFR 50, Appendix B.	As stated in section B.1.1 of the LRA this program is consistent with GALL. In addition, section 3.1.B.7.b of JAF-RPT-05-LRD02 states that the site corrective action program is in accordance with 10 CFR 50 Appendix B such that any coating or wrapping degradations would be reported.
55	AMP B.1.1-6 Buried Piping and Tanks Inspection LRA Section B.1.1, Exceptions to NUREG-1801, states that methods that allow assessment of pipe condition without excavation may be substituted for inspections requiring excavation solely for the purpose of inspection. Phased array UT technology is provided as an example of such a method. Please discuss the following with regard to this exception: a) what selection criteria will be used to select the inspection method, b) how will the method be qualified, c) what training will inspectors be given, d) what criteria will be used to determine if corrective actions are needed, and e) what information will be provided related to the condition of coatings, linings, or wraps used on the buried components if a method such as phased array UT is used.	The criteria will be that the inspection method allows effective assessment of piping condition without the threat of damage to the coating that accompanies excavation. It is anticipated that such methods will allow for assessment of more extensive portions of buried piping than the method of excavating for visual inspections at a sampling of locations. This exception was to allow the use of more effective state-of-the-art inspection techniques, such as phased array UT, in lieu of excavating piping which has the potential for damaging the piping and its coating. Any technique used will be appropriately qualified for use and will require the use of trained inspectors applying appropriate acceptance criteria. The specific acceptance criteria and the extent of information providing an indication of the condition of the coating will depend on the specific inspection method developed. The effectiveness of the method in determining the overall condition of the piping and its protective coating will be the determining factor in the selection of alternate methods, if any.
56	AMP B.1.1-7 Buried Piping and Tanks Inspection LRA Section B.1.1, "Operating Experience," states that JAFNPP plant-specific operating experience is consistent with the operating experience in the NUREG-1801 program description. Please discuss the JAFNPP plant-specific operating experience with buried components for each of the different material-environment combinations identified at the JAFNPP site. Please include any failures or degradation resulting in leaks of these components that required corrective action, and their cause.	Within the past six years there have been no leaks in buried components in systems included in the scope of license renewal.

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57	AMP B.1.1-8 Buried Piping and Tanks Inspection The FSAR supplement for AMP B.1.1 In Section A.2.1 of the LRA does not include a discussion of the commitment to implement this new program prior to the period of extended operation. Please revise the FSAR supplement to include this commitment.	Section A.2.1 of the LRA states, "All aging management programs will be implemented prior to entering the period of extended operation." For additional clarification, LRA Appendix A will be revised as follows. Section A.2.1.1, Buried Piping and Tanks Inspection Program, add "This program will be implemented prior to the period of extended operation." This requires a LRA Amendment.
58	AMP B.1.9 -1 Diesel Fuel Monitoring The "Program Description" for AMP B.1.9 states that the program entails sampling to ensure that adequate diesel fuel quality is maintained to prevent corrosion of fuel systems. Please provide the sampling frequency for each of the diesel fuel tanks in the scope of license renewal.	The EDG fuel oil storage tanks are sampled every 31 days. The diesel fire pump fuel oil tanks are sampled every 92 days. Reference procedure SP-01.07, "Diesel Fuel oil Sampling and Analysis", step 2.3.1:
61	AMP B.1.9 -4 Diesel Fuel Monitoring With regard to AMP B.1.9, please confirm that accumulated water is periodically drained from each of the diesel fuel tanks in the scope of license renewal and provide the frequency at which this activity is performed. If it is not, please provide the technical justification for not draining accumulated water periodically from each tank.	As stated in LRA Section B.1.9 under "Enhancements", the Diesel Fuel Monitoring Program will be enhanced to include periodic draining. The diesel fuel oil tanks are sampled monthly for water. If water is detected then it is drained. Site reference is ST-9J.
62	AMP B.1.9 -5 Diesel Fuel Monitoring With regard to AMP B.1.9, please clarify whether coatings are used on any of the diesel fuel tanks in the scope of license renewal. Please include the type of coating, if any, and the results of any recent inspections of the coating.	Coatings are not used on the diesel fuel tanks in the scope of license renewal.
63	AMP B.1.9 -6 Diesel Fuel Monitoring With regard to AMP B.1.9, please confirm that multi-level oil sampling and analysis are performed for the diesel fuel oil storage tank in accordance with ASTM Standard D 4057. If it is not, please provide the technical justification for not performing multi-level sampling.	JAFNPP performs periodic multilevel sampling to provide assurance that fuel oil contaminants are within acceptable limits. ASTM D4057, Standard Practice for Manual Sampling of Petroleum and Petroleum Products, is used for guidance on oil sampling. The JAF procedure is SP-01.07.

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64	AMP B.1.9 -7 Diesel Fuel Monitoring With regard to AMP B.1.9, please provide the frequency at which water and biological activity or particulate contamination concentrations are monitored and trended for each of the diesel fuel tanks in the scope of license renewal.	The monitoring and trending attribute of NUREG-1801, Section XI.M30, Fuel Oil Chemistry Program states water and biological activity or particulate contamination concentrations are monitored and trended in accordance with the plant's technical specifications or at least quarterly. As indicated in the LRA, no exceptions are taken with respect to the monitoring and trending attribute of the program described in NUREG-1801, Section XI.M30. The EDG fuel oil storage tanks are sampled every 31 days. The diesel fire pump fuel oil tanks are sampled every 92 days. These samples include a Tech Spec required composite for particulates on the diesel fuel oil storage tanks. The samples also include a test for water and sediment required by the Technical Requirements Manual.
65	AMP B.1.9 -8 Diesel Fuel Monitoring The Operating Experience section for AMP B.1.9 states that in 2000, sample results for EDG fuel oil storage tanks exceeded the industry acceptable limit for particulate contamination. Please discuss the extent and cause of this excursion and the corrective actions.	The probable cause was listed as possible fuel oil degradation. The extent affected tanks TK-6B and TK-6D. Corrective actions included resampling tank TK-6B and draining and refilling tank TK-6D with fresh fuel oil. Resample results of TK-6B were acceptable. Reference document, CR-JAF-2000-02022 and CR-JAF-2000-05845
66	AMP B.1.9 -9 Diesel Fuel Monitoring The Operating Experience section for AMP B.1.9 states that in 2002, trending of bottom sample results for EDG fuel oil storage tank 93TK-6C showed a particulate contamination increase. Please discuss the extent and cause of this excursion.	The probable cause was listed as fuel oil degradation. Corrective action was to drain 2000 gallons of fuel oil from the bottom of the tank and refill the tank with fresh fuel oil Reference document, CR-JAF-2002-01207 .
67	AMP B.1.9 -10 Diesel Fuel Monitoring The Exception noted for AMP B.1.9 states that the guidelines of ASTM D2276 are not used for determination of particulates; instead ASTM D6217 is used. However, NUREG-1801, Rev. 1, includes ASTM D6217 as an acceptable standard for the determination of particulates. Please clarify why the use of ASTM D6217 was identified as an exception.	The NUREG-1801 Section XI.M30 Parameters Monitored/Inspected states, "For determination of particulates, modified ASTM D 2276, Method A, is used.". The guidelines of ASTM D2276 are not used for determination of particulates, so it was necessary to identify this as an exception.

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68	AMP B.1.9 -11 Diesel Fuel Monitoring The Enhancement noted for AMP B.1.9 states that the Diesel Fuel Monitoring Program will be enhanced to include periodic draining, cleaning, visual inspections, and ultrasonic measurement of the bottom surfaces of the fire pump diesel fuel oil tanks, EDG day tanks, and EDG fuel oil storage tanks. Please provide a) the frequency for these activities for each diesel fuel tank in the scope of license renewal, b) the basis for each frequency, c) the percentage of each tank bottom that will receive UT measurement, and d) how the locations for UT measurements will be determined.	The emergency diesel underground fuel oil storage tanks are cleaned and inspected on an eight year frequency. They were UT inspected in 1988. These inspections have not revealed any degradation in the surface of the tank. As described in XI.M34 the most susceptible area for corrosion is the bottom of the tanks where water and sediment can accumulate. JAFNPP plans to continue to inspect these tanks on this eight year frequency based on past inspection results and if any significant corrosion is detected a UT of the corrosion site and adjacent areas of the tank bottom will be performed using the appropriate grid size based on the size of the tank. The fire pump diesel fuel oil tanks and the EDG day tanks are not currently subjected to internal inspections. An inspection frequency cannot be firmly established until the internal condition of these tanks is baselined. JAFNPP therefore plans to inspect these tanks on an eight year frequency similar to the EDG underground storage tanks. This frequency is based on the past inspection results of the EDG underground fuel oil storage tanks which have not indicated significant degradation while exposed to the same internal fuel oil environment. If initial inspections find unexpected conditions the frequency will be adjusted via the corrective action process.
69	AMP B.1.9 -12 Diesel Fuel Monitoring Section B.1.9 of the LRA states two enhancements for AMP B.1.9; however, the FSAR supplement in Section A.2.1.9 of the LRA does not include a discussion of the commitment to enhance this program. Please revise the FSAR supplement to include a discussion of the two enhancements for AMP B.1.9 to be implemented prior to the period of extended operation.	Section A.2.1 of the LRA states, "All aging management programs will be implemented prior to entering the period of extended operation." This includes enhancements to individual programs. For additional clarification, LRA Appendix A will be revised as follows. Section A.2.1.9, Diesel Fuel Monitoring Program, add "This program will be enhanced to include periodic draining, cleaning, and ultrasonic measurement of the bottom surfaces of the fire pump diesel fuel oil tanks, EDG day tanks, and EDG fuel oil storage tanks. Also, this program will be enhanced to specify acceptance criteria for UT measurements of diesel fuel storage tanks included in this program. These enhancements will be implemented prior to the period of extended operation." This requires a LRA amendment.
70	AMP B.1.9 -13 Diesel Fuel Monitoring With regard to AMP B.1.9, please clarify whether flashpoint is measured as part of the fuel oil analysis. If it is not, please provide the technical justification for not measuring this parameter.	Flashpoint is not a required parameter for this AMP. NUREG-1801 Section XI.M30 does not specify flash point as a test for diesel fuel oil. However, flash point is measured. Reference procedure SP-01.07, "Diesel Fuel oil Sampling and Analysis", step 3.1.2.A: Flash Point – °F 125 °F - min Flash points are measured on both new and stored diesel fuel oil.
71	AMP B.1.9 -14 Diesel Fuel Monitoring Clarify whether or not the inspections and/or surveillance tests requirements described in this AMP are consistent with Technical Specifications (TS) Sections 3.0.2, 3.0.3, 3.8.3.3 and 5.5.10. If not, provide a technical basis for its acceptability and your commitments for revising the TS.	The inspections and/or surveillance test requirements described in this AMP are consistent with Technical Specifications (TS). Reference procedure SP-01.07, "Diesel Fuel oil Sampling and Analysis", step 3.1.1.

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73	AMP B.1.21-2 One-Time Inspection In LRA Section B.1.21, the Program Description states that the one-time inspection activity for small bore piping in the reactor coolant system and associated systems that form the reactor coolant pressure boundary will also be comparable to the program described in NUREG-1801, Section XI.M35, One-Time Inspection of ASME Code Class I Small-Bore Piping. Please confirm that volumetric examinations will be performed on selected small-bore piping weld locations to detect cracking, as recommended in NUREG-1801. Please address both butt-welded and socket-welded piping.	The One-Time Inspection Program at JAFNPP, described in Section B.1.21 of the application, will provide examinations of selected small-bore piping weld locations to detect cracking as recommended in NUREG-1801. Techniques proven by past industry experience to be effective for the identification of cracking in small bore socket-welded and butt-welded piping will be used. Include examination of one (1) socket welded connection. Should an inspection opportunity not occur (e.g., socket weld replacement), a susceptible small-bore socket weld will be examined either destructively or non-destructively prior to entering the period of extended operation. The existing ISI program for small-bore piping at JAF uses nondestructive examination (NDE) techniques to detect and characterize flaws. Three different types of examinations are volumetric, surface, and visual. Examinations performed on pipe segments within the 3rd interval inspection program have included the examination of associated socket welds. The pipe segments have been examined for FAC and thermal fatigue by ultrasonic's, radiography and surface examination (dependent upon flaw mechanism) that captures the associated socket welds verifying integrity. Surface examinations, such as magnetic particle or dye penetrant testing, are used to locate surface flaws. Three levels of visual examinations are specified. VT-1 visual examination is conducted to assess the condition of the surface of the part being examined, looking for cracks and symptoms of wear, corrosion, erosion or physical damage. It can be done with either direct visual observation or with remote examination using various optical and video devices. VT-2 visual examination is conducted specifically to locate evidence of leakage from pressure retaining components (periodic pressure tests). While the system is under pressure for a leakage test, visual examinations are conducted to detect direct or indirect indication of leakage. VT-3 visual examination is conducted to determine general mechanical and structural condition of components and supports and to detect discontinuities and imperfections. A preliminary review of Class 1 piping was performed to derive an estimated number of Class 1 socket welds and/or piping segments in accordance with the Risk-Informed Inservice Inspection Program (RI-ISI). The estimated total of Class 1 socket welds and/or piping segments is eight piping segments that are inspected in each ISI interval out of the total segments identified in the ISI program and includes approximately 15 welds out of the total class I socket weld population. The total number of inspections conducted during the 3rd ISI Interval estimated at approximately 5% of the total segments and 1% of the total welds. Examination Category B-F welds are scheduled and examined as part of the IGSCC Augmented Inspection Program. Extent and frequency of examinations are in accordance with the Risk-Informed ISI Program
74	AMP B.1.21-3a One-Time Inspection With regard to the one-time inspection sample size for small-bore piping, please provide the following information: a) How will the sample selection process ensure that samples of all different pipe sizes less than 4" are inspected (i.e., 1", 2", 3" etc.)?	Since the One-Time Inspection Program is a new program, the sample selection process has not yet been established. However, the One-Time Inspection program will inspect a representative sample of small bore piping to confirm that cracking is not occurring or is so insignificant that an aging management program is not warranted. This sample selection process will be consistent with NUREG-1801 (GALL). Industry operating experience with use of sampling techniques will be used as guidance for this process.

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75	AMP B.1.21-3b One-Time Inspection With regard to the one-time inspection sample size for small-bore piping, please provide the following information: b)What percentage of Class 1 pipes less than 4" NPS in the scope of this AMP are socket welded?	JAF piping specification requires socket welds for piping 2" and less. The percentage of socket welds at JAF, based on ASME Section XI Code Category B-J and B-F, has not been compiled at this time. But estimated to be greater than 50% of all Class 1 pipes less than 4" NPS in the scope of this AMP. A preliminary review of Class 1 piping was performed to derive an estimated number of Class 1 socket welds and/or piping segments in accordance with the Risk-Informed Inservice Inspection Program (RI-ISI). The estimated total of Class 1 socket welds and/or piping segments is eight segments including approximately 15 welds. Total number of inspection conducted during the 3rd ISI Interval approximately 5% of the segments and 1% of the total welds.
76	AMP B.1.21-3c One-Time Inspection With regard to the one-time inspection sample size for small-bore piping, please provide the following information: c) For Class 1 pipes less than 4" NPS in the scope of this AMP, how will non-butt welded pipes be inspected since UT examination is not suitable for socket welds?	JAFNPP performs examinations of these welds as required by Section XI of the ASME code. Other techniques proven by past industry experience to be effective for the identification of cracking in small bore socket-welded piping will be used if available. Should an inspection opportunity not occur (e.g., socket weld replacement), a susceptible small-bore socket weld will be examined either destructively or non-destructively prior to entering the period of extended operation. Destructive examination may be required if an effective nondestructive examination technique is not available or if results of NDE are not conclusive. Examination techniques for socket welds will be appropriately qualified for the parameter in question and the aging effects of concern. Additionally, industry operating experience will be considered in selection of the examination technique.
77	AMP B.1.21-4 One-Time Inspection What is JAFNPP's operating experience with Class 1 piping less than 4 inch NPS in terms of degradation or failure, including cracking? Provide a detailed discussion of the operating experience.	This discussion is provided in Table 3.1.2 of JAF-RPT-05-LRD05. This review did not find any evidence of degradation or cracking in class 1 piping less than 4".

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78	AMP B.1.21-5a One-Time Inspection In LRA Section B.1.21, the Program Description states that the elements of the program include (a) determination of the sample size based on an assessment of materials of fabrication, environment, plausible aging effects, and operating experience; (b) identification of the inspection locations in the system or component based on the aging effect; (c) determination of the examination technique, including acceptance criteria that would be effective in managing the aging effect for which the component is examined; and (d) evaluation of the need for follow-up examinations to monitor the progression of any aging degradation. Please provide the following information with regard to this statement: a) Please provide a description of the process to be used for performing the activities delineated in each of the items (a) to (d) above, including sources of information to be used and the criteria upon which decisions will be made.	Since the One-Time Inspection Program is a new program, the specific processes have not yet been established. However, the One-Time Inspection Program will be consistent with the program described in NUREG-1801, Section XI.M32, "One-Time Inspection." The primary criterion upon which decisions will be made is the effectiveness of the program in managing the effects of aging. Industry operating experience with use of sampling techniques will be used as guidance for this process.
81	AMP B.1.21-5d One-Time Inspection In LRA Section B.1.21, the Program Description states that the elements of the program include (a) determination of the sample size based on an assessment of materials of fabrication, environment, plausible aging effects, and operating experience; (b) identification of the inspection locations in the system or component based on the aging effect; (c) determination of the examination technique, including acceptance criteria that would be effective in managing the aging effect for which the component is examined; and (d) evaluation of the need for follow-up examinations to monitor the progression of any aging degradation. Please provide the following information with regard to this statement: d) Please describe the qualifications and training requirements to be implemented for personnel performing the one-time inspections.	Personnel qualifications and training requirements will be appropriate for the techniques used for the inspections and will be in compliance with the applicable industry standards.

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82	AMP B.1.21-6 One-Time Inspection With regard to AMP B.1.21, please confirm that the program provides for increasing of the inspection sample size and locations in the event that aging effects are detected.	The One-Time Inspection Program at JAFNPP will provide for increasing the inspection sample size and locations in the event that aging effects are detected, as recommended in NUREG-1801.
83	AMP B.1.21-7 One-Time Inspection The FSAR supplement for AMP B.1.21 in Section A.2.1.23 of the LRA does not discuss the commitment to implement this new program prior to the period of extended operation. Please revise the FSAR supplement to discuss this commitment.	Section A.2.1 of the LRA states, "All aging management programs will be implemented prior to entering the period of extended operation." This includes the One-Time Inspection Program. For additional clarification, LRA Appendix A will be revised as follows. Section A.2.1.23, One-Time Inspection Program, add "This program will be implemented prior to the period of extended operation." This requires a LRA amendment.
86	AMP B.1.22-3 Periodic Surveillance and Preventive Maintenance In LRA Section B.1.22, the table in the Program Description states that this AMP will be used to manage loss of material for carbon steel components on cranes, rails, and girders. NUREG-1801 includes AMP XI.M23, Inspection of Overhead Heavy Load and Light Load Handling Systems, which covers aging management of these components. Please confirm that the activities in JAFNPP AMP B.1.22 are consistent with the recommendations in NUREG-1801 AMP XI.M23 for managing aging of these components. Please provide the technical justification for those activities that are not consistent.	Reactor building steel crane structural girders used in load handling are inspected under the Periodic Surveillance and Preventive Maintenance Program (PSPM) identified in Section B.1.22 of the application. Process facility crane rails and girders are inspected under the Structures Monitoring Program as identified in Section B.1.27. The Structures Monitoring Program will be enhanced, as identified in Section B.1.27, to address crane rails and girders. These programs when enhanced will include visual inspections of the crane rails and girders consistent with XI.M23 to manage loss of material. Therefore the aging management activities for crane rails and girders under the above two programs will be consistent with the attributes described for the program in NUREG-1801 XI.M23 during the period of extended operation.

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87	AMP B.1.22-4 Periodic Surveillance and Preventive Maintenance In LRA Section B.1.22, the table in the Program Description states that this AMP will be used to manage loss of material for the internal surfaces of various piping, valve, and flow elements. NUREG-1801 includes AMP XI.M38, Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components, which covers aging management of these components. Please confirm that the activities in JAFNPP AMP B.1.22 are consistent with the recommendations in NUREG-1801 AMP XI.M38 for managing aging of these components. Please provide the technical justification for those activities that are not consistent.	The XI:M38 program consists of visual inspections of the internal surfaces of steel piping, piping components, ducting, and other components exposed to environments such as condensation and uncontrolled indoor air that are not covered by other aging management programs. Aging management activities for internal steel piping, piping components, and ducting included in the Periodic Surveillance and Preventive Maintenance program as shown in Attachment 3 of JAF-RPT-05-LRD-02- include periodic visual inspections and are consistent with the attributes described for the program in NUREG-1801 XI.M38
88	AMP B.1.22-5 Periodic Surveillance and Preventive Maintenance In LRA Section B.1.22, the table in the Program Description states that this AMP will be used to monitor core spray piping per the existing augmented flow accelerated corrosion program. Similar statements are made for the HPCI system and RCIC system piping. Please clarify the intent of these statements. Specifically, are these components in the scope of this AMP or the flow-accelerated corrosion AMP?	The intent of these statements was to explain that the core spray, HPCI and RCIC piping included in this program are administratively controlled in the Flow Accelerated Corrosion program, but are inspected using the Periodic Surveillance and Preventive Maintenance program. Because the aging effect for these components is loss of material due to erosion and not loss of material due to flow accelerated corrosion it would not be appropriate to manage using the Flow Accelerated Corrosion program. Therefore these components are managed by the Periodic Surveillance and Preventive Maintenance program.

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90	AMP B.1.22-7 Periodic Surveillance and Preventive Maintenance The FSAR supplement for AMP B.1.22 in Section A.2.1.24 of the LRA does not discuss the commitment to implement the enhancement to this program prior to the period of extended operation. Please revise the FSAR supplement to discuss this commitment.	Section A.2.1 of the LRA states, "All aging management programs will be implemented prior to entering the period of extended operation." This includes enhancements to individual programs. For additional clarification, LRA Appendix A will be revised as follows. Section A.2.1.24, Periodic Surveillance and Preventative Maintenance Program, add "This program will be enhanced as necessary to assure that the effects of aging will be managed such that applicable components will continue to perform their intended functions consistent with the current licensing basis. These enhancements will be implemented prior to the period of extended operation." This requires a LRA amendment. JAFNPP License Renewal Commitment 13 states, "Enhance the Periodic Surveillance and Preventive Maintenance Program as necessary to assure that the effects of aging will be managed as described in LRA Section B.1.22". The referenced LRA section identifies the specific PSPM activities credited for license renewal. This assures that all of the credited activities are identified when implementing the commitment. JAF-RPT-05-LRD02 identifies which of these specific activities are accomplished with existing procedures. JAF-RPT-05-LRD02 will be a reference employed when implementing the commitment.
91	AMP B.1.2 -1 BWR CRD Return Line Nozzle The program description of the LRA states that JAFNPP has cut and capped the CRD return line (CRDRL) nozzle to mitigate cracking, and continues ISI examinations to monitor the effects of crack initiation and growth of the nozzle and cap. Please provide the following information: a) Provide details about the cracking found and the repairs made (i.e., cut and capped) to mitigate future cracking; b) Provide the ASME Section XI inspection results since the corrective actions to address cracking were implemented; and c) Discuss the results of your 2004 self-assessment and the corrective actions taken.	a) UT data for CRDRL cut and cap (1983) was provided. B) The CRDRL nozzle-to-cap and cap weld was inspected after the cap was installed and has been inspected in accordance with the IGSCC Inspection Program as a Category D weld. In 2000 the inspection results revealed an unacceptable flaw in this weld and a repair was initiated to install a weld overlay. (Reference: JAF Mod JD-00-010). Upon completion of the weld overlay Mod a UT examination for the inspection of overlays was performed with acceptable results. C) Copy of assessment was provided to the NRC auditor. LO-WPOLO-2004-00056

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92	AMP B.1.2 -2a BWR CRD Return Line Nozzle The discussion of Exceptions to NUREG-1801 for AMP B.1.2 in the LRA states that JAFNPP repaired the CRDRL nozzle by weld overlay rather than removing the crack by grinding. ASME Code Case N-504-1 was the technical basis for using this alternate repair. It is also stated that the staff has approved the use of this Code Case in a letter dated October 26, 2000. Please provide the following information: Since code cases can not be used as the basis for justification to license renewal, please provide the technical justification for this weld repair for the period of extended operation.	Technical justification to license renewal for Applicability to Nickel-Based Austenitic Steel This repair was prepared specifically for austenitic stainless steel material. An alternate application to nickel-base austenitic materials (i.e., Alloy 52) was used due to the specific configuration of the nickel-based austenitic weldment. A nickel-based filler was required and Alloy 52 was selected in place of low carbon austenitic stainless steel. Delta ferrite measurements were not performed for this overlay. A system hydrostatic test of completed repairs has been performed. A system leakage test of completed repairs with a four-hour hold time was used
93	AMP B.1.2 -2b BWR CRD Return Line Nozzle The discussion of Exceptions to NUREG-1801 for AMP B.1.2 in the LRA states that JAFNPP repaired the CRDRL nozzle by weld overlay rather than removing the crack by grinding. ASME Code Case N-504-1 was the technical basis for using this alternate repair. It is also stated that the staff has approved the use of this Code Case in a letter dated October 26, 2000. Please provide the following information: b). Discuss how the CRDRL will be monitored for cracking during the period of extended operation	The CRDRL is incorporated into the JAF IGSCC Inspection Program, implemented in accordance with the requirements of BWRVIP-75A, classified under Category E. The extent and frequency of the inspection are in accordance with the parameters specified under Category E weldments

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94	AMP B.1.2 -3 BWR CRD Return Line Nozzle The discussion of Exceptions to NUREG-1801 for AMP B.1.2 in the LRA states that liquid penetrant testing (PT) of CRDRL nozzle blend radius, adjacent wall area and bore regions is not performed. Note 3 states that JAFNPP performs EVT-1 visual examinations (1/2 mil resolution) of the CRDRL nozzle blend radius and adjacent wall area every 10 years in lieu of PT examinations. Note 3 further states that the weld overlay installed over a crack in the CRDRL nozzle-to-cap weld covers the nozzle, the nozzle-to-cap weld, and part of the cap. Since the weld overlay is examined using UT in accordance with GL 88-01 and BWRVIP 75-A, the LRA concludes that examination of the nozzle and original nozzle-to-cap weld is not required. In NUREG-1801, AMP XI.M6 recommends PT inspection of CRDRL nozzle blend radius and bore regions, and the reactor vessel wall area beneath the nozzle. Please provide a discussion, including drawings, to clarify how UT inspection of the weld overlay is consistent with the recommendations in NUREG-1801. Also, please discuss how these regions will be monitored for cracking during the period of extended operation.	The CRDRL nozzle blend radius has been added to ISI Program and is examined in accordance with the ASME Section XI Code requirements of IWB-2500-1, code Category B-D, Item No. B3.100. Reference ASME Section XI, Figure IWB-2500-7(a) through (d), Nozzle in Head or Shell CRDRL nozzle Relief request RR-29, Request for Relief from the ASME Boiler and Pressure Vessel Code Requirements (TAC No. MB5037). This relief allows the use of the PDI program in lieu of ASME Section XI, 1995 Edition, 1996 Addenda. As discussed with the NRC auditor, this activity is listed as an exception to NUREG-1801 since the dissimilar weld between the CRDRL nozzle and end cap is inspected as part of the JAFNPP IGSCC program and not subject to ASME Section XI Subsection IWB requirements. This is discussed in LRA B.1.2 Note 1. The enhancement listed for B.1.2 "BWR CRD Return Line Nozzle" relates to the fact that this inspection was not part of the original schedule for the current third interval, although an inspection was performed. CR-JAF-2006-00581 describes this situation. As discussed with the NRC auditor, this enhancement to B.1.2 contains an error which will be corrected. The category B-D items should be listed as B3.90 and B3.100 since JAF uses Program B in IWB-2500-1. This requires a LRA amendment.
95	AMP B.1.2 -4 BWR CRD Return Line Nozzle The discussion of Exceptions to NUREG-1801 for AMP B.1.2 in the LRA states that JAFNPP was granted an exemption from the requirement to perform a CRD return flow capacity test per NUREG-0619 through an NRC letter dated August 25, 1983, which was issued before the CRDRL modification was made. Please discuss the technical justifications for this exemption, and provide a copy of the NRC letter accepting them.	In NYPA letter JPN-83-64 dated July 7, 1983 there is a detailed discussion of the defect and the CRD return flow capacity test. NRC Letter dated 8/25/1983 indicates a regulatory acceptance of the NYPA technical position. Documentation is available onsite for review

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96	AMP B.1.2 -5 BWR CRD Return Line Nozzle The discussion of Exceptions to NUREG-1801 for AMP B.1.2 in the LRA states that the dissimilar weld between the CRDRL nozzle and the end cap is not subject to ISI per ASME Section XI, Subsection IWB. Note 1 states that this weld is inspected by UT as part of the JAFNPP IGSCC program. Please discuss the technical justification for this exception and provide a copy of the SER written by the staff accepting this use of UT to inspect this weld.	As discussed with the NRC auditor, this activity is listed as an exception to NUREG-1801 since the dissimilar weld between the CRDRL nozzle and end cap is inspected as part of the JAFNPP IGSCC program and not subject to ASME Section XI Subsection IWB requirements. This is discussed in LRA B.1.2 Note 1.
97	AMP B.1.3-1a BWR Feedwater Nozzle The Program Description for AMP B.1.3 in the LRA states that, under this program, JAFNPP has removed all identified feedwater blend radii flaws. Please provide the following information: a) Discuss the nature of the flaws identified in the feedwater blend radii.	No indications were noted during the performance of the FW Nozzle Mod for the removal of Cladding. Change of the FW thermal sleeve was performed in accordance with NUREG-0619. The phrase "removed all identified feedwater blend radii flaws" is standard terminology for the description of a repair of this nature. However, it will be removed to increase clarity of the LRA. This requires an amendment to the LRA.
98	AMP B.1.3-1b BWR Feedwater Nozzle The Program Description for AMP B.1.3 in the LRA states that, under this program, JAFNPP has removed all identified feedwater blend radii flaws. Please provide the following information: b) Provide details on the size and location of any cracks found in the feedwater nozzles, along with their repairs. Include a discussion of any cracking found after the removal of cladding.	No flaws were identified during the implementation of this modification. The phrase "removed all identified feedwater blend radii flaws" is standard terminology for the description of a repair of this nature. However, it will be removed to increase clarity of the LRA. This requires an amendment to the LRA.

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99	AMP B.1.3-2a BWR Feedwater Nozzle The Program Description for AMP B.1.3 in the LRA states that this program implements enhanced inservice inspection (ISI) of the feedwater nozzles in accordance with the requirements of ASME Section XI, Subsection IWB and the recommendations of General Electric (GE) NE-523-A71-0594 to monitor the effects of cracking on the intended function of the feedwater nozzles. Please provide the following information: a) Discuss the methodology used in performing the enhanced ASME Inservice Inspections (ISI) of the feedwater nozzles, and the results of the most recently completed ISI inspections.	The third interval feedwater nozzle inner radius examinations were completed with phased array automated techniques (Wesdyne) based on EPRI modeling meeting ASME Section XI, NUREG-0619 and NE-523-A71-0594 Rev.1 requirements. No recordable indications were identified in the area of interest. Subsequent examinations will be performed per ASME Section XI as modified by the fourth interval ISI program. In 1983 the FW nozzle modification (removing stainless steel cladding from the FW nozzle; installing the triple thermal sleeve, double piston-ring seal spargers; and cutting & capping the CRD return line) was implemented. Inspections of the FW nozzle blend radius area have been performed every inspection interval in accordance with NUREG 0619 and/or the alternative requirements of GE document NE-523-A71-0594 Rev 0 and Rev 1. The results of these inspections revealed no relevant and/or reportable indications. The most recently completed ISI inspections performed on the FW nozzle blend radius were conducted in 2002 using GE document NE-523-A71-0594 Rev 1, meeting Table 6-1, Method 4, Note 2 and 3, Triple sleeve, double piston ring, unclad. In accordance with this criterion JAF meets the requirement to extend the inspection interval to 10 years.
100	AMP B.1.3-2b BWR Feedwater Nozzle The Program Description for AMP B.1.3 in the LRA states that this program implements enhanced inservice inspection (ISI) of the feedwater nozzles in accordance with the requirements of ASME Section XI, Subsection IWB and the recommendations of General Electric (GE) NE-523-A71-0594 to monitor the effects of cracking on the intended function of the feedwater nozzles. Please provide the following information: b) Provide additional details on the recommendations in GE report NE-523-A71-0594 that JAFNPP has implemented in this AMP. Please specify the revision of the GE report that was used.	The enhanced ASME Inservice Inspections (ISI) of the feedwater nozzles per NUREG-0619 and NE-523-A71-0594 expand the inner radius examination volume identified by ASME Section XI to the nozzle OD taper. Feedwater nozzle inner radius examinations were completed in 2002 using phased array automated techniques (Wesdyne) based on procedure GFITI-ISI-210AD that references NE-523-A71-0594 revision 1.
101	AMP B.1.3-3 BWR Feedwater Nozzle The discussion of the Exception for AMP B.1.3 in the LRA states that NRC noted that the intent of the requirements of NUREG-0619 and NEDO-21821-A had been satisfied with the JAFNPP modifications. Please clarify how the intent of the requirements of NUREG-0619 and NEDO-21821-A were satisfied with the steps taken to address feedwater cracking. Also, please provide a copy of NEDO-21821-A.	In 1983 the FW nozzle modification (removing stainless steel cladding from the FW nozzle; installing the triple thermal sleeve, double piston-ring seal spargers; and cutting & capping the CRD return line) was implemented. Repairs meet the requirements and guidelines of NUREG 0619/NEDO-21821-01. Inspections of the FW nozzle blend radius area have been performed every inspection interval in accordance with and/or the alternative requirements of GE document NE-523-A71-0594 Rev 0 and Rev 1. The results of these inspections revealed no relevant and/or reportable indications.

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102	AMP B.1.3-4 BWR Feedwater Nozzle With regard to AMP B.1.3, please discuss how JAFNPP will monitor the bypass flow (if any) around the feedwater nozzle thermal sleeve to detect leakage due to degraded thermal sleeve seals and welds during the period of extended operation.	JAFNPP submitted letter JPN-99-003, dated February 18, 1999, Commitment Change Feedwater Nozzle Leakage Monitoring System, detailing JAF's basis and position for discontinuing the use of the FW Leakage Monitoring System (LMS) to detect Feedwater bypass flow at JAF. JAF has adopted the recommendations of NUREG-0619 byimplementing the following: •Removing stainless steel cladding from the Feedwater nozzles •Installing triple thermal sleeve, double pistion-ring seal spargers •Cutting and capping the Control Rod Drive (CRD) return line •Changing the internal valve trim in the low flow Feedwater control valve, and •Implementing an augmented inspection program This commitment change was evaluated using the Nuclear Energy Institute's (NEI) guidelines on commitment management (NEI "Guideline for managing NRC Commitments," Nuclear Energy Institute, Rev. 2, December 19, 1995
104	AMP B.1.4 -1 BWR Penetrations In NUREG-1801, the discussion in the Scope of Program element for AMP XI.M8 notes that guidelines for repair design criteria are provided in BWRVIP-57 for instrumentation penetrations, and BWRVIP-53 for the SLC line. Please confirm that JAFNPP AMP B.1.4 follows the guidelines provided in BWRVIP 53 and 57 for repairs, along with the inspection and evaluation guidelines of BWRVIP-49 and 27.	The BWR Penetrations Program scope of program is consistent with NUREG-1801 XI.M8, BWR Penetrations. The BWR Penetrations Program follows the guidelines of BWRVIP 53-A and 57-A for repairs and BWRVIP-49-A and 27-A for inspection and evaluation of applicable penetrations. All BWRVIP guidelines are followed by JAFNPP as described in EN-DC-135, JAF-RPT-NBS-01848, JAF-RPT-NBS-04394, and ER-JAF-06-25191. JAF is committed to apply BWRVIP documents per BWRVIP letter to NRC "BWR Utility Commitments to the BWRVIP" dated May 30, 1997, and BWRVIP letter to NRC "BWR Utility Commitments to the BWRVIP" dated October 30, 1997.

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106	AMP B.1.4 -3 BWR Penetrations In NUREG-1801, the discussion in the Detection of Aging Effects element for AMP XI.M8 notes that the NDE techniques appropriate for inspection of BWR vessel internals, including the uncertainties, are included in BWRVIP-03. Please discuss the NDE techniques in BWRVIP-03 that are used in the JAFNPP inservice inspection program as part of AMP B.1.4.	A discussion of NDE techniques used for inspection of BWR penetrations is provided in section 4.3 of JAF-RPT-05-LRD02, which was available for review on site. Section 11 of BWRVIP-03 describes NDE techniques outlined in BWRVIP-27-A for inspection of SLC/ΔP nozzles. As described in section 4.3 of JAF-RPT-05-LRD02, JAFNPP performs an enhanced visual leakage inspection (with direct view of component during pressure test) every outage and a surface examination every 10 years until such time as a volumetric inspection technique is developed. Once an acceptable volumetric examination is developed, it will be performed each 10 year ISI interval in conjunction with continued visual inspections each outage. Section 14 of BWRVIP-03 endorses the inspection guidelines of BWRVIP-49-A for inspection of instrumentation penetrations. As described in section 4.3 of JAF-RPT-05-LRD02, JAFNPP performs visual inspections of penetrations and nozzle-to-extension welds during pressure testing (VT-2). Both the SLC/ΔP nozzles and instrumentation penetrations are inspected by the ISI program which is consistent with the guidance of BWRVIP-03. All BWRVIP guidelines are followed by JAFNPP as described in EN-DC-135, JAF-RPT-NBS-01848, JAF-RPT-NBS-04394, and ER-JAF-06-25191. JAF is committed to apply BWRVIP documents per BWRVIP letter to NRC "BWR Utility Commitments to the BWRVIP" dated May 30, 1997, and BWRVIP letter to NRC "BWR Utility Commitments to the BWRVIP" dated October 30, 1997.
107	AMP B.1.4 -4 BWR Penetrations In NUREG-1801, the discussion in the Acceptance Criteria element for AMP XI.M8 notes that BWRVIP-14, 59, and 60 provide guidelines for the evaluation of crack growth for stainless steel, nickel alloys and low alloy steels, respectively. Please confirm that these recommended guidelines are included in AMP B.1.4, and make the JAFNPP procedures that implement these recommended guidelines available for staff review.	The BWR Penetrations Program does not specifically use the guidelines for flaw growth evaluation as specified in BWRVIP-14, 59, 60. Flaws found during inspections are evaluated per applicable section of ASME Section XI. The ISI program procedures, JAF-ISI-0002 and JAF-ISI-0003, were available for review on site. NUREG-1801 Section XI.M8 states: "Any indication detected is evaluated in accordance with ASME Section XI or other acceptable flaw evaluation criteria, such as the staff-approved BWRVIP-49 or BWRVIP-27 guidelines. Applicable and approved BWRVIP 14, BWRVIP-59, and BWRVIP-60 documents provide guidelines for evaluation of crack growth in stainless steels (SSs), nickel alloys, and low-alloy steels, respectively." For this attribute of this AMP at JAF, flaw growth evaluation is performed using ASME Section XI criteria as allowed by GALL. In this case, the BWRVIP-14, 59, 60 guidance is not needed All BWRVIP guidelines are followed by JAFNPP as described in EN-DC-135, JAF-RPT-NBS-01848, JAF-RPT-NBS-04394, and ER-JAF-06-25191. JAF is committed to apply BWRVIP documents per BWRVIP letter to NRC "BWR Utility Commitments to the BWRVIP" dated May 30, 1997, and BWRVIP letter to NRC "BWR Utility Commitments to the BWRVIP" dated October 30, 1997.

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108	AMP B.1.4 -5 BWR Penetrations In NUREG-1801, AMP XI.M8, eleven BWRVIP reports are referenced as guidance documents to manage aging effects of BWR penetrations. Appendix C of this LRA addresses the applicant action items associated with only of these reports - BWRVIP-27. Please provide the repsonses to the applicant action items applicable to JAFNPP for each of the remaining 10 BWRVIP reports cited in NUREG-1801.	Responses to BWRVIP action items are provided in LRA Appendix C. A copy of all SE reports for all BWRVIP documents was provided to the staff at JAFNPP. The complete list of BWRVIP documents with license renewal applicant action items is: 18-A, 25, 26-A, 27-A, 38, 41, 47-A, 48-A, 49-A, 74-A. None of the SE reports for other BWRVIP documents contain such action items.
109	AMP B.1.4 -6 BWR Penetrations The discussion of Operating Experience for AMP B.1.4 in the LRA states that self-assessments in 2004 and 2005 revealed no issues or findings that could impact effectiveness of the program. Please provide the details of the findings resulted from these self-assessments applicable to this AMP. Address any issues related to penetrations that have been determined to be sensitized.	Section 4.6 and 4.10.7 of assessment report JAF-RPT-NBS-04394, "Assessment of Vessel Internals Health", evaluates the effectiveness of inspections of BWR vessel penetrations and documents acceptable tests. Copies of these reports were provided to the NRC auditor. Details of a 2004 ISI self assessment and 2005 BWRVIP self assessment identified no relevant findings related to penetration inspections.

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110	AMP B.1.5-1a BWR Stress Corrosion Cracking The Program Description for AMP B.1.5 in the LRA sates that JAFNPP has taken actions to prevent IGSCC and will continue to use materials resistant to IGSCC for component replacements and repairs following the recommendations delineated in NUREG-0313, Generic Letter 88-01, and the staff-approved BWRVIP-75-A report. Please provide the following information: a) Discuss the details of any weld repairs and material replacement of components at JAFNPP to implement the NUREG-0313, GL 88-01 and BWRVIP-75A recommendations.	Core Spray from RPV Nozzle on B loop to first isolation valve was replaced with 347NG in 1992 and Core Spray A loop was replaced from the Safe End to the Isolation Valve with 316L. All other IGSCC repairs have been by Weld Overlay. JAF Pipe Specification Class 1504 restricts Carbon Content to .035% max and requires solution annealing. A) The following is the IGSCC Program and welds by Category: IGSCC Examination Category A Category A - Identifies welds, which are fabricated from resistant materials. (Total Population = 24) the increase in population is due to the installation of RWCU MOD No. JD-99-134 Category A-1- Identifies longitudinal seam welds. (Total Population = 163) Category A* - Identifies sweep-o-let welds that have been solution annealed. (Total Population = 8) NOTE: Long seam welds within the IGSCC Inspection Program are housed solely in the longitudinal seam weld spreadsheet database and were previously categorized as Category A-1. The ISI Program at James A. FitzPatrick has been updated to reflect the requirements of 10CFR50.55a. The longitudinal seam weld spreadsheet shall be maintained for the purposes of location and identification only, and will no longer be updated except when these two parameters are affected. IGSCC Examination Category B Category B are those welds not made of resistant materials that have had a Stress Improvement (SI) process performed either before service or within two years of operation. Category B - There are no welds in this category. IGSCC EXAMINATION CATEGORY C Category C are those welds not made of resistant materials that have been given an SI process after more than two years of operation. NUREG 0313 Frequency and Extent Inspection requirements = All Every 10 Years. ENN has further defined those welds in Category C by using the following suffixes: Category C-2 - Identifies welds given a SI process after more than two years of operation. (Total Population = 59) Category C* - Identifies welds treated with a Resistance Heating Stress Improvement (RHSI) process after more than two years of operation. (Total Population = 2) Category C-3 - Identifies welds given an SI process after more than two years of operation and have a service stress over 1.0 SM. Reference NuReg 0313, Rev. 2, Section 4.5.

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		(Total Population = 3) IGSCC Examination Category D Category D - NWC=100% every 6 years; HWC/NMCA =100% every 10 years (at least 50% in 1st 6 years) *as supplemented by Notes: 1, 2,and 3(b) Included in this category are all bimetallic nozzle weldments made with non-resistant material and 182 inconel weld butter. (Total Population = 27) The decrease in population is due to an overlay being applied to N-9-C1 IGSCC Examination Category E Category E - All welds included in this category are weld overlays. (Total Population = 24) The increase in population is due to an overlay being applied to N-9-C1 IGSCC Examination Category F There are no welds in this category. IGSCC Examination Category G There are no welds in this category b) Induction Heat Stress Improvement and/or Resistance Heat Stress Improvement has been employed on all recirculation system piping welds with the exception of safe-ends to nozzle welds and the Tee to RHR SDC weld.
111	AMP B.1.5-1b BWR Stress Corrosion Cracking The Program Description for AMP B.1.5 in the LRA sates that JAFNPP has taken actions to prevent IGSCC and will continue to use materials resistant to IGSCC for component replacements and repairs following the recommendations delineated in NUREG-0313, Generic Letter 88-01, and the staff-approved BWRVIP-75-A report. Please provide the following information: b) Provide the response to applicant action items (if any) associated with BWRVIP-75-A.	JAF action items for BWRVIP reports are listed in Appendix C of the LRA. A copy of all SE reports for all BWRVIP documents was provided to the staff upon arrival at JAFNPP. The complete list of BWRVIP documents with license renewal applicant action items is: 18-A, 25, 26-A, 27-A, 38, 41, 47-A, 48-A, 49-A, 74-A. None of the SE reports for other BWRVIP documents, including BWRVIP-75-A, contain such action items.

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112	AMP B.1.5-1c BWR Stress Corrosion Cracking The Program Description for AMP B.1.5 in the LRA sates that JAFNPP has taken actions to prevent IGSCC and will continue to use materials resistant to IGSCC for component replacements and repairs following the recommendations delineated in NUREG-0313, Generic Letter 88-01, and the staff-approved BWRVIP-75-A report. Please provide the following information: c) Discuss any detected flaw indications or cracks, along with their evaluations/repairs, subsequent to implementing the NUREG-0313 recommendations.	To date JAF has detected cracks via UT examination and repaired the following with Weld Overlays Recirculation System 12-02-2-1 28-02-2-53 12-02-2-8 22-02-2-63 12-02-2-12 12-02-2-64 12-02-2-15 12-02-2-65 12-02-2-18 12-02-2-69 12-02-2-19 12-02-2-70 22-02-2-22 12-02-2-76 12-02-2-23 28-02-2-92 28-02-2-33 28-02-2-113 28-02-2-48 28-02-2-116 28-02-2-52 Jet Pump Instrumentation N8A-SE-2 4-02-2-118 Control Rod Drive N-9-C1 a)□The post weld overlay exams performed on these welds reveal no reportable and/or unacceptable conditions.
113	AMP B.1.5-2 BWR Stress Corrosion Cracking In NUREG-1801, the discussion of Acceptance Criteria for AMP XI.M7 notes that applicable and approved BWRVIP-14, 59, 60, 61 and 62 documents provide guidelines for evaluation of crack growth. Please clarify whether any of these BWRVIP reports are used in JAFNPP AMP B.1.5, and discuss the scope of their use. For each BWRVIP report used, provide the response to applicant action items (if any) associated with the BWRVIP report.	The BWR Stress Corrosion Cracking Program acceptance criteria are consistent with NUREG-1801 XI.M7, BWR Stress Corrosion Cracking with the exception of a different ASME Section XI code edition. Responses to BWRVIP action items are listed in LRA Appendix C. A copy of all SE reports for all BWRVIP documents was provided to the staff upon arrival at JAFNPP. The complete list of BWRVIP documents with license renewal applicant action items is: 18-A, 25, 26-A, 27-A, 38, 41, 47-A, 48-A, 49-A, 74-A. None of the SE reports for other BWRVIP documents contain such action items.

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114	AMP B.1.5-3 BWR Stress Corrosion Cracking The discussion of Exceptions to NUREG-1801 for AMP B.1.5 in the LRA states that the 1989 edition of ASME Section XI is used for flaw evaluation, while NUERG-1801 specifies the 1986 edition. Since the 1986 Subsections IWB/C/D-4000 and –7000 are replaced by Subsection IWA-4000 in the later editions of the Code, please clarify whether JAFNPP will use the guidelines in Subsection IWA-4000 for repairs and replacements.	a) JAF current interval 3rd uses IWA-4000. In the future, JAF is committed to the ASME 2001/2003 Addenda, which requires the use of IWA-4000.
115	AMP B.1.5-4 BWR Stress Corrosion Cracking The discussion of Operating Experience for AMP B.1.5 in the LRA states that UT examinations of four recirculation nozzle safe-end welds, three jet pump instrumentation nozzle safe-end welds, seven recirculation system piping welds, and three RHR system piping welds during RO15 (2002) resulted in six recordable indications, attributed to geometric conditions and not cracks. Please provide additional details to explain the geometric conditions observed and how they resulted in recordable indications. Please include a discussion, including test data, to demonstrate how these geometric conditions are distinguished from cracks when performing UT examinations.	RO15 (2002) examinations included UT examinations of four recirculation nozzle safe-end welds, one jet pump instrumentation nozzle safe-end weld and two piping welds (Note N8-SE-1 and N8-SE-3 are piping welds despite the nomenclature), seven recirculation system piping welds, and five RHR system piping welds. Performance demonstration Initiative (PDI) personnel performed the examinations per Washington group procedure JAF-UT-89-1 which adopted the Performance demonstration initiative requirements of PDI-UT-2 as required per 10CFR-50.55a for piping welds at the time. The examinations performed identified geometry requiring recording per JAF-UT-89-1 requirements. The root and counterbore geometry identified was recorded and evaluated by the examiner per procedure requirements and techniques developed during the performance demonstration Initiative. Performance demonstration Initiative (PDI) procedures provide guidance for the evaluation of indications observed during examinations. The evaluation criterion is applied by PDI qualified examiners as necessary for indication evaluation and varies dependent on the examination and circumstances encountered. Reference current PDI procedures for additional information. This clarification of the operating experience with N8-SE-1 and N8-SE-3 welds, and five RHR system piping welds versus three RHR system piping welds as originally described, requires an LRA amendment.
116	AMP B.1.5-5 BWR Stress Corrosion Cracking Since NUREG-0313 was implemented at JAFNPP, all replacement components for degraded items must be procured with IGSCC-resistant materials. Please discuss, and provide copies for review of the plant procedures and/or plans that are used to ensure that replacement components at JAFNPP are being procured with IGSCC-resistant components.	A discussion of repair and replacement corrective actions under the BWR Stress Corrosion Cracking Program is provided in section 4.4 of JAF-RPT-05-LRD02. Applicable procedures supporting procurement of IGSCC-resistant material were available for review on site. JAF Piping Specification Class 1504 restricts carbon content of stainless steel to .035% max and requires solution annealing. Both these requirements provide IGSCC resistance. Copies of procurement information for stock codes J0700166, J0700167, J0700183, J0700184 (ER308L/E308L) containing technical requirements indicating delta ferrite exceeded NUREG requirements of 8% fe were provided to the NRC auditor.

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117	AMP B.1.29.2 -1a Water Chemistry Control - BWR The Program Description for AMP B.1.29.2 in the LRA states that the program relies on monitoring and control of water chemistry based on EPRI Report 1008192 (BWRVIP-130). NUREG-1801 recommends BWRVIP-29 (1996) or later revisions, which includes BWRVIP-79 and BWRVIP-130. Please provide the following information related to this AMP. a. Discuss the history of the water chemistry program at JAFNPP including the periods when BWRVIP-29 and BWRVIP-79 were used, and when use of BWRVIP-130 was initiated.	BWRVIP-29 was implemented into JAF chemistry procedures in approximately 1999. BWRVIP-79 was implemented into JAF chemistry procedures in February 2003. BWRVIP-130 was implemented into JAF chemistry procedures in June 2005.
118	AMP B.1.29.2 -1b Water Chemistry Control - BWR The Program Description for AMP B.1.29.2 in the LRA states that the program relies on monitoring and control of water chemistry based on EPRI Report 1008192 (BWRVIP-130). NUREG-1801 recommends BWRVIP-29 (1996) or later revisions, which includes BWRVIP-79 and BWRVIP-130. Please provide the following information related to this AMP. b. Discuss the specific differences between BWRVIP-29 and BWRVIP-79 and any corrective actions added to the water chemistry program at the time BWRVIP-79 was implemented. Provide the technical basis for the disposition of each difference.	BWRVIP-79 updated the BWR Water Chemistry Guidelines – 1996 (BWRVIP-29) to provide updated methodology for establishing site-specific BWR water chemistry control programs. Section 1 "Management Responsibilities" discusses the importance of good water chemistry control in obtaining inspection relief from NRC. The committee reformatted Section 2 to be consistent with the equivalent section in BWRVIP-62 on inspection relief for core internals. The discussion provides the basis for the HWC recommendation, and the role of impurities on IGSCC in the water chemistry limits included in Section 4. Section 3 covers other factors, besides IGSCC, that are influenced by water chemistry. It includes a discussion of the effect of HWC and zinc injection on radiation fields, updated with the most recent plant data, and a strengthened discussion of feedwater iron control. The discussion of water chemistry effects on fuel integrity includes information on recent fuel failures. The committee reduced the Action Level 1 limit for feedwater copper from 0.5 to 0.2 ppb, and added diagnostic parameters for feedwater and reactor water iron. Recent plant data on the effect of oxygen on flow-accelerated corrosion (FAC) resulted in the committee raising the Action Level 1 limit for dissolved oxygen in the feedwater from a minimum of 15ppb to 30ppb. The recommendations for water chemistry control and diagnostic parameters in Section 4 now include separate tables for normal water chemistry and hydrogen water chemistry (including NMCA). It is possible to relax the limits for chloride and sulfate in the HWC cases. The committee reviewed and reduced recommended chemistry surveillance, wherever appropriate, in support of the utility drive to reduce O&M costs (Section 5). A new appendix on the effects of impurity transients on crack growth rates is included, with examples of decision trees for evaluating actions to minimize the detrimental effects on stress corrosion cracking. This document, which replaces the 1996 revision (BWRVIP-29), provides water chemistry recommendations for BWRs during all modes of operation. It summarizes the technical bases for all water chemistry alternatives and provides guidance on the development of plant-specific chemistry programs. The guidelines recommend tightening some limits, relaxing others, and implementing more cost-effective monitoring. This will improve protection against materials and fuel problems, and reduce the risks of loss of output from chemistry transients

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119	AMP B.1.29.2 -1c Water Chemistry Control - BWR The Program Description for AMP B.1.29.2 in the LRA states that the program relies on monitoring and control of water chemistry based on EPRI Report 1008192 (BWRVIP-130). NUREG-1801 recommends BWRVIP-29 (1996) or later revisions, which includes BWRVIP-79 and BWRVIP-130. Please provide the following information related to this AMP. c. Discuss the specific differences between BWRVIP-29 and BWRVIP-130, or between BWRVIP-79 and BWRVIP-130 and any corrective actions added to the water chemistry program at the time BWRVIP-130 was implemented. Provide the technical basis for the disposition of each difference, including the "good practice" recommendations in BWRVIP-130, including NEI 03-08, for optimizing the water chemistry.	BWRVIP-130 updated the BWR Water Chemistry Guidelines – 2000 (BWRVIP-79), providing an enhanced methodology for establishing site-specific BWR water chemistry control programs. Section 1 addresses a recent policy of the U.S. nuclear industry, which commits each nuclear utility to adopt the responsibilities and processes on the management of materials aging issues. It specifies which portions of the document are "Mandatory," "Needed," or "Good Practices," using the classification in NEI 03-08: Guideline for the Management of Materials Issues. Section 2 discusses the technical basis for water chemistry control of IGSCC. The committee updated this Section with the latest information on the effects of impurities such as copper, sulfate and chloride. It also discusses the overall goal of demonstrating the effectiveness of mitigating IGSCC of piping and reactor internals using HWC and NMCA. Section 3 covers radiation field effects of water chemistry. The guidelines update the discussion of the effects of NMCA and zinc injection on radiation fields with the most recent plant data, and strengthen the discussion on control of feedwater iron with the recognition that iron increases fuel crud formation and decreases the efficiency of zinc. Section 4 covers Flow Accelerated Corrosion (FAC) and now includes the effects of NMCA. Section 5 discusses water chemistry impacts on fuel integrity, including corrosion-related fuel failures and the need for control of feedwater zinc, iron and copper. The guidelines recommend quarterly average maxima for feedwater zinc of 0.6 ppb for HWC plants and 0.4 ppb for NMCA plants based on fuel integrity issues. Section 6 comprises the recommendations for water chemistry control and diagnostic parameters, which now include separate tables for hydrogen water chemistry, HWC/NMCA and normal water chemistry. The Action Level tables now address the possibility that continued operation may reduce IGSCC if utilities exceed the Action Levels. Section 7 is a new section containing recommended goals for water chemistry optimization. These are "good practice" recommendations for targets that plants may use in optimizing water chemistry to balance the conflicting requirements of materials, fuel and radiation control. Section 8 discusses recommended chemistry surveillance. The guidelines reduce recommended surveillance and monitoring frequencies in order to reduce O&M costs, as long as there is no significant adverse impact on plant chemistry. Appendices discuss the effects of impurity transients on crack growth rates, auxiliary systems, conductivity corrections for the presence of ionic species that are benign toward system integrity, ultrasonic fuel cleaning and the BWRVIP radiolysis model. This document, which replaces the 2000 revision (BWRVIP-79), provides proactive water chemistry recommendations for BWRs during all modes of operation. It summarizes the technical bases for all water chemistry alternatives and provides guidance on the development of plant-specific chemistry programs. The guidelines recommend tightening some limits, relaxing others, and implementing more cost-effective monitoring, which will improve protection against materials and fuel problems and also reduce the risks of loss of output from chemistry transients.

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120	AMP B.1.29.2 -1d Water Chemistry Control - BWR The Program Description for AMP B.1.29.2 in the LRA states that the program relies on monitoring and control of water chemistry based on EPRI Report 1008192 (BWRVIP-130). NUREG-1801 recommends BWRVIP-29 (1996) or later revisions, which includes BWRVIP-79 and BWRVIP-130. Please provide the following information related to this AMP. d. Describe the current status of the JAFNPP Water Chemistry Control Program with respect to Hydrogen Water Chemistry (HWC), Noble Metal Chemical Application (NMCA), and Zinc Injection. Specifically, identify when these programs started, and their impact on the operation of plant systems and the degradation of component materials.	JAFNPP instituted hydrogen water chemistry (HWC) in 1988 to mitigate cracking in recirculation piping. There have been no new IGSCC indications in the recirculation system piping after HWC implementation. Due to dose rate issues JAF could not add sufficient hydrogen to mitigate cracking of reactor internals so they implemented noble metal chemical addition (NMCA) in 1999 and reapplied in 2004 for that reason. Zinc addition was instituted in 1989 for dose rate reduction and has no impact on material degradation.
121	AMP B.1.29.2 -2 Water Chemistry Control - BWR BWRVIP-62, "Technical Basis for Inspection Relief for BWR Internal Components with Hydrogen Injection," and BWRVIP-75, "Technical Basis for Revisions to Generic Letter 88-01 Inspection Schedules" identify circumstances and conditions for which relief may be granted by the staff. Please describe all relief that has been granted by the staff for JAFNPP, based on these documents.	Engineering report JAF-RPT-05-LRD-02, Aging Management Program Evaluation Report, (AMPER) was available for onsite review. As noted in AMPER sections 4.3, 4.5, and 4.6, JAFNPP has not sought inspection relief for reactor vessel internals based on the use of hydrogen water chemistry or the use of Noble Metal Chemical Application. If inspection relief is sought in the future, the guidelines of BWRVIP-62 will be followed. JAFNPP has taken credit for NMCA to reduce the inspections in the 88-01 program for welds that are mitigated by noble metals. Details were available for onsite review.

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122	AMP B.1.29.2 -3a Water Chemistry Control - BWR GALL recommends that hydrogen peroxide be monitored to mitigate degradation in structural material. GALL also notes that the rapid decomposition of hydrogen peroxide makes reliable data exceptionally difficult to obtain, and BWRVIP-130 Section 6.3.3, "Water Chemistry Guidelines for Power Operation," does not address monitoring for hydrogen peroxide. The staff notes that the Electrochemical Corrosion Potential (ECP) quantifies the oxidizing power of a solution in contact with a specific metal surface. The ECP of different reactor internals component materials is very sensitive to the concentration of oxygen, hydrogen, and hydrogen peroxide and therefore is different at different locations within the BWR reactor system. Section 8.3 of BWRVIP-130 (Figure 8-11) discusses the potential locations suitable for measuring the ECP. Please provide the following information related to this AMP. a. Clarify whether ECP is monitored at the reactor locations recommended in BWRVIP-130 at JAFNPP. Discuss the methods used and their frequency.	Engineering report JAF-RPT-05-LRD-02, Aging Management Program Evaluation Report, (AMPER) was available for onsite review. As described in AMPER section 4.22.2.B.3.b, JAFNPP does not monitor ECP directly due to its status as a Category 3b plant as described in Table 2-6 of BWRVIP-130. JAFNPP follows BWRVIP-62 criteria for Category 3b plants and measures the reactor water and RWCU molar ratio. When this ratio is > 2:1 the ECP is effectively < -230 mV SHE and in reality closer to -400 mV SHE. JAFNPP operates with a measured molar ratio significantly > 2:1 with a goal of > 4:1.

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123	AMP B.1.29.2 -3b Water Chemistry Control - BWR GALL recommends that hydrogen peroxide be monitored to mitigate degradation in structural material. GALL also notes that the rapid decomposition of hydrogen peroxide makes reliable data exceptionally difficult to obtain, and BWRVIP-130 Section 6.3.3, "Water Chemistry Guidelines for Power Operation," does not address monitoring for hydrogen peroxide. The staff notes that the Electrochemical Corrosion Potential (ECP) quantifies the oxidizing power of a solution in contact with a specific metal surface. The ECP of different reactor internals component materials is very sensitive to the concentration of oxygen, hydrogen, and hydrogen peroxide and therefore is different at different locations within the BWR reactor system. Section 8.3 of BWRVIP-130 (Figure 8-11) discusses the potential locations suitable for measuring the ECP. Please provide the following information related to this AMP. b. If ECP is not monitored periodically, discuss how JAFNPP ensures that hydrogen addition alone will maintain the ECP at an acceptable level within the reactor system.	Based on the BWRVIP radiolysis model, a measured molar ratio in the reactor water of > 2:1 demonstrates the molar ratio is > 2:1 everywhere in the reactor vessel at or below the normal water level which is where all the wetted components were treated with noble metals. JAFNPP adds sufficient feedwater hydrogen to operate with a measured molar ratio > 4:1. In accordance with the model, it demonstrates at least a molar ratio of 3:1 at the upper portion of the shroud OD. Components above this level cannot be mitigated with HWC or NMCA. When molar ratio is > 2:1 the equivalent of ECP according to the model is < -400 mV SHE. Data from other stations that measured ECP with noble metals validates the model results for the category 3B plants.
124	AMP B.1.29.2 -4 Water Chemistry Control - BWR GALL recommends that dissolved oxygen be monitored as part of the water chemistry program. Please identify the systems in which dissolved oxygen is monitored at JAFNPP, and discuss the methods used to monitor this parameter. Also, provide examples of recent data from these systems.	As described in LRA Section B.1.29.2, the Water Chemistry Control – BWR Program is consistent with NUREG-1801. Engineering report JAF-RPT-05-LRD-02, Aging Management Program Evaluation Report, (AMPER) was available for onsite review. AMPER section 4.22.2.B.3.b indicates that the Water Chemistry Control – BWR Program periodically monitors the concentration of dissolved oxygen in reactor water, feedwater, condensate, and control rod drive water and keeps it within the BWRVIP-130 recommended range to mitigate corrosion. Examples of recent dissolved oxygen data from the reactor water, feedwater, condensate, and control rod drive water systems were available for onsite review.

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125	AMP B.1.29.2 -5 Water Chemistry Control - BWR GALL recommends that the water quality (i.e., pH and conductivity) be maintained in accordance with EPRI Guidelines by periodic sampling to determine the concentration of chemical species. BWRVIP-130, Section 8.2.1.11, indicates that pH measurement accuracy in most BWR streams is generally suspect because of the dependence of the instrument reading on ionic strength of the sample solution. In addition, the monitoring of pH is not discussed in BWRVIP-130, Appendix B for condensate storage tank, demineralized water storage tank, or torus water. Please explain what methods are used to monitor the water quality of these systems and components, and the technical basis for concluding that they are effective.	Engineering report JAF-RPT-05-LRD-02, Aging Management Program Evaluation Report, (AMPER) was available for onsite review. As described in AMPER section 4.22.2.B.3.b, torus/pressure suppression chamber, condensate storage tank, and demineralized water storage tank conductivity, chloride, sulfate and total organic compound levels are monitored and kept below BWRVIP-130 recommended levels to mitigate SCC and corrosion. Operating experience shows that this program has been effective in managing aging effects. Therefore, continued implementation of the program provides reasonable assurance that effects of aging will be managed so that components crediting this program can perform their intended function consistent with the current licensing basis during the period of extended operation. In addition, as described in LRA Section B.1.21, prior to the period of extended operation, a one-time inspection activity will verify the effectiveness of the water chemistry control aging management programs by confirming that unacceptable cracking, loss of material, and fouling is not occurring.
126	AMP B.1.29.2 -6 Water Chemistry Control - BWR Flow accelerated corrosion (FAC) in carbon and low alloy steel components is affected by dissolved oxygen concentration, among other factors. Section 4.2.1 of BWRVIP-130 states that the rate of FAC increases dramatically if oxygen concentration is less than about 25 ppb. Please describe the procedures used at JAFNPP to maintain appropriate oxygen levels in water in the various plant systems for which this AMP is credited to mitigate loss of material due to FAC (i.e., erosion/corrosion, steam cutting, etc.).	The Water Chemistry Control – BWR Program is not credited to manage loss of material due to FAC. Consistent with NUREG-1801, loss of material due to FAC is managed by the Flow-Accelerated Corrosion Program described in LRA Section B.1.14. As stated in NUREG-1801, Section XI.M17, the FAC program is an analysis, inspection, and verification program; thus, there is no preventive action. As described in LRA Section B.1.29.2, the Water Chemistry Control – BWR Program is consistent with NUREG-1801. Engineering report JAF-RPT-05-LRD-02, Aging Management Program Evaluation Report, (AMPER) was available for onsite review. AMPER section 4.22.2.B.3.b indicates that the Water Chemistry Control – BWR Program periodically monitors the concentration of dissolved oxygen in reactor water, feedwater, condensate, and control rod drive water and keeps it within the BWRVIP-130 recommended range.
127	AMP B.1.29.2 -7 Water Chemistry Control - BWR BWRVIP-130 recommends that reactor water iron level be monitored as a diagnostic parameter, and that feedwater copper level be monitored as one of the control parameters. Please confirm that the JAFNPP water chemistry program includes monitoring of these parameters.	Reactor water iron level is monitored as a diagnostic parameter. As described in LRA Section B.1.29.2, the Water Chemistry Control – BWR Program is consistent with NUREG-1801. Engineering report JAF-RPT-05-LRD-02, Aging Management Program Evaluation Report, (AMPER) was available for onsite review. As described in AMPER Section 4.22.2.B.3.b, feedwater iron and copper concentrations are periodically monitored and kept below recommended levels. Thus, feedwater copper is monitored as a control parameter.

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128	AMP B.1.29.2 -8 Water Chemistry Control - BWR Aging of Standby Liquid Control (SBLC) system components not in the reactor coolant pressure boundary section of SBLC system relies on monitoring and control of SBLC makeup water chemistry. The effectiveness of the water chemistry program will be verified by a one-time inspection of the SBLC system. Please confirm that the One-Time Inspection program will include the SBLC pump casing, and the associated tank discharge piping and valve bodies in addition to the SBLC tank.	LRA Table 3.3.2-1, Standby Liquid Control System Summary of Aging Management Evaluation, shows that stainless steel accumulators, orifices, piping, pump casings, tank, thermowells, tubing, and valve bodies containing sodium pentaborate solution credit the Water Chemistry Control – BWR Program for aging management. Note 315 for each of these line items indicates that the One-Time Inspection Program is applicable. Therefore, the One-Time Inspection Program will include the SBLC pump casing, and the associated tank discharge piping and valve bodies in addition to the SBLC tank.
129	AMP B.1.29.2 -9 Water Chemistry Control - BWR The discussion of operating experience for AMP B.1.29.2 in the LRA indicates that a self-assessment of the water chemistry program was conducted in 2001. Please discuss any abnormalities identified and corrective actions taken as a result of this self-assessment, and provide a copy of the most recently completed self-assessment related to the water chemistry program at JAFNPP.	As discussed in LRA Section B.1.29.2, the 2001 self-assessment revealed that sample system flow rates for the corrosion product metal samplers for feedwater and condensate may not be high enough to adequately give a representative sample. The sample lines were replaced with sample lines that deliver greater than or equal to 6 linear ft/sec during 1st quarter 2004. A copy of the most recently completed self-assessment related to the water chemistry program was available for onsite review.
130	AMP B.1.26 -1 Service Water Integrity The Program Description for AMP B.1.26 in the LRA states that Service Water Integrity Program relies on implementation of the recommendations of GL 89-13 to ensure that the effects of aging on the service water systems (SWS) will be managed for the period of extended operation. Please confirm that all of the recommendations in GL 89-13 have been implemented at JAFNPP, including a) surveillance and control of biofouling, b) a test program to verify heat transfer capabilities, c) routine inspection and maintenance, d) system walkdowns, and e) review of maintenance, operating, and training practices and procedures. Provide the technical basis for any recommendations that have not been implemented. Also, please make the JAFNPP responses to GL 89-13 available for staff review at the onsite audit.	JAFNPP has implemented long term commitments provided in response to GL 89-13 recommendations that include heat transfer testing, inspections and maintenance, and biofouling control. The one-time actions for walkdowns and review of maintenance, operating, and training practices and procedures have also been completed.

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131	AMP B.1.26 -2 Service Water Integrity The Program Description for AMP B.1.26 in the LRA states that the service water systems include the normal service water (NSW), emergency service water (ESW), and residual heat removal service water (RHRSW). Please confirm that these are the only systems at JAFNPP that transfer heat from safety-related systems, structures, and components to the ultimate heat sink, and, therefore, are the only systems in the scope of this AMP.	As stated in JAF-RPT-05-LRD02 section 4.20 and section B.1.26 the service water systems of normal service water (NSW), emergency service water (ESW), and residual heat removal service water (RHRSW) are the raw water systems included in the scope of this AMP. These are the only systems at JAFNPP that transfer heat from safety-related systems, structures, and components to the ultimate heat sink.
132	AMP B.1.26 -3 Service Water Integrity The Program Description for AMP B.1.26 in the LRA states that the program includes component inspections for erosion, corrosion, and blockage. In NUREG-1801, AMP XI.M20 notes that visual inspections are typically performed; however, nondestructive testing such as ultrasonic testing and eddy current testing, are effective methods to measure surface condition and the extent of wall thinning, when determined necessary. Please discuss the inspection methods included in AMP B.1.26, including the type of inspections used, the scope of the inspections, and the frequency of the inspections.	As described in JAF-RPT-05-LRD02 section 4.20 the service water integrity program includes visual inspections and non destructive testing methods including ultrasonic testing and eddy current testing of heat exchanger tubes. These methods are applied to in-scope service water cooled components. This is documented in site procedures AP-19.12 and AP-19.14 which provide information on the scope and frequency of the inspections.
133	AMP B.1.26 -4a Service Water Integrity The discussion of Exceptions to NUREG-1801 for AMP B.1.26 in the LRA states that components are lined or coated only where necessary to protect the underlying metal surfaces. Please provide the following information: a) Identify the components that are lined or coated in the JAFNPP service water systems	Coatings and linings are not credited to prevent or minimize aging effects on components and as such the aging management review did not identify components that are lined or coated. There are no linings or coatings used within the service water piping.
134	AMP B.1.26 -4b Service Water Integrity The discussion of Exceptions to NUREG-1801 for AMP B.1.26 in the LRA states that components are lined or coated only where necessary to protect the underlying metal surfaces. Please provide the following information: b) Confirm that AMP B.1.26 includes inspections to detect degraded protective linings or coatings.	Because linings and coatings are not credited to prevent or minimize aging effects no specific inspections are needed. However, AMP B.1.26 includes the inspections of various service water components which would detect any degradation of lined or coated components.

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135	AMP B.1.26 -4c Service Water Integrity The discussion of Exceptions to NUREG-1801 for AMP B.1.26 in the LRA states that components are lined or coated only where necessary to protect the underlying metal surfaces. Please provide the following information: c) Discuss the preventive measures taken at JAFNPP to protect unlined/uncoated components in the service water systems that are exposed to aggressive cooling water environments, such as the use of appropriate materials	Unlined/uncoated components in the service water systems are inspected as part of AMP B.1.26 to ensure that aging effects do not affect their ability to perform their intended functions. The use of appropriate materials is controlled by design processes which consider the environment and operating experience to ensure appropriate materials are selected.
136	AMP B.1.26 -5a Service Water Integrity The discussion of Operating Experience for AMP B.1.26 in the LRA states that the results of SWS visual and other nondestructive examinations (2000-2004) revealed areas of erosion and areas of corrosion on internal and external surfaces. Corrective actions included replacement of RHRSW pumps, replacement of ESW and normal service water piping components, replacement of EDG jacket water heat exchangers, and close monitoring of RHRSW and ESW pump discharge strainer housings by ultrasonic inspections with repair as needed. Please provide the following information: a) Identify the RHRSW pumps and EDG jacket heat exchangers that were replaced.	All 4 original RHRSW pumps have been replaced: 10P-1A, 1B, 1C and 1D. All of the EDG jacket water heat exchangers have been replaced. 93WE-1A – 12/05; 93WE-1B – 12/05; 93WE-1C – 6/05 and 93WE-1D – 2/04.

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137	AMP B.1.26 -5b Service Water Integrity The discussion of Operating Experience for AMP B.1.26 in the LRA states that the results of SWS visual and other nondestructive examinations (2000-2004) revealed areas of erosion and areas of corrosion on internal and external surfaces. Corrective actions included replacement of RHRSW pumps, replacement of ESW and normal service water piping components, replacement of EDG jacket water heat exchangers, and close monitoring of RHRSW and ESW pump discharge strainer housings by ultrasonic inspections with repair as needed. Please provide the following information: b) Provide the percentage of ESW and NSW piping that was replaced, and the material used for the replacement piping.	b) Approximately 1% of the ESW and NSW piping has been replaced due to visual and non-destructive examinations. The piping was replaced with carbon steel for the most part. Carbon steel has aged well at JAF as evidenced by the 30+ year service without the currently implemented controls. Implementation of the current controls will only serve to extend the service life. These controls are the visual and non-destructive examinations that are currently conducted. The continuous chlorination performed for both the NSW and ESW systems. The use of BULAB chemicals to assist the chlorine in penetrating any buildup within the piping and to keep dissolved substances and silt in suspension so as to exit the system piping. The PMs for examination and cleaning of piping and appurtenances on frequencies designed to minimize pipe wall thinning and maximize design functionality. The periodic flow testing via surveillance testing and flushing of stagnant system legs are some of the methodologies used at JAF to control system degradation. The chemical cleaning processes, used in the ESW system, also ensures design functionality. Stainless steel has been used in areas of erosion to extend the service life of the piping exposed to cavitation.
138	AMP B.1.26 -5c Service Water Integrity The discussion of Operating Experience for AMP B.1.26 in the LRA states that the results of SWS visual and other nondestructive examinations (2000-2004) revealed areas of erosion and areas of corrosion on internal and external surfaces. Corrective actions included replacement of RHRSW pumps, replacement of ESW and normal service water piping components, replacement of EDG jacket water heat exchangers, and close monitoring of RHRSW and ESW pump discharge strainer housings by ultrasonic inspections with repair as needed. Please provide the following information: c) Aside from the components that were replaced, discuss the other internal and external surfaces for which erosion and corrosion were found, including the extent of the degradation and the corrective actions taken. Discuss your plans for replacing any components or piping before the period of extended operation.	There are no other areas where erosion or corrosion have been found that need to be addressed in the RHRSW system. Within the ESW and NSW system there are sections of piping that have scheduled follow up non-destructive examinations with ample time allotted for replacement as warranted. The unit cooler coils have been replaced in a number of ESW unit coolers / heat exchangers. Replacement of additional unit cooler / heat exchanger coils has been included in the JAF long term plan.

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139	AMP B.1.26 -5d Service Water Integrity The discussion of Operating Experience for AMP B.1.26 in the LRA states that the results of SWS visual and other nondestructive examinations (2000-2004) revealed areas of erosion and areas of corrosion on internal and external surfaces. Corrective actions included replacement of RHRSW pumps, replacement of ESW and normal service water piping components, replacement of EDG jacket water heat exchangers, and close monitoring of RHRSW and ESW pump discharge strainer housings by ultrasonic inspections with repair as needed. Please provide the following information: d) Discuss the results of the monitoring activities for the RHRSW and ESW pump discharge strainer housings.	UT inspections of the RHRSW pump discharge and RHRSW system strainers have been ongoing since about 2001. Several below min. wall areas of the strainers have been repaired. No repairs were necessary for the RHRSW pumps. All 4 pumps have since been replaced. The ESW duplex strainers have experienced only a single repair for wall thinning on the four ESW strainer basket housings. Recent discussions of how to improve the service life of the strainer housings has included the application of an epoxy coating thereby precluding any wall thinning. The existing ESW strainer housings have lasted for 30+ years and are in no imminent danger of pinhole leaks. The application of epoxy coatings is proactive and will eliminate the potential for pinhole leaks.

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140	AMP B.1.26 -6 Service Water Integrity The discussion of Operating Experience for AMP B.1.26 in the LRA states that a two-week ESW system assessment in February 2000 revealed weaknesses in the Service Water Integrity Program. Please discuss the weaknesses identified and the significant improvements made to correct the weaknesses.	The majority of issues centered on the implementation of Generic Letter 89-13. Since then, there have been several GL-89-13 inspections. Some inspections were in-house (Corporate Inspections) and some were by outside agencies (NRC Ultimate Heat Sink and other inspections). All of the inspections since 2000 indicated that GL-89-13 has been appropriately implemented. Specifically, prior to 2000, lack of program ownership and weak program maintenance were identified as improvements needed for appropriate implementation of GL-89-13. The corrective actions taken essentially re-constituted the licensing commitments associated with Generic Letter 89-13, ensured that all related plant procedures were updated to reflect GL 89-13 licensing commitments. There were two less prevalent issues identified in 2000 assessment. The Surveillance Test Program and the Corrective Action Program (CAP) were issues that resulted in effectiveness reviews being conducted for both programs. Corrective actions were initiated to correct and improve both programs. Several ESW Condition Reports issued prior to 2000 required adjustments in significant level and closure of corrective actions. All issues identified regarding the CAP have been addressed. Additionally, all issues associated with the Surveillance Test Program have been addressed and included in the creation of a Surveillance Program Coordinator and a Surveillance Program Round Table. Several NRC inspections confirm that the strength of the significant improvements made within the ESW system. Integrated Inspection Report 05000333/2003008 is one example. During the ESW and support systems review, the ESW system was heavily scrutinized. The inspection reviewed open work requests, temp mods, and operator workarounds to assess the collective impact on system operation. The inspection reviewed the condition report database to verify that equipment alignment problems were being identified and appropriately resolved. No findings of significance were identified. Post work testing within the service water systems was reviewed. Again, no findings of significance were identified. Inspectors witnessed surveillance testing of service water systems and reviewed test data to assess whether the SSCs satified TS, UFSAR, Technical Requirements Manual, and Entergy procedural requirements. Again, no findings of significance were identified. Inspectors performed a detailed review of 69 corrective action program items assessing Entergy's threshold for problem identification, adequacy of cause analysis and extent of condition reviews, and timeliness of the corrective actions required. No findings of significance were identified. Problem Identification and Resolution Inspection Report 05000333/2004006 is another example of the significant improvements made within the ESW system. The identification and resolution of problems was reviewed by the NRC. Their inspection team reviewed all aspects of the corrective action program (CAP). No findings of significance were identified. There were minor deficiencies noted. The team concluded that the plant staff identified deficiencies and entered them in the CAP, and at the appropriate threshold. The team also found that the self assessments and audits were sufficiently self-critical and provided relevant performance observations and insights. The team found that with regard to prioritization and evaluation of issues including "service water system erosion and/or corrosion, heat exchanger fouling" that there were no findings of significance identified. There were some minor instances of documentation issues.

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141	AMP B.1.26 -7 Service Water Integrity The discussion of Operating Experience for AMP B.1.26 in the LRA states that during the fall of 2005, NRC conducted an integrated inspection, which included an assessment of maintenance effectiveness for the ESW system. Please discuss any weaknesses identified in the NRC inspection, and the corrective actions taken.	Integrated Inspection Report 05000333/2005006 is the report referred to in the LRA section. During the inspection maintenance effectiveness was reviewed. The inspectors reviewed problems involving selected in-scope SSCs to assess the effectiveness of the maintenance program. The Emergency Service Water (ESW) system was one of the two sample systems selected. Reviews focused on proper Maintenance Rule scoping in accordance with 10CFR50.65; characterization of reliability issues; changing system and component unavailability; 10CFR50.65 (a)(1) and (a)(2) classifications; identifying and addressing common cause failures; trending key parameters and the appropriateness of performance criteria for SSCs classified (a)(2) as well as the adequacy of goals and corrective actions for SSCs classified (a)(1). The inspectors reviewed system health reports, maintenance backlogs, and MR Basis documents. No findings of significance were identified.
142	AMP B.1.29.1 -1 Water Chemistry Control-Auxiliary Systems Program The Program Description for AMP B.1.29.1 in the LRA states that the water chemistry control - auxiliary systems includes the following: 1) control room and relay room chilled water system, 2) security generator jacket cooling water, 3) aux boiler heating water, 4) decay heat removal cooling water, and 5) the stator cooling water system. Please confirm that these are the only auxiliary systems at JAFNPP utilizing cooling water as the heat transfer medium that are not already included in another AMP. (e.g., jacket cooling water for an SBO diesel generator or a dedicated Appendix R diesel generator)	These are the only auxiliary systems with license renewal intended functions utilizing cooling water as the heat transfer medium that are not included in another AMP.
143	AMP B.1.29.1 -2 Water Chemistry Control-Auxiliary Systems Program The Program Description for AMP B.1.29.1 in the LRA states that the program includes sampling, analysis, and coolant replacement activities. Please discuss the sampling and analysis methods included in AMP B.1.29.1, including the sampling procedures and controls, sampling and analysis frequency, types of analyses performed, inspections used, and criteria for coolant replacement for each of the systems covered in the program.	For stator cooling water and auxiliary boiler heating water, the parameters monitored, associated acceptance criteria, plans for inspection, and administrative controls are described in LRA section B.1.29.1. Stator cooling water conductivity is monitored weekly, while dissolved oxygen and soluble copper are monitored monthly. The sampling and analysis procedure was available for onsite review. JAF has two on-line stator cooling water conductivity monitors. Auxiliary boiler heating water conductivity, pH, and dissolved oxygen are monitored quarterly. The sampling and analysis procedure was available for onsite review. For control room and relay room chilled water, decay heat removal cooling water, and security generator jacket cooling water, LRA section B.1.29.1 notes that the program will be enhanced prior to the period of extended operation to provide guidance for sampling and analysis. Industry recommendations and One-Time Inspection Program results will be considered in determining the parameters to be monitored, monitoring frequency, and associated acceptance criteria. This requires a LRA amendment.

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144	AMP B.1.29.1 -3 Water Chemistry Control-Auxiliary Systems Program The "Parameters Monitored/Inspected " program element for AMP B.1.29.1 in the LRA states that the selection of parameters to be monitored/inspected for the systems included in the program is in accordance with industry recommendations. Please identify the documents that are used as the basis for the industry recommendations, and make these available for NRC review at the time of the onsite audit.	The Auxiliary Systems Water Chemistry Control Program is based on equipment vendor specifications, chemical vendor recommendations, technical manuals, industry standards, and operating experience. Guidelines utilized include EPRI guidelines, as well as vendor and other industry guidelines. Basis documents for stator cooling water monitoring include EPRI Technical Report 1004004 and General Electric Technical Information Letters and Service Information Letters. Basis documents for auxiliary boiler monitoring include the Cleaver Brooks manuals. These documents were available for onsite review.
145	AMP B.1.29.1 -4 Water Chemistry Control-Auxiliary Systems Program The "Detection of Aging Effects" program element for AMP B.1.29.1 in the LRA states that the One-Time Inspection Program will verify effectiveness of water chemistry control program. Please identify the specific inspection methods that will be used in the One Time Inspection Program for each of the auxiliary systems in the scope of AMP B.1.29.1.	As described in LRA section B.1.21, the One-Time Inspection Program is a new program that will be consistent with NUREG-1801 XI.M32, One-Time Inspection. Engineering report JAF-RPT-05-LRD-02, Aging Management Program Evaluation Report, (AMPER) was available for onsite review. As described in AMPER Appendix B, for the one-time inspection activity to verify effectiveness of water chemistry control programs, combinations of nondestructive examinations (including VT-1, ultrasonic, and surface techniques) will be performed by qualified personnel following procedures that are consistent with Section XI of ASME B&PV Code and 10CFR50, Appendix B. This requires a LRA amendment.
146	AMP B.1.29.1 -5a Water Chemistry Control-Auxiliary Systems Program The "Monitoring and Trending" program element for AMP B.1.29.1 in the LRA states that values from the analyses are archived for long term trending and review. Please provide the following information: a) Identify the parameters that are to be trended for each of the auxiliary systems in the scope of this AMP.	The parameters monitored are archived for long term trending and review. As stated under Parameters Monitored/Inspected of AMP B1.29.1, stator cooling water conductivity, dissolved oxygen, and soluble copper are monitored and auxiliary boiler heating water conductivity, pH, and dissolved oxygen are monitored. For control room and relay room chilled water, decay heat removal cooling water, and security generator jacket cooling water, LRA Section B.1.29.1 notes that the program will be enhanced prior to the period of extended operation to provide guidance for sampling and analysis. Industry recommendations and One-Time Inspection Program results will be considered in determining the parameters to be monitored, monitoring frequency, and associated acceptance criteria. Parameters monitored for these systems will be archived for long term trending and review. This requires a LRA amendment.

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147	AMP B.1.29.1 -5b Water Chemistry Control-Auxiliary Systems Program The "Monitoring and Trending" program element for AMP B.1.29.1 in the LRA states that values from the analyses are archived for long term trending and review. Please provide the following information: b) Discuss the administrative controls and procedures to be used to implement the periodic review and trending.	In accordance with Entergy corporate procedure EN-CY-101, Chemistry Activities, the chemistry department trends chemistry and radiochemistry parameters to allow identification and correction of adverse trends before limits are exceeded. Data is reviewed as it is generated, and appropriate comments are made as necessary to document reasons for adverse data indications. The site chemistry staff reviews the data trends to ensure adverse indications are noted and addressed in a timely manner. In addition, site chemistry department group data review sessions are performed at least quarterly to share information on specific plant chemistry. A corporate chemist periodically participates in the data review sessions to provide an independent assessment. Chemistry trends, underlying causes of problems, and results of corrective actions are periodically reviewed with higher levels of line management.
148	AMP B.1.29.1 -5c Water Chemistry Control-Auxiliary Systems Program The "Monitoring and Trending" program element for AMP B.1.29.1 in the LRA states that values from the analyses are archived for long term trending and review. Please provide the following information: c) Discuss the process to be used to determine whether corrective actions are required.	As described in LRA section B.0.3, JAFNPP quality assurance (QA) procedures, review and approval processes, and administrative controls are implemented in accordance with the requirements of 10 CFR Part 50, Appendix B. Conditions adverse to quality, such as failures, malfunctions, deviations, defective material and equipment, and nonconformances, are promptly identified and corrected. In the case of significant conditions adverse to quality, measures are implemented to ensure that the cause of the nonconformance is determined and that corrective action is taken to preclude recurrence. In addition, the root cause of the significant condition adverse to quality and the corrective action implemented are documented and reported to appropriate levels of management. The implementing procedure for the corrective action process was available for onsite review.
149	AMP B.1.29.1 -6a Water Chemistry Control-Auxiliary Systems Program The "Acceptance Criteria" program element for AMP B.1.29.1 in the LRA provides acceptance criteria for the stator cooling water system and the aux boiler heating water in accordance with industry recommendations. Please provide the following information: a) Identify the industry documents that are used as the basis for the industry recommendations, and make these available for NRC review at the time of the onsite audit.	The Auxiliary Systems Water Chemistry Control Program is based on equipment vendor specifications, chemical vendor recommendations, technical manuals, industry standards, and operating experience. Guidelines utilized include EPRI guidelines, as well as vendor and other industry guidelines. Basis documents for stator cooling water monitoring include EPRI Technical Report 1004004 and General Electric Technical Information Letters and Service Information Letters. Basis documents for auxiliary boiler monitoring include the Cleaver Brooks manuals.

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150	AMP B.1.29.1 -6b Water Chemistry Control-Auxiliary Systems Program The "Acceptance Criteria" program element for AMP B.1.29.1 in the LRA provides acceptance criteria for the stator cooling water system and the aux boiler heating water in accordance with industry recommendations. Please provide the following information: b) Identify the acceptance criteria for the other auxiliary systems in the scope of this AMP.	For control room and relay room chilled water, decay heat removal cooling water, and security generator jacket cooling water, LRA Section B.1.29.1 notes that the program will be enhanced prior to the period of extended operation to provide guidance for sampling and analysis. Industry recommendations and One-Time Inspection Program results will be considered in determining the parameters to be monitored, monitoring frequency, and associated acceptance criteria. This requires a LRA amendment.
151	AMP B.1.29.1 -6c Water Chemistry Control-Auxiliary Systems Program The "Acceptance Criteria" program element for AMP B.1.29.1 in the LRA provides acceptance criteria for the stator cooling water system and the aux boiler heating water in accordance with industry recommendations. Please provide the following information: c) Discuss how the acceptance criteria are determined and how are they are administratively controlled.	Acceptance criteria are determined by engineering evaluation of industry recommendation and experience. For instance, the stator cooling water dissolved oxygen limits were changed in September 2005 to more conservative values from GE TIL-1098 following the determination that a trip at River Bend was due to having dissolved oxygen limits at 1 ppm for an extended period of time. Acceptance criteria are administratively controlled via sampling and analysis procedures, which was available for onsite review.
152	AMP B.1.29.1 -7 Water Chemistry Control-Auxiliary Systems Program The "Corrective Actions" program element for AMP B.1.29.1 in the LRA states that chemistry parameters are adjusted as appropriate and that additional sampling and verification are performed if necessary. Please discuss the administrative controls that are in place to determine the necessity for these additional activities and to implement them.	As described in LRA section B.0.3, JAFNPP quality assurance (QA) procedures, review and approval processes, and administrative controls are implemented in accordance with the requirements of 10 CFR Part 50, Appendix B. Conditions adverse to quality, such as failures, malfunctions, deviations, defective material and equipment, and nonconformances, are promptly identified and corrected. In the case of significant conditions adverse to quality, measures are implemented to ensure that the cause of the nonconformance is determined and that corrective action is taken to preclude recurrence. In addition, the root cause of the significant condition adverse to quality and the corrective action implemented are documented and reported to appropriate levels of management. The implementing procedure for the corrective action process was available for onsite review.

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153	AMP B.1.29.1 -8a Water Chemistry Control-Auxiliary Systems Program The "Operating Experience" program element for AMP B.1.29.1 in the LRA describes operating experience for the stator cooling water system conductivity, dissolved oxygen, and copper content and aux boiler heating water conductivity and pH. These are the same parameters and auxiliary systems described in the Acceptance Criteria subsection of AMP B.1.29.1. Please provide the following information: a) Discuss the operating experience that has been gathered and reviewed for other auxiliary systems described in the scope of this AMP.	For control room and relay room chilled water, decay heat removal cooling water, and security generator jacket cooling water, LRA Section B.1.29.1 notes that the program will be enhanced prior to the period of extended operation to provide guidance for sampling and analysis. Since these systems are not currently monitored, operating experience providing objective evidence of program effectiveness for these systems does not exist. This requires a LRA amendment.
154	AMP B.1.29.1 -8b Water Chemistry Control-Auxiliary Systems Program The "Operating Experience" program element for AMP B.1.29.1 in the LRA describes operating experience for the stator cooling water system conductivity, dissolved oxygen, and copper content and aux boiler heating water conductivity and pH. These are the same parameters and auxiliary systems described in the Acceptance Criteria subsection of AMP B.1.29.1. Please provide the following information: b) Discuss the acceptance criteria or performance parameters for other auxiliary systems described in this AMP, and how are they applied to the review of their operating experience.	For control room and relay room chilled water, decay heat removal cooling water, and security generator jacket cooling water, LRA Section B.1.29.1 notes that the program will be enhanced prior to the period of extended operation to provide guidance for sampling and analysis. Industry recommendations and One-Time Inspection Program results will be considered in determining the parameters to be monitored, monitoring frequency, and associated acceptance criteria. This requires a LRA amendment.

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155	AMP B.1.29.1 -8c Water Chemistry Control-Auxiliary Systems Program The "Operating Experience" program element for AMP B.1.29.1 in the LRA describes operating experience for the stator cooling water system conductivity, dissolved oxygen, and copper content and aux boiler heating water conductivity and pH. These are the same parameters and auxiliary systems described in the Acceptance Criteria subsection of AMP B.1.29.1. Please provide the following information: c) Clarify whether the aux boiler has continuous monitoring instrumentation or alarms for conductivity, pH, or other parameters, and whether these additional data are recorded, trended, and reviewed periodically.	The auxiliary boiler does not have continuous monitoring instrumentation or alarms for conductivity, pH, or dissolved oxygen.
156	AMP B.1.29.1 -8d Water Chemistry Control-Auxiliary Systems Program The "Operating Experience" program element for AMP B.1.29.1 in the LRA describes operating experience for the stator cooling water system conductivity, dissolved oxygen, and copper content and aux boiler heating water conductivity and pH. These are the same parameters and auxiliary systems described in the Acceptance Criteria subsection of AMP B.1.29.1. Please provide the following information: d) Clarify whether the stator cooling water system has continuous monitoring instrumentation or alarms for conductivity, dissolved oxygen, or other parameters, and whether these additional data are recorded, trended, and reviewed periodically.	The stator cooling water system has continuous in-line conductivity meters at the generator inlet and outlet. Although these meters do not have alarms, data from these meters is recorded, trended, and reviewed periodically. The stator cooling water system does not have continuous monitoring instrumentation or alarms for dissolved oxygen or soluble copper.

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157	AMP B.1.29.3 -1 Water Chemistry Control-Closed Cooling Water Program The Program Description for AMP B.1.29.3 in the LRA states that the water chemistry control - closed cooling water systems program includes the following: 1) jacket cooling water subsystem for the emergency diesel generator, 2) reactor building closed loop cooling, and 3) turbine building closed loop cooling. Please confirm that these are the only closed cooling water systems at JAFNPP in which the water chemistry is controlled, that are not subjected to significant sources of contamination, and in which heat is not directly rejected to a heat sink.	With the exception of systems in the Water Chemistry Control – Auxiliary Systems Program, there are no other closed cooling water systems with license renewal intended functions at JAFNPP in which the water chemistry is controlled, that are not subjected to significant sources of contamination, and in which heat is not directly rejected to a heat sink.
158	AMP B.1.29.3 -2 Water Chemistry Control-Closed Cooling Water Program The Program Description for AMP B.1.29.3 in the LRA states that the program includes preventive measures that manage loss of material, cracking, and fouling for components in closed cooling water systems. As described in NUREG-1801, Rev. 1, Section XI.M21, CCCW system aging management programs monitor the effects of corrosion and SCC by testing and inspection. Please describe the testing and inspection activities utilized at JAFNPP to monitor the effects of corrosion and SCC on closed cooling water systems components.	As noted in LRA section B.1.29.3, the JAFNPP Water Chemistry Control – Closed Cooling Water Program takes exception to the recommended performance and functional testing, with the following justification. While NUREG-1801, Section XI.M21, Closed-Cycle Cooling Water System endorses EPRI report TR-107396 for performance and functional testing guidance, EPRI report TR-107396 does not recommend that equipment performance and functional testing be part of a water chemistry control program. This is appropriate since monitoring pump performance parameters is of little value in managing effects of aging on long-lived, passive CCW system components. Rather, EPRI report TR-107396 states in section 5.7 (Section 8.4 in EPRI report 1007820) that performance monitoring is typically part of an engineering program, which would not be part of water chemistry. In most cases, functional and performance testing verifies that component active functions can be accomplished and as such would be governed by the maintenance rule (10 CFR 50.65). For example, loss of material cannot be detected by system performance testing. Passive intended functions of pumps, heat exchangers and other components will be adequately managed by the Closed Cooling Water Chemistry and One-Time Inspection programs through monitoring and control of water chemistry parameters and verification of the absence of aging effects. Corrosion coupons are used to monitor the effects of corrosion on the reactor building and turbine building closed loop cooling systems. In addition, LRA section B.1.21, One-Time Inspection, describes inspections planned to verify effectiveness of the water chemistry control programs to ensure that significant degradation is not occurring and component intended function is maintained during the period of extended operation.

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159	AMP B.1.29.3 -3 Water Chemistry Control-Closed Cooling Water Program The Program Description for AMP B.1.29.3 in the LRA states that the activities for monitoring and controlling closed cooling water chemistry using JAFNPP procedures and processes are based on EPRI guidance for closed cooling water chemistry. Please identify the EPRI documents used as guidance and make them available for NRC review at the time of the onsite audit.	The EPRI document used as guidance is EPRI Report 1007820, Closed Cooling Water Chemistry Guideline (TR-107396, Rev. 1). EPRI Report 1007820, Closed Cooling Water Chemistry Guideline (TR-107396, Rev. 1) was available for onsite review.
160	AMP B.1.29.3 -4a Water Chemistry Control-Closed Cooling Water Program With regard to AMP B.1.29.3, provide the following details of the JAFNPP closed cooling water aging management program: a) Identify the parameters monitored for each of the closed cooling water systems in the program, the sampling and testing frequencies, and how these are determined.	As indicated in LRA section B.1.29.3, the Water Chemistry Control – Closed Cooling Water Program is consistent with the program described in NUREG-1801, Section XI.M21, Closed-Cycle Cooling Water System, with one exception related to performance and functional testing. Sampling and testing frequencies are documented in Chemistry procedures SP-01.25, Reactor Building Closed Loop Cooling Sampling and Analysis, RT-01.15, Turbine Building Closed Loop Cooling Sampling and Analysis, and SP-01.23, Diesel Fire Pump Emergency Diesel Generator Coolant Corrosion Inhibitor Sampling and Analysis. These procedures were available for onsite review. The parameters monitored and frequencies are those recommended in EPRI Report 1007820.
161	AMP B.1.29.3 -4b Water Chemistry Control-Closed Cooling Water Program With regard to AMP B.1.29.3, provide the following details of the JAFNPP closed cooling water aging management program: b) Identify the acceptance criteria for the monitored parameters and how these are determined.	Acceptance criteria are identified in Chemistry procedures SP-01.25, Reactor Building Closed Loop Cooling Sampling and Analysis, RT-01.15, Turbine Building Closed Loop Cooling Sampling and Analysis, and SP-01.23, Diesel Fire Pump Emergency Diesel Generator Coolant Corrosion Inhibitor Sampling and Analysis. These procedures were available for onsite review. The acceptance criteria are those recommended in EPRI Report 1007820.
162	AMP B.1.29.3 -4c Water Chemistry Control-Closed Cooling Water Program With regard to AMP B.1.29.3, provide the following details of the JAFNPP closed cooling water aging management program: c) Describe which of the parameters are trended for each of the closed cooling water systems in the program.	The parameters trended are those recommended in EPRI Report 1007820. See the response for item # 163 for additional details.

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163	AMP B.1.29.3 -4d Water Chemistry Control-Closed Cooling Water Program With regard to AMP B.1.29.3, provide the following details of the JAFNPP closed cooling water aging management program: d) Describe the administrative controls and procedures used to implement periodic review and trending of water chemistry parameters and to determination what corrective actions are required.	In accordance with Entergy corporate procedure EN-CY-101, Chemistry Activities, the chemistry department trends chemistry and radiochemistry parameters to allow identification and correction of adverse trends before limits are exceeded. Data is reviewed as it is generated, and appropriate comments are made as necessary to document reasons for adverse data indications. The site chemistry staff reviews the data trends to ensure adverse indications are noted and addressed in a timely manner. In addition, site chemistry department group data review sessions are performed at least quarterly to share information on specific plant chemistry. A corporate chemist periodically participates in the data review sessions to provide an independent assessment. Chemistry trends, underlying causes of problems, and results of corrective actions are periodically reviewed with higher levels of line management.
164	AMP B.1.29.3 -4e Water Chemistry Control-Closed Cooling Water Program With regard to AMP B.1.29.3, provide the following details of the JAFNPP closed cooling water aging management program: e) Describe the initiation and implementation of the corrective action process for bringing water chemistry parameters back within the limits of the acceptance criteria specified by the program.	Corrosion inhibitor concentrations outside allowable limits are returned to acceptable range utilizing chemical additions or feed and bleed. The TBCLC and RBCLC systems have a demineralizer available, along with feed and bleed, to remove system contaminants. Both systems have an oxygen addition and oxygen removal skids available to control levels of dissolved oxygen. Corrective actions are taken in accordance with 10 CFR Part 50, Appendix B; EPRI Report 1007820 (TR-107396 Rev. 1); and the JAFNPP corrective action program.

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165	AMP B.1.29.3 -5 Water Chemistry Control-Closed Cooling Water Program The 'Exceptions to NUREG-1801' subsection for AMP B.1.29.3 in the LRA states that the JAFNPP water chemistry control - closed cooling water program does not include performance and functional testing. As described in NUREG-1801, Rev. 1, Section XI.M21, program element 3 for Parameters Monitored/Inspected states that the aging management program monitors the effects of corrosion and SCC by testing and inspection to evaluate system and component condition. Further, element 4 for Detection of Aging Effects states that control of chemistry does not preclude corrosion or SCC at locations of stagnant flow conditions or crevices and that the extent and schedule of inspections and testing should assure detection of corrosion or SCC before the loss of the intended function of the component. Please provide the technical justification for concluding that water chemistry control alone is sufficient to assure detection of corrosion or SCC before the loss of the intended function of the component or system. Also, please discuss the administrative controls or procedures that are in place to evaluate and initiate corrective actions in the closed cooling water chemistry aging management program based on the results of inspections or other means for the detection of aging resulting from corrosion and SCC.	The Water Chemistry Control-Closed Cooling Water Program includes monitoring and control of water chemistry to minimize exposure to aggressive environments and corrosion inhibitors for the emergency diesel generator closed cooling water to manage general, crevice, and pitting corrosion, as well as SCC. Corrosion coupons are used to monitor the effects of corrosion on the reactor building and turbine building closed loop cooling systems. As noted in LRA section B.1.29.3, the JAFNPP Water Chemistry Control – Closed Cooling Water Program takes exception to the recommended performance and functional testing, with the following justification. While NUREG-1801, Section XI.M21, Closed-Cycle Cooling Water System endorses EPRI report TR-107396 for performance and functional testing guidance, EPRI report TR-107396 does not recommend that equipment performance and functional testing be part of a water chemistry control program. This is appropriate since monitoring pump performance parameters is of little value in managing effects of aging on long-lived, passive CCW system components. Rather, EPRI report TR-107396 states in section 5.7 (Section 8.4 in EPRI report 1007820) that performance monitoring is typically part of an engineering program, which would not be part of water chemistry. In most cases, functional and performance testing verifies that component active functions can be accomplished and as such would be governed by the maintenance rule (10 CFR 50.65). For example, loss of material cannot be detected by system performance testing. Passive intended functions of pumps, heat exchangers and other components will be adequately managed by the Closed Cooling Water Chemistry and One-Time Inspection programs through monitoring and control of water chemistry parameters and verification of the absence of aging effects. In addition, LRA section B.1.21, One-Time Inspection, describes inspections planned to verify effectiveness of the water chemistry control programs to ensure that significant degradation is not occurring and component intended function is maintained during the period of extended operation. As described in LRA section B.0.3, JAFNPP quality assurance (QA) procedures, review and approval processes, and administrative controls are implemented in accordance with the requirements of 10 CFR Part 50, Appendix B. Conditions adverse to quality, such as failures, malfunctions, deviations, defective material and equipment, and nonconformances, are promptly identified and corrected. In the case of significant conditions adverse to quality, measures are implemented to ensure that the cause of the nonconformance is determined and that corrective action is taken to preclude recurrence. In addition, the root cause of the significant condition adverse to quality and the corrective action implemented are documented and reported to appropriate levels of management. The implementing procedure for the corrective action process were available for onsite review.

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166	AMP B.1.29.3 -6a Water Chemistry Control-Closed Cooling Water Program The Operating Experience subsection for AMP B.1.29.1 in the LRA describes operating experience for the RBCLC system where low levels of dissolved oxygen in the piping caused loss of material in system piping. An oxygen injection system was installed in August 2003 to correct this problem. Please provide the following information: a) Discuss how the loss of piping material was detected and how it was linked to the low levels of dissolved oxygen in the system water.	Loss of piping material was calculated from corrosion studies on coupons of base metals that were indicative of metals in the RBCLC system. The type of iron oxide found and the quantity of filterable iron in the RBCLC system indicated that low oxygen levels in the system were contributing to a magnetite iron oxide and not the protective layer of iron oxide that was desirable.
167	AMP B.1.29.3 -6b Water Chemistry Control-Closed Cooling Water Program The Operating Experience subsection for AMP B.1.29.1 in the LRA describes operating experience for the RBCLC system where low levels of dissolved oxygen in the piping caused loss of material in system piping. An oxygen injection system was installed in August 2003 to correct this problem. Please provide the following information: b) Clarify whether this was a special inspection or whether administrative controls or procedures are in place to correlate physical inspections and tests to water chemistry on a periodic basis.	Administrative controls or procedures are in place to correlate physical inspections and tests to water chemistry on a periodic basis. Periodic chemistry monitoring of corrosion coupons, dissolved oxygen and iron concentration in the RBCLC water were particularly useful in this case. In accordance with Entergy corporate procedure EN-CY-101, Chemistry Activities, the chemistry department periodically assesses corrosion/deposition conditions in plant systems by direct inspections, test coupons, microbiological sampling, computer modeling or other means.
168	AMP B.1.29.3 -6c Water Chemistry Control-Closed Cooling Water Program The Operating Experience subsection for AMP B.1.29.1 in the LRA describes operating experience for the RBCLC system where low levels of dissolved oxygen in the piping caused loss of material in system piping. An oxygen injection system was installed in August 2003 to correct this problem. Please provide the following information: c) Identify the water chemistry parameters that are continuously monitored in the RBCLC system.	Conductivity is the only parameter continuously monitored in the RBCLC system.

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169	AMP B.1.29.3 -7a Water Chemistry Control-Closed Cooling Water Program The Operating Experience subsection for AMP B.1.29.1 in the LRA describes operating experience for the TBCLC system where high dissolved oxygen concentration in the piping caused pitting corrosion in carbon steel. An oxygen removal skid was installed and system leaks were repaired to lower the dissolved oxygen concentration. Please provide the following information: a) Discuss how the pitting corrosion in carbon steel material was detected and how it was linked to the high concentrations of dissolved oxygen in the system water.	Corrosion coupons installed in the TBCLC water during periods of high dissolved oxygen concentration had pits on the surface. Unlike the corrosion coupons, the system piping has a protective iron oxide layer, and therefore may not have experienced pitting.
170	AMP B.1.29.3 -7b Water Chemistry Control-Closed Cooling Water Program The Operating Experience subsection for AMP B.1.29.1 in the LRA describes operating experience for the TBCLC system where high dissolved oxygen concentration in the piping caused pitting corrosion in carbon steel. An oxygen removal skid was installed and system leaks were repaired to lower the dissolved oxygen concentration. Please provide the following information: b) Clarify whether this was the result of a special inspection or whether administrative controls or procedures are in place to correlate physical inspections and tests to water chemistry on a periodic basis.	Administrative controls or procedures are in place to correlate physical inspections and tests to water chemistry on a periodic basis. For additional details see response to item # 169. In accordance with Entergy corporate procedure EN-CY-101, Chemistry Activities, the chemistry department periodically assesses corrosion/deposition conditions in plant systems by direct inspections, test coupons, microbiological sampling, computer modeling or other means.

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171	AMP B.1.29.3 -7c Water Chemistry Control-Closed Cooling Water Program The Operating Experience subsection for AMP B.1.29.1 in the LRA describes operating experience for the TBCLC system where high dissolved oxygen concentration in the piping caused pitting corrosion in carbon steel. An oxygen removal skid was installed and system leaks were repaired to lower the dissolved oxygen concentration. Please provide the following information: c) Identify the water chemistry parameters that are continuously monitored in the TBCLC system.	Conductivity is the only parameter continuously monitored in the TBCLC system.
172	AMP B.1.11-1 External Surfaces Monitoring With regard to AMP B.1.11, please discuss how surfaces that are inaccessible or not readily visible and insulated will be handled under this program.	Surfaces that are inaccessible or not readily visible due to radiological, safety, security or other considerations are inspected when plant conditions permit such as refueling outages. Surfaces that are inaccessible or not readily visible during both plant operations and refueling outages are inspected at such intervals that would provide reasonable assurance that the effects of aging will be managed such that applicable components will perform their intended function during the period of extended operation. Surfaces that are insulated are inspected when the external surface is exposed (i.e., maintenance) at such intervals that would provide reasonable assurance that the effects of aging will be managed such that applicable components will perform their intended function during the period of extended operation
173	AMP B.1.11-2 External Surfaces Monitoring Please confirm that AMP B.1.11 includes confirmation of the integrity of any paint or coatings that are used on the surface of components.	Yes, the condition of coatings is inspected. During system inspections, visual inspections identify items which could affect system performance, safety, or reliability as well as general housekeeping, personnel safety hazards and radiological concerns. Examples of parameters inspected are • condition and placement of coatings, • evidence of corrosion, and • indications of leakage. This is discussed in Parameters Monitored/Inspected in the NUREG-1801, Section XI.M38 program description. The JAF AMP is consistent with the NUREG-1801 AMP with no exceptions
174	AMP B.1.11-3 External Surfaces Monitoring Please discuss the frequency of inspections for the various applications described in AMP B.1.11and the basis for these frequencies.	System inspections are conducted at least once per refueling cycle and are normally performed more frequently. This frequency is acceptable since aging effects are typically caused by long-term degradation mechanisms such as corrosion. Surfaces that are inaccessible or not readily visible during plant operations and refueling outages are inspected at such intervals that would ensure the components intended function is maintained. The intervals of inspections may be adjusted as necessary based on plant-specific inspection results and industry experience. In addition, all plant personnel are required to identify adverse conditions via the corrective action process. Since adverse conditions include those which the system walkdowns are intended to manage, aging effects may be identified through routine operations and maintenance activities.

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175	AMP B.1.11-4 External Surfaces Monitoring Please discuss the qualifications and training requirements for personnel performing inspections under AMP B.1.11.	Visual inspection activities are performed and associated personnel are qualified in accordance with site controlled procedures and processes.
176	AMP B.1.11-5 External Surfaces Monitoring Please discuss the monitoring and trending activities to be implemented under AMP B.1.11 including the acceptance criteria to be used for each component/aging effect to be managed by AMP B.1.11.	This is discussed in "Monitoring and Trending" in the AMPER LRD-02, Section 4.10. Acceptance criteria are discussed under "Acceptance Criteria" in the AMPER LRD-02, Section 4.10. Monitoring and Trending Visual inspection activities are performed and associated personnel are qualified in accordance with site controlled procedures and processes. The External Surfaces Monitoring Program uses standardized monitoring and trending activities to track degradation. Deficiencies are documented so that results can be trended. Acceptance Criteria Engineering evaluations of visual indications of leakage or loss of material consider procedural requirements, current licensing basis, industry codes, and standards to ensure that the need for corrective actions is identified before loss of intended functions
177	AMP B.1.11-6 External Surfaces Monitoring With regard to the Enhancement for AMP B.1.11, please identify a) the guidance documents that will be enhanced, b) the components that will be affected, and c) the aging effects that will be addressed by the enhancement.	a) The guidance documents were available on site for review. b) As stated in the enhancement, "Inspections shall include areas surrounding the subject systems to identify hazards to those systems. Inspections of nearby systems that could impact the subject systems will include SSCs that are in scope and subject to aging management review for license renewal in accordance with 10 CFR 54.4 (a)(2)." c) The aging effect will be loss of material.
178	AMP B.1.11-7 External Surfaces Monitoring The FSAR supplement for AMP B.1.11 in Section A.2.1.11 of the LRA does not discuss the commitment to implement the enhancement to this program prior to the period of extended operation. Please revise the FSAR supplement to discuss this commitment.	Section A.2.1 of the LRA states, "All aging management programs will be implemented prior to entering the period of extended operation." This includes enhancements to individual programs. For additional clarification, LRA Appendix A will be revised as follows. Section A.2.1.11, External Surfaces Monitoring, add "This program will be enhanced to include periodic inspections of systems in scope and subject to aging management review in accordance with 10 CFR 54.4(a)(1) and (a)(3). Inspections shall include areas surrounding the subject systems to identify hazards to those systems. Inspections of nearby systems that could impact the subject systems will include SSCs that are in scope and subject to aging management review in accordance with 10 CFR 54.4(a)(2). These enhancements will be implemented prior to the period of extended operation." This requires a LRA Amendment.

Item	Request	Response
179	AMP B.1.15-1 Heat Exchanger Monitoring In LRA Section B.1.15, the Program Description states that representative tubes within the sample population of heat exchangers will be eddy current tested at a frequency determined by internal and external operating experience. Please clarify what is meant by internal and external operating experience. Also, please discuss a) the rational to be used in determining the inspection frequency using plant-specific and industry operating experience, and b) the anticipated minimum inspection frequency to be imposed to ensure timely detection of aging effects.	"Internal and external operating experience" means "JAFNPP site and industry operating experience." The following is an example of the steps which may be used to develop the inspection plan: 1. An initial visual inspection would be performed of the sample population of in scope heat exchangers. This inspection would document the "as-found" conditions. Additional examination methods may be used if "as-found" conditions warrant, (i.e. ultrasonic thickness measurements or radiography). The results of these inspections would be used to establish the frequency of future inspections. 2. Where physically accessible, baseline eddy current data would be obtained. The results of these tests would be used to determine the frequency of future inspections and the number of tubes to be sampled.
180	AMP B.1.15-2 Heat Exchanger Monitoring In LRA Section B.1.15, the discussion of " Parameters Monitored" program element states that, where practical, eddy current inspections of shell-and-tube heat exchanger tubes will be performed to determine tube wall thickness. Please discuss the criteria for determining practicality for eddy current inspections. Also, please discuss how aging of tubes for heat exchangers in the scope of this AMP will be managed when it is determined that eddy current inspection is impractical.	(a) Practicality is dependant on physical location, physical size, orientation, physical dimensions, accessibility and disassembly of heat exchanger. (b) If eddy current inspection is determined to be impractical aging of tube is managed based on the results of: 1. Visual inspection of the external portion of heat exchanger tubes is conducted during maintenance activities when eddy current inspections are not practical. This inspection is focused on detecting the extent of tube erosion, corrosion, fouling and scaling, and on the detection of corrosion at the tube sheet and rolled tube joints. And/or 2. Pressure/Leak testing is another method that can be used when eddy current is impractical. This task is focused on finding leaks in cracked tubes and in defects at the tube joints. These defects may be caused by improper installation, abusive transients, by plugging of tubes, and also by improper cleaning in the case of rolled tube joints.
181	AMP B.1.15-3 Heat Exchanger Monitoring In LRA Section B.1.15, the discussion of " Parameters Monitored" program element states that visual inspections will be performed on heat exchanger heads, covers, and tubesheets where accessible to monitor surface condition for indications of loss of material. Since this AMP is credited to manage loss of material-wear on the external surface of heat exchanger tubes, please clarify how the visual inspections described will help to manage the aging effects for which it is credited in the LRA.	Visual inspections is focused on detecting the extent of tube erosion, corrosion, fouling and scaling, and on the detection of corrosion at the tube sheet and rolled tube joints. In some cases, heat exchanger heads, partition plates, baffles, covers, or tubesheets are of the same material environment combination as tubes, which provides additional data for determining inspection frequency and the presence of aging effects.

Item	Request	Response
182	AMP B.1.15-4 Heat Exchanger Monitoring In LRA Section B.1.15, the discussion of " Detection of Aging Effects"program element states that representative tubes within the sample population of heat exchangers will be eddy current tested. Please discuss a) the rational to be used in determining the sample population, and b) the rational to be used for selecting representative tubes within the sample population.	(a) The sample population of heat exchangers will be determined based on the materials of construction of the heat exchanger tubes and the associated environments as well as the type of heat exchanger (for example, shell and tube type). At least one heat exchanger of each type, material and environment combination will be included in the sample population. This ensures that potential impacts of different design, material and environment combinations will be addressed. (b) Representative tubes within the heat exchanger sample population will be selected based on previous eddy current inspections, WO history such as corrective maintenance, tube plugging history, engineering evaluation, EPRI guidance and service condition of the heat exchanger. The sample tubes are considered on locations in the bundle most prone to discovering mechanistic failures such as pitting, tube erosion, and lagging vibration wear/fret damage.
183	AMP B.1.15-5 Heat Exchanger Monitoring In LRA Section B.1.15, the discussion of " Detection of Aging Effects" program element states that representative tubes within the sample population of heat exchangers will be eddy current tested. Please discuss the data collection techniques that will be implemented for this AMP.	Eddy Current test inspections are done according to the code requirements of ASME Section V, Article 8 1980 and 1989 editions. Vendor who provides services uses digital data acquisition with offline analysis.
184	AMP B.1.15-6 Heat Exchanger Monitoring In LRA Section B.1.15, the discussion of " Acceptance Criteria" program element states that the minimum acceptable tube wall thickness for each heat exchanger to be eddy current inspected will be established based upon a component-specific engineering evaluation. Please confirm that the acceptance criteria established will ensure that the component intended functions are maintained under all CLB design conditions during the period of extended operation.	The acceptance criteria established will ensure that the component intended functions are maintained under all CLB design conditions during the period of extended operation.
185	AMP B.1.15-7 Heat Exchanger Monitoring In LRA Section B.1.15, the discussion of " Operating Experience" program element states that the Heat Exchanger Monitoring Program at JAFNPP is a new program. Please discuss the JAFNPP-specific operating experience with the heat exchangers for which this AMP is credited to manage aging, including any degradation or failures that resulted in corrective actions.	As stated in Section 3.2 of JAF-RPT-05-LRD02, the Heat Exchanger Monitoring Program manages loss of material for copper alloy heat exchanger tubes in the lube oil subsystems of the HPCI pump turbine and EDG engine. Of these components only the HPCI turbine lube oil cooler has been inspected. These inspections occurred in 1998 and 2006 and detected no evidence of degradation. A review of site condition reports and records did not document any failures on these heat exchangers.

Item	Request	Response
186	AMP B.1.15-8 Heat Exchanger Monitoring The FSAR supplement for AMP B.1.15 in Section A.2.1.16 of the LRA does not discuss the commitment to implement this new program prior to the period of extended operation. Please revise the FSAR supplement to discuss this commitment.	Section A.2.1 of the LRA states, "All aging management programs will be implemented prior to entering the period of extended operation." This includes the Heat Exchanger Monitoring Program. For additional clarification, LRA Appendix A will be revised as follows. Section A.2.1.16, Heat Exchanger Monitoring Program, add "This program will be implemented prior to the period of extended operation." This requires a LRA amendment.
187	AMP B.1.28 -1 Thermal Aging and Neutron Irradiation Embrittlement of Cast Austenitic Stainless Steel (Cass) The description of AMP B.1.28 in the LRA states that this is a new program and will be fully implemented prior to the period of extended operation. Please provide a list of CASS components in the primary pressure boundary and RVI that are in the scope of this AMP, and the screening criteria that will be used to determine the susceptibility of CASS components exposed to thermal and neutron embrittlement.	As indicated in LRA Table 3.1.2-2, the CASS components in the scope of this program are: * Control rod guide tubes (bases) exposed to an environment of Treated water > 482 F and neutron fluence. * Fuel support pieces (orificed supports) exposed to an environment of Treated water > 482 F and neutron fluence. * Jet pump castings (transition piece, inlet elbow/nozzle, mixer adapter, restrainer bracket, diffuser collar) exposed to an environment of Treated water > 482 F and neutron fluence. As stated in LRA Section B.1.28, the Thermal Aging and Neutron Irradiation Embrittlement of Cast Austenitic Stainless Steel (CASS) Program at JAFNPP is a new program that will be consistent with the program described in NUREG-1801, Section XI.M13. As a program that is consistent with NUREG-1801, the screening criteria (casting method, molybdenum content, and ferrite content) given in Section XI.M13, Scope of the Program, apply to the JAFNPP program for determining susceptibility to thermal aging. Components exposed to more that 1E17 n/cm2 (E>1MeV) over the life of the plant will be included in the program as susceptible to neutron irradiation embrittlement.
188	AMP B.1.28 -2 Thermal Aging and Neutron Irradiation Embrittlement of Cast Austenitic Stainless Steel (CASS) With regard to AMP B.1.28, please discuss the results of recent ISI examinations for those components that are within the scope of this program.	Recent ISI examination results were provided during the site audit.

Item	Request	Response
189	AMP B.1.28 -3a Thermal Aging and Neutron Irradiation Embrittlement of Cast Austenitic Stainless Steel (Cass) In NUREG-1801, the discussion in the "Detection of Aging Effects" program element for AMP XI.M13 notes that for reactor vessel internal CASS components that have a neutron fluence of greater than 10E17 n/cm2 or are determined to be susceptible to thermal embrittlement, an applicant can implement either (a) a supplemental examination of the affected component as part of a 10-year ISI program during the license renewal period, or (b) a component specific evaluation to determine the component's susceptibility to loss of fracture toughness. Please provide the following information: a) Identify any components for which a supplemental examination is used, and describe what kind of supplemental inspection will be used for detecting the critical flaw size with adequate margin	Since the Thermal Aging and Neutron Irradiation Embrittlement of Cast Austenitic Stainless Steel (CASS) Program at JAFNPP is a new program, the list of components for which a supplemental examination will be used has not yet been established. One example of a supplemental examination for those components that require inspection is an enhanced visual examination (EVT-1) capable of detecting 0.0005 inch resolution.
190	AMP B.1.28 -3b Thermal Aging and Neutron Irradiation Embrittlement of Cast Austenitic Stainless Steel (Cass) In NUREG-1801, the discussion in the "Detection of Aging Effects" program element for AMP XI.M13 notes that for reactor vessel internal CASS components that have a neutron fluence of greater than 10E17 n/cm2 or are determined to be susceptible to thermal embrittlement, an applicant can implement either (a) a supplemental examination of the affected component as part of a 10-year ISI program during the license renewal period, or (b) a component specific evaluation to determine the component's susceptibility to loss of fracture toughness. Please provide the following information: b) Identify any components for which a component specific evaluation is used, and discuss the methodology that will be used to demonstrate adequate toughness of the embrittled material.	Since the Thermal Aging and Neutron Irradiation Embrittlement of Cast Austenitic Stainless Steel (CASS) Program at JAFNPP is a new program, the list of components for which a component specific evaluation will be used has not been developed. Component-specific evaluations will be in accordance with guidance in NUREG-1801, Section XI.M13.

Item	Request	Response
191	AMP B.1.28 -4 Thermal Aging and Neutron Irradiation Embrittlement of Cast Austenitic Stainless Steel (Cass) In NUREG-1801, the discussion in the " Acceptance Criteria" program element for AMP XI.M13 notes that flaws detected in CASS components are evaluated in accordance with the applicable procedures of IWB-3500/3600 or IWC-3500/3600. Please confirm that the flaw evaluation procedure to be used for CASS components with detected flaws is consistent with the NUREG-1801 recommendations.	Flaws found by supplemental inspections will be evaluated in accordance with the ASME Boiler and Pressure Vessel Code, Section IWB-3500. Flaw evaluation for CASS components with up to 25% ferrite content will be in accordance with ASME Sections IWB-3640 and IWB-3641. Flaw evaluation for CASS components with >25% ferrite content will be developed on a case-by-case basis using fracture toughness data. This is consistent with NUREG-1801 recommendations.
192	AMP B.1.28 -5 Thermal Aging and Neutron Irradiation Embrittlement of Cast Austenitic Stainless Steel (Cass) In NUREG-1801, the discussion in the "Monitoring and Trending" program element for AMP XI.M13 notes that an inspection schedule of CASS components in accordance with IWB-2400 or IWC-2400 ensures timely detection of cracks. Please confirm that the inspection schedule to be used for CASS components is consistent with the NUREG-1801 recommendations.	As indicated in LRA Section B.1.28, JAFNPP monitoring and trending will be consistent with NUREG-1801. No exceptions were taken to the Monitoring and Trending program element.
193	AMP B.1.28 -6 Thermal Aging and Neutron Irradiation Embrittlement of Cast Austenitic Stainless Steel (Cass) In NUREG-1801, the discussion in the "Corrective Actions" program element for AMP XI.M13 notes that repair is performed in conformance with IWA-4000 and IWB-4000 or IWC-4000, and replacement in accordance with IWA-7000 and IWB-7000 or IWC-7000. Also, 10 CFR 50, Appendix B requirements are acceptable to address the corrective actions. Please confirm that the corrective actions to be used for CASS components will be consistent with the NUREG-1801 recommendations.	As indicated in LRA Section B.1.28, JAFNPP corrective actions will be consistent with NUREG-1801. No exceptions were taken to the Corrective Actions program element.

Item	Request	Response
194	AMP B.1.28 -7 Thermal Aging and Neutron Irradiation Embrittlement of Cast Austenitic Stainless Steel (Cass) With regard to AMP B.1.28, please discuss JAFNPP-specific operating experience with CASS components in the scope of this AMP.	The CASS program comparable to NUREG-1801 Section XI.M13 is applicable only to the reactor vessel internals. The identified CASS components of the internals (guide tube, fuel support pieces, and pieces of the jet pump assemblies) are not subject to ISI, so there are no ISI results to date. No other JAFNPP site operating experience exists for the components in the scope of this new program.
195	AMP B.1 27.1 -1a Masonry Wall The program description for AMP B.1.27.1 in the JAFNPP LRA indicates that the scope of this program includes all masonry walls that perform an intended function in accordance with 10 CFR 54.4. The applicant is requested to provide the following information related to the scope of this program: (a) Identify whether any additional masonry walls have been added to the scope of the current JAFNPP program as a result of the LR scoping and screening review, particularly in light of the requirement to consider regulated events in the LR assessment. (b) If additional masonry walls have been added to the scope, explain how the requirements of I. E. Bulletin 80-11 have been applied to these walls, and describe any physical modifications that have/will be implemented to establish the evaluation bases. (c) If additional masonry walls have been added to the scope, explain why this is not considered an enhancement to the current Fitzpatrick program.	No additional masonry walls have been added to the scope of JAFNPP masonry wall program as result of the LR scoping and screening process [Ref. Aging management program evaluation report LRD-02, section 4.21.2].

Item	Request	Response
198	AMP B.1 27.1 -2 Masonry Wall The program description for AMP B.1.27.1 in the JAFNPP LRA does not indicate that this program includes all of the guidance provided in I.E. Bulletin 80-11, "Masonry Wall Design," and Information Notice 87-67, "Lessons learned from Regional Inspections of Licensee Actions in Response to I.E. 80-11." Please describe how you incorporated these guidance in the program. Also, provide the visual examination frequency for the program and its technical basis.	In performing the IPA for license renewal, Entergy compared the JAFNPP masonry wall program to the acceptable masonry wall program described in NUREG-1801,. The program attributes were specifically compared to the ten elements of the program described in NUREG-1801, Section XI.S5, Masonry Wall Program. As stated in the Abstract of NUREG-1801, an applicant may reference the GALL report in a license renewal application to demonstrate that the programs at the applicant's facility correspond to those reviewed and approved in the GALL report and that no further staff review is required. As indicated in Aging Management Program Evaluation Report LRD-02, Section 4.21.2, Operating experience shows that this program has been effective in managing aging effects. I.E. Bulletin 80-11 block walls within scope of JAFNPP maintenance rule are visually inspected at least once every 5 years to ensure there is no loss of intended function between inspections. There are no inaccesible block walls. The absence of operating experience involving significantly degraded masonry walls indicates that this frequency is appropriate. (Ref. JAFNPP procedure JAF-RPT-BYM-263, Section 4, and Aging Management Program Evaluation Report LRD 02, Section 4.21.2)

Item	Request	Response
199	AMP B.1 27.2 -1 Structures Monitoring Program In the discussion of operating experience, four noteworthy incidences of degradation are noted: cracks, gaps, corrosion, and flaking of coating. For each of the first three incidences of degradation, please provide the plant documentation that describes the degradation, the assessment performed, the acceptance criteria applied, future monitoring recommendations, and any corrective actions taken. Also describe the monitoring activities that are or will be conducted under the Structures Monitoring Program.	The Structural Maintenance Rule Monitoring is performed in accordance with procedure DESO 12. This document provides for inspection of reinforced concrete, structural steel, masonry, and architectural items. One or more inspection data sheets (dependent on whether degradation is noted) are completed for each Structure that is outlined in the Structural Maintenance Rule Basis Document. Judgment of the engineering team (two minimum) is used to evaluate degradation and determine the course of action whether to restore the condition of the structure or to adjust the monitoring frequency. The results of each subsequent monitoring inspection are recorded and evaluated to establish the time for the next inspection. The interval before the next inspection for a structure may decrease, increase, or remain the same based on the condition of the structure relative to the previous inspection. A Condition Report (CR) is issued for any structures that require immediate attention or a Work Order is initiated for minor degradation that requires attention. Inspection Checklist data sheets from the most recent inspections are available for review. The following reinforced concrete and masonry degradations, including cracks and gaps, were reported during the 2005 SMP inspections: The SMP inspection of the RWCU Heat Exchanger (Inspection # 05-RB-300-005-03) reinforced concrete pedestal foundation monitors a degraded concrete condition. The steel frame supporting each end of the three stacked RWCU heat exchangers rests on concrete pedestals. One of the concrete pedestals had degraded by the loss of concrete from top and side surfaces located adjacent to the bearing surface of the steel frame. Past repairs were not effective in restoring the concrete due to the thermal expansion of the heat exchangers. The most recent inspection in 2005 confirmed there was no change in the concrete condition from the previous inspection in 2003 (i.e., 2-year frequency). The broken concrete condition exceeds the acceptance criteria of hairline cracks and therefore condition reports have been written to provide immediate management attention. As a result, an engineering change package has been designed and issued to restore the support structure and is scheduled for implementation. The monitoring frequency will remain at 2-years for this item. The SMP inspection of the Emergency Diesel Generator Room (Inspection # 05-ED-272-002-03, # 05-ED-272-004-03) of masonry block walls identified separations between the reinforced concrete wall and the end of the adjoining masonry walls. The vertical joint between the walls has separated from the joint filler such that a small (cracklike) opening has formed at several locations along the joint. The joint filler serves to fill the gap between the two walls and does not contribute to the structural integrity of the walls Therefore, a work order has been issued to repair the filler material. The repair work has not been scheduled. The monitoring frequency will remain at 2-years for these items. No corrosion was reported during the 2005 inspections for reinforced concrete and masonry items.

Item	Request	Response
200	AMP B.1 27.2 -2 Structures Monitoring Program Some BWR units have a history of problems with containment penetration bellows, and the licensee has a long-term replacement program that will continue into the LR period. The applicant is requested to address this industry operating experience and submit a specific technical basis why the JAFNPP containment penetration bellows are not subject to the aging effects and aging mechanisms observed at these BWRs.	The Dresden/Quad Cities License Renewal Application (LRA) and Safety Evaluation Report (SER) provide a description of the Dresden/Quad Cities operating experience with stainless steel bellows. The Dresden/Quad Cities review determined a total of 120 bellows were within the scope of license renewal. Of these 120 bellows, 24 bellows were identified as being degraded. The root cause was identified as stress corrosion cracking (SCC). From 1990 to 2003 Dresden/Quad Cities replaced or removed the degraded bellows from service. The SER states that several of the replaced bellows received metallurgical analysis. Analysis results from a couple of examples determined the presence of corrosive products, such as "magnesium salts", chlorides, fluorides, and sulfides. Also, these corrosive species are not typical of containment operating conditions. As a result, the SER concludes the corrosive species, leading to the site specific degradation of the bellows, were most probably introduced during plant construction. (Reference Dresden/Quad Cities SER pages 3-403 to 3-408) Cracking due to SCC for the JAFNPP containment bellows is not an aging affect requiring management. There is no JAFNPP site-specific operating experience similar to that of Dresden/Quad Cities. In summary, the presence of corrosive contaminants is necessary for SCC to occur. The normal environment for the JAFNPP drywell is dry and there has been no indication of contamination of the bellows during construction. In addition, containment bellows for JAFNPP are not exposed to a corrosive environment. As such, SCC is not applicable to JAFNPP stainless steel bellows. (Ref. LRA paragraph 3.5.2.2.1.7) There is nothing to indicate that the bellows have been or would be subjected to corrosive contaminants since the environment is dry and inerted. They are static devices designed for thermal expansion between the drywell and torus during a DBA, therefore they do not experience inservice stresses that would make them susceptible to SCC. The leak rate testing (ref. ST-39B-X201) performed to date provides reasonable assurance that the structural integrity of these expansion bellows remains intact.
201	AMP B.1 27.2 -3 Structures Monitoring Program More information is needed about the aging management of inaccessible concrete areas. The applicant is requested to submit the dates and complete results (at specific locations/not averages or ranges) of all past groundwater monitoring tests. Discuss why the groundwater is non-aggressive, and/or aggressive, if applicable. Confirm that the JAFNPP SMP credited for LR will continue to perform the groundwater monitoring and inspect all inaccessible areas that may be exposed by excavation for any reason, whether the environment is considered aggressive or not, and will also inspect any inaccessible area where observed conditions in accessible areas, which are exposed to the same environment, show that significant concrete degradation occurred.	JAFNPP has determined that groundwater is not aggressive and sampling will be done in the future to verify this evaluation. Groundwater at JAFNPP is expected to be non-aggressive similar to Nine Mile which is non-aggressive as stated in the SER for License Renewal of Nine Mile Point Nuclear Station, Units 1 and 2. Values for pH, chloride and sulfate are not available. Structures Monitoring Program (SMP) will be enhanced to ensure an engineering evaluation is made on a periodic basis (at least once every five years) of groundwater samples to assess aggressiveness of groundwater to concrete. For the SMP, JAFNPP will obtain samples from a well that is most representative of the ground water surrounding below-grade site structures. Samples will be monitored for sulfates, pH and chlorides. Structures Monitoring Program will also inspect any inaccessible concrete areas that may be exposed by excavation for any reason, or any inaccessible area where observed conditions in accessible areas, which are exposed to the same environment, show that significant concrete degradation is occurring. This is license renewal commitment 17.

Item	Request	Response
202	AMP B.1 27.2 -4 Structures Monitoring Program The applicant is requested to address and discuss operating experience in detail for the cracks identified in 2005, including the acceptance criteria of concrete structures and components. Was any scope expansion required due to unacceptable conditions identified? Identify any additional inspections scheduled for the next inspection period.	Monitoring report JAF-RPT-BYM-03399 Revision 2 documents the results of inspection performed under the structures monitoring program. Acceptance criteria are delineated in DESO 12. The cracks identified did not deviate significantly from the baseline inspection and were identified as "minor cracking". Follow-up actions, if required, are identified within the body of the report and were available for review during the site audit. As a result of the inspection no additional scope nor new inspections were added. The structural maintenance rule baseline (initial) inspections were performed in 1997 and future monitoring inspection frequencies were established based on the results of the baseline inspections. In cases where random cracks were identified in either reinforced concrete or masonry, a shorter monitoring interval of 2 years was established to confirm the condition was not a degrading condition (i.e., shrinkage cracks). For the majority of cases, the 2-year frequency has been continued until the present. As a result, the multiple inspections of these structures have confirmed the condition is not progressing and will not affect functional capabilities. No additional inspections are required during the next planned inspection for any items that have cracks identified. As discussed in the Item #199 response, the only cracks of any significance that were reported during the 2005 inspection was associated with the RWCU Heat Exchanger concrete pedestal. However, there were a number of reinforced concrete and masonry items that were inspected in 2005 that contain hairline cracks that were reported during previous inspections and continue to be monitored. Any hairline cracks that are identified and being monitored in reinforced concrete are reviewed by experienced structural engineers to confirm they are not associated with a structural loading condition. Likewise, most hairline cracks being monitored in masonry construction are located a joint lines and are attributed to shrinkage. Minor pre-existing masonry wall hairline crack in the block face in the Electric Bay (Inspection # 05-TB-272-002-03) and in the West Diesel Fire Pump Room (Inspection # 05-SW-255-006-03) are being monitored on 2-year frequencies. A work order has been issued to repair the West Diesel Fire Pump Room hairline crack.
203	AMP B.1 27.2 -5a Structures Monitoring Program Please address each the current status of the enhancement to the existing Structures Monitoring Program. Including results of any enhanced inspections that have already been completed.	Approximately 7 years remain before JAFNPP enters the period of extended operation, implementing procedures required for new AMPs, and procedure revisions for enhancements to existing AMPs have not yet been developed. Commitment #17 to implement the enhancements to the Structures Monitoring Program are described in LRA Section B.1.27.2.

Item	Request	Response
206	AMP B.1 27.2 -6a Structures Monitoring Program The scope of the enhancements listed for AMP B.1.27.2 is quite significant, and it encompasses several elements that would be expected to be part of an existing Structures Monitoring Program. Notable examples are the inclusion of anchors and the addition of steel components to the current inspection criteria. Consequently, the applicant is requested to: (a) describe the scope of AMP B.1.27.2, including the structures and components in the scope of AMP B.1.27.2; the aging effects that are monitored; the inspection methods employed; and the inspection frequency;	The enhancements to the Structures Monitoring Program (SMP) are relatively minor items that are not typically found in a maintenance rule structures monitoring program. The structures, structural components and their aging effects requiring management under scope of SMP are included in LRA Tables 3.5.2-1 through 3.5.2-6. Visual inspections of plant structures are performed at five-year intervals, except for the intake and discharge tunnel structures which are inspected at ten-year intervals. Visual inspections of buried plant structures are performed when opportunistic excavation occurs. However, more frequent inspections may be performed based on past inspection results, industry experience, or exposure to a significant event (e.g. tornado, earthquake, fire, chemical spill). (Ref. Aging Management Program Evaluation Report LRD-02, section 4.21.1).
207	AMP B.1 27.2 -6b Structures Monitoring Program The scope of the enhancements listed for AMP B.1.27.2 is quite significant, and it encompasses several elements that would be expected to be part of an existing Structures Monitoring Program. Notable examples are the inclusion of anchors and the addition of steel components to the current inspection criteria. Consequently, the applicant is requested to: (b) for the structures and components that will be added to the Structures Monitoring Program scope for license renewal, describe the aging management activities that are currently being implemented.	Currently the aging management activities being implemented for structures and components that will be added to the Structures Monitoring Program for license renewal are routine observations during normal plant operation and maintenance. This is commitment #17 The corrective action program requires initiating condition reports for degraded conditions observed during routine operation and maintenance.
208	AMP B.1 27.2 -7 Structures Monitoring Program The applicant has not addressed aging management of the portion of the drywell shell embedded in the drywell concrete floor. This area is inaccessible for inspection, but is potentially subject to wetting on both the inside and outside surfaces. Are there any inspections planned prior to the period of extended operation for this portion of the drywell shell?	The seal between the concrete floor inside the drywell and the drywell shell is inspected under the SMP and was most recently inspected in October 2006 during the refueling outage. In response to NRC Generic Letter GL 87-05, the drywell 'sand cushion' drains were inspected to verify they were free from plugging. The JAF design includes drains to capture refueling seal leakage and a seal over the sand cushion that precludes water intrusion that could affect the exterior surface of the embedded portion of the drywell shell. JAF engineering will evaluate the need for any appropriate additional actions. A white paper will be provided as an amendment to the LRA.

Item	Request	Response
209	AMP B.1 27.2 -8 Structures Monitoring Program Describe the "aggressive environment" and "water-flowing" environments for Reinforced Concrete Foundation, Slabs, and Reinforced Concrete Walls. What is the plant-specific program to manage potential degradation?	Aggressive environment is defined in NUREG-1801 Chapter XI as it applies to steel in concrete as that occurring when concrete pH <11.5 or chlorides concentration >500 ppm. Concrete at JAFNPP is not susceptible to the aging effects caused by "aggressive environment" since it meets the NUREG-1801 criteria provided in Item III.A6-1. NUREG-1801 is unclear with respect to this item as the Volume 2 T-18 item (III.A6-1) has an air environment and the associated T-18 Volume 1 item (Table 3.5-1, Item 34) discusses aging management programs for water environments. "Water flowing" is defined in NUREG-1801 as water that is refreshed, thus having larger impact on leaching; this can be rainwater, raw water, groundwater, or flowing water under a foundation. For the purposes of the JAFNPP aging management review, water-flowing was considered flowing water at greater than 3 fps. (Ref. EPRI report 1002950 "Aging Effects for Structures and Structural Components (Structural Tools), Section 3.3.1.4) The potential aging effect resulting from flowing water is loss of material. For concrete, structures monitoring manages loss of material as identified in LRA Tables 3.5.2-1 through 3.5.2-4.
212	AMP B.1 27.2 -9a Structures Monitoring Program Please provide the following information related to inspection of underwater supports for loss of mechanical function: (a) Identify the specific underwater supports that will be added to the scope of the inspection program for the license renewal period, including the system name and ASME Code Class.	For JAFNPP no underwater supports are identified to be added to scope of this program for license renewal period. No inspections are performed at JAFNPP using the GALL AMP XI.S7. The water control structures at JAFNPP are the intake and discharge structures. Inspections of these structures are performed under the " Structures Monitoring Program" AMP B.1.27.2. [Ref. Aging Management Program Evaluation Report LRD-02, section 4.21.1].
215	B.1.16.1-1a Containment Inservice Inspection (CII) JAFNPP AMP B.1.16.1 identifies that the Containment Inservice Inspection (CII) program is a plant-specific program encompassing the requirements for the inspection of class MC. Please provide the following information related to: (a) Identify the MC supports that are currently included in the existing inspection program.	The Class MC supports that are currently in scope of containment inspection program at JAFNPP are 16 torus saddle supports, 4 torus earthquake ties and 8 upper drywell stabilizers.

Item	Request	Response
216	B.1.16.1-1b Containment Inservice Inspection (CII) JAFNPP AMP B.1.16.1 identifies that the Containment Inservice Inspection (CII) program is a plant-specific program encompassing the requirements for the inspection of class MC. Please provide the following information related to: (b) Identify the MC supports that will be added to the scope of this inspection program for the license renewal period.	(b) Torus supports and RPV stabilizer supports. The program document is JAF-RPT-PC-04088. All torus supports, earthquake ties and upper drywell stabilizer supports will be scheduled for examination during the 4th ten-year inspection interval. The Code of Record for the 4th Interval shall be ASME Section XI 2001 Edition /2003 Addenda. There are no other supports to add.
217	B.1.16.1-1c Containment Inservice Inspection (CII) JAFNPP AMP B.1.16.1 identifies that the Containment Inservice Inspection (CII) program is a plant-specific program encompassing the requirements for the inspection of class MC. Please provide the following information related to: (c) Specify the current inspection program and describe the current inspection details for the MC supports that are identified in (b) above.	(c) These are under the ASME Section XI program and require VT-3 inspection. The Class MC supports at JAF consist of 16 torus saddle supports, 4 torus earthquake ties and 8 upper drywell stabilizers. The original IWE program at JAF was developed in accordance with the requirements ASME XI 1992 edition with 1992 addenda after the IWE section of the code was mandated in 1996. This edition of the code did not require inspection of Class MC supports. The current IWE Program at JAF was developed in accordance with the 1998 edition with 1998 addenda of ASME XI. This code edition requires that 100% of the Class MC supports be examined during the ten year interval. Accordingly, all torus supports, earthquake ties and upper drywell stabilizer supports are scheduled for examination during the JAF 4th ten-year inspection interval. The first examinations under the 4th interval IWE program will be performed either prior to or during RFO17 in 2008. The torus saddle supports and earthquake ties are accessible to inspection as they are located on the torus floor. Inspection of the upper drywell stabilizers requires the removal of bolted access hatches to perform the required visual inspections. These hatches constitute a portion of the primary containment pressure boundary and are tested in accordance with Appendix J requirements after each opening.
218	B.1.16.1-1d Containment Inservice Inspection (CII) JAFNPP AMP B.1.16.1 identifies that the Containment Inservice Inspection (CII) program is a plant-specific program encompassing the requirements for the inspection of class MC. Please provide the following information related to: (d) Confirm that, all MC supports will be included in the scope of this inspection program for the period of extended operation.	(d) These shall be included in the 4th interval ISI program which expires in October 17, 2014. The next interval will be updated and maintained as required by 10 CFR 50.55(a) and ASME Section requirements. All torus supports, earthquake ties and upper drywell stabilizer supports continue to be examined in accordance with the JAF IWE Program during the period of extended operation.

Item	Request	Response
219	B.1.16.1-2 Containment Inservice Inspection (CII) The applicant is requested to identify the inspection program and the Inspection frequency for the current license and for the extended period of operation. In the OE it said: "Results of the CII....during RF16 (2004) revealed no significant lost of material.." Please, provide the inspection documentation of this inspection and the results.	The IWE containment inspection program is currently performed in accordance with ASME section XI 1998, no addenda with repair / replacement activities in accordance with ASME section XI 1992 including addenda. Going forward to the fourth ten-year ISI interval, inspection and repair / replacement will be performed in accordance with ASME section XI 2001 edition including 2003 addenda. Documentation available for review at the site.
220	B.1.16.1-3 Containment Inservice Inspection (CII) The applicant is requested to address the results of the CII general walkdown of primary containment during 2006 (RFO 17) including any corrective action, preventive action related to question 219 above. Are there any degradations found? If found, What are they? What were your corrective and preventive actions? What were the results of your root cause analysis? Please discuss the acceptance criteria, qualification method used, and/or any other means to support your conclusion?	With exception of the conditions identified in item 221 (B.1 16.1-4), the general walk down of primary containment during 2006 (RFO 17) identified minor surface rust/corrosion and areas of deteriorated coatings evaluated by the responsible design engineer as acceptable.
221	B.1.16.1-4 Containment Inservice Inspection (CII) Please explain, Why the June 27, 2005, operating experience such as crack on the torus shell addressed in the LRA? Are there any other similar situations identified? What are the preventive and corrective actions taken for the torus shell wall thinning? Please, provide the results of the NDE examination including the acceptance criteria and qualification method used and any pertaining documentation for the staff to review.	The JAF Torus Preservation verifies that sample locations are tracked for wall thinning. The reports are in the NDE database and used to assure adequate wall thickness. IWE examinations are performed and any discrepancies noted in coatings are repaired using the CR system. All data is available on site. JPCE ISI engineer and IWE Structural engineer can supply documentation for both the Torus Cracking and/or Torus Wall. The torus crack was discussed in LRA Section 3.5.2.2.1.8. The Torus was repaired in July 2005 using a cap and removing the damaged section of shell. The RCA determined Condensation Oscillation from the HPCI Turbine Steam Discharge provided the energy that initiated the cracking. UT was subsequently performed at this location and at the RCIC discharge each time they were run. In RO17 a Visual examination was scheduled on the extent of condition and 2 cracks were noted near the HPCI discharge. These cracks were not through wall were removed and repaired by welding. To eliminate the cause the HPCI discharge line was modified with a sparger assembly which is designed to eliminate condensation oscillation. JAF documentation can be found under the following: CR-JAF-05-2593 WO- JAF-05-24673 CR-JAF-06-4526 WO-JAF-06-28641 Additional information will be addressed under RAI 3.5.2-5.

Item	Request	Response
222	B.1.16.1-5 Containment Inservice Inspection (CII) Explain how inspections are performed in the torus suppression pool above and below the water line. Explain historically what inspection findings have lead to the need for augmented inspections. Explain if any augmented inspections are currently being performed.	The interior torus suppression pool area above and below the water line are inspected in accordance with the IWE program during refueling outages. A general visual examination is performed of the area above the water line. Below the water line is normally inaccessible unless the torus water level is lowered or drained for a work activity. The torus was last drained and cleaned in 1998 for the installation of the ECCS strainers. A general visual exam of the surface above and below the water line was performed. The visual examination identified nine (9) of the most severe areas of pitting. The depths of the pits were measured at that time and a portion of those areas are monitored and measured by means of a UT from the outside of the torus shell every outage. Over a five year period, all nine of the pitted areas are examined by performing a UT. Additional information will be provided in an amendment to the LRA.
223	B.1.16.1-6 Containment Inservice Inspection (CII) Explain if water leakage has ever been discovered between the drywell and concrete secondary shield wall or in the sand pocket area. Explain what JAFNPP does to inspect for water leakage in these two areas or to verify that loss of material is not occurring on the backside of the drywell. Provide the latest engineering system health report for the CII program.	There has been no observed leakage causing moisture in the vicinity of the sand cushion at JAF and no moisture has been detected or suspected on the inaccessible areas of the drywell shell. Further, as discussed above, any potential leakage through the refueling bellows assembly is directed to a drain system. Therefore, no additional components have been identified that require aging management review as a source of moisture that might affect the drywell shell in the lower region. In 1988, JAF verified that the air gap through drain lines using fiber optic cable and did not find any evidence of moisture in the air gap or corrosion of the drywell shell. Additional information will be addressed under RAI 3.5.2-3.
224	B.1.16.1-7 Containment Inservice Inspection (CII) The containment inservice inspection aging management program described in LRA B.1.16.1 did not provide any information regarding the applicant's actions in response to GL 87-05 and other industry operating experience including actions planned as a result of recent staff guidance (LR-ISG-2006-01) to address the potential loss of material due to corrosion in inaccessible areas of the Mark 1 steel drywell shell for the period of extended operation.	Two inspections were required per NRC Generic Letter 87-05 prior to start-up from the 1988 Refuel Outage. The first being inspection of the eight (8) 2" diameter sand cushion drain lines and the second being inspection of the six (6) refueling bellows leakage drain lines. The inspections using a flexible boroscope were to determine that the lines were unplugged and functioning as designed. All eight sand cushion drain lines were inspected and seven of the eight were found to be operable. Five of the six refueling bellows leakage drain lines were inspected and found to be operable. Inspection ports were installed prior to the inspection in five of the six lines, an inspection port was not installed in the sixth line because of the line's inaccessibility. The sand cushion for JAF is covered with stainless steel plates and an adhesive seal to prevent in-leakage. Drains are provided above these plates and also at the bottom of the sand cushion. Because of this encasement type design arrangement, no ultrasonic (UT) thickness measurements are required for the drywell shell plates adjacent to the sand cushion. Additional information will be addressed under RAI 3.5.2-3.

Item	Request	Response
225	AMP B.1.8 - 10CFR 50 appendix J (XI.S4) The applicant is requested to address and discuss the test option related to this program. What was the most significant operating experience related to this program? What were your corrective and preventive actions? When does your next "periodic interval"start?	As indicated in LRA section B.1.8, the Containment Leak Rate Program is consistent with the NUREG-1801 Section XI.S4, 10 CFR Part 50, Appendix J, Option B program. As documented in the Integrated Leakage Rate Test (ILRT) 5 year extension request (Accession # ML032170128), the previous 4 ILRTs, dating back to May 1985, showed consistent low leakage and validate the structural integrity of the primary containment. Consistent with NUREG-1801, Section XI.S4, 10 CFR 50, Appendix J, the Containment Leak Rate Program is a monitoring program without preventive actions. Corrective actions are performed in accordance with 10 CFR Part 50, Appendix J, NEI 94-01, and 10CFR50 Appendix B. Since the 5 year extension request was approved, the next ILRT is to be performed no later than March 7, 2010. Local leak rate tests have different intervals for individual components based on prior performance.

Item	Request	Response
227	AMP B.1.16.2 -1 Inservice Inspection Program The [Scope of the Program] states that the ISI program manages cracking, loss of material, and reduction of fracture toughness of the reactor coolant system piping, components, and support. A. Clarify what other plant systems the ISI Program covers in additon to the reactor coolant system. If the scope of the ISI Program covers other plant systems at JAFNPP under the requirements of 10CFR50.55a, identify and justify whether or not the [Scope of Program] program attribute needs to be revised. B. Confirm that the ISI progrm includes implementation of the general requirements of ASME Section XI, Subsection IWA for these systems, the specific requirements of ASME Section XI, Subsection IWB for portions of these systems that are part of the reactor coolant pressure boundary, the specific requirements of ASME Section XI, Subsection IWC for portions of these systems that are categorized as ASME Code Class 2, Subsection IWD for portions of these systems that are categorized as ASME Code Class 3, and Subsection IWF for ASME Code Class 1, 2, and 3 component supports	This item incorporates the following: Item 228, 229, 230, 231, 234, 236, 237, 238 inclusively a) The ISI Program at JAF includes both the Reactor Coolant Pressure Boundary (RCPB) and piping systems that have been identified as ISI Class 2 & 3. However, the LRA credits the ISI Program for aging management of the Class 1 RCPB only. Therefore, no revision of the scope of program attribute is required. b) The question in part B is confirmed. The list of systems in the JAFNPP ISI program includes: Flow Diagram Reactor Building Service Water Cooling Control Room Area-Service and Chilled Water Reactor Building Cooling Water Reactor Building Cooling Water Pass Cooling Water Supply Fuel Pool Cooling (FPC) Core Spray (CS) Standby Liquid Control Reactor Core Isolation Cooling (RCIC) Reactor Water Cleanup (RWC) Residual Heat Removal (RHR) Residual Heat Removal (RHR) High Pressure Coolant Injection (HPCI) Reactor Water Recirculation (RC) Control Rod Drive (CRD) Feedwater (FW) Service Water (SW) Emergency Service Water (ESW) Nuclear Boiler Vessel Instrumentation (NBVI) Emergency Diesel Generator Fuel Oil and Combustion Air Systems Emergency Diesel Generator and Lubricating Systems Emergency Diesel Generator Air Start-up Lines

Item	Request	Response
235	AMP B.1.16.2 -9 Inservice Inspection Program Program element "Detection of Aging Effects" - It is not clear how the NDE methods described in ASME Section XI, Subsection IWA and invoked in accordance with specific inspection requirements in ASME Section XI, Subsection IWB, IWC, or IWD have the ability to monitor for a drop in the fracture toughness property for a given ASME Code Class 1, 2, or 3 component. The project team requests that Entergy provide additional clarification on how the ISI program for JAFNP will manage loss of fracture toughness in the ASME Code 1, 2, and 3 components for the facility, and in particular, how the ISI program, when implemented, will ensure compliance with pertinent fracture toughness requirements in Section XI of the ASME Code and ensure system integrity if the fracture toughness for a particular component's material is projected to drop over the EPO.	As stated in NUREG-1801 Volume 2 Rev 1 XI.M12, the ASME Section XI inspection requirements are sufficient for managing the effects of loss of fracture toughness due to thermal aging embrittlement of CASS pump casings and valve bodies, to wit: For pump casings and valve bodies, based on the assessment documented in the letter dated May 19, 2000, from Christopher Grimes, Nuclear Regulatory Commission (NRC), to Douglas Walters, Nuclear Energy Institute (NEI), screening for susceptibility to thermal aging is not required. The existing ASME Section XI inspection requirements, including the alternative requirements of ASME Code Case N-481 for pump casings, are adequate for all pump casings and valve bodies. In this way, the ISI program is used to manage the aging effect of "loss of fracture toughness" through analysis instead of monitoring techniques.
241	AMP B.1.16.2 -13c Inservice Inspection Program The project team requests that Entergy provide the following information with respect to the operating experience that is relevant to the JAFNP ISI Program: c). Provide the following information if it is determined that Entergy did augment its ISI examination requirements for any given ASME Code Class 1, 2, or 3 component or its supports (i.e., other than pertinent reactor pressure vessel and internals components, which have been augmented for inspection pursuant to commitments for pertinent BWRVIP guidelines): (1) identify what component is of concern and what the relevant operating experience was that prompted Entergy to augment ISI examination requirements for the component, and (2) clarify what Entergy did to augment its ISI program requirements for these components.	c) JAFNPP performs augmented inspections for the following components: •IGSCC (ASME Section XI B-F, B-J & C-F weldments •Risk-Informed Inservice Inspection (RI-ISI) Class 1, 2, and 3 piping welds (ASME Code Category B-F, B-J & C-F) •Main Steam & Feedwater High Stress Welds inspected in accordance with JAF's TRM Section 3.4A and Engineering Report JAF-RPT-03-00289, Rev. 0, "Main Steam and Feedwater Augmented Inspection Program" , and 50.59 Safety Evaluation, JAF-SE-03-0004, Rev. 0, "Update of the Main Steam and Feedwater Augmented Inspection Program". •Core Spray Augmented Inspection Program - Core spray augmented examinations are welds that have been identified that warrant monitoring of the pump discharge piping for vibration. The exam requirements are to be performed in accordance JAF calculation / JAF-CALC-CSP-00327 Rev. 0, "JAF Core Spray Vibration Evaluation Core Spray Pump Discharge Lines", dated 9/27/91 •Feedwater Nozzle Inspection Program - The Feedwater Nozzle Inspection Program at JAF implements enhanced inservice inspection (ISI) of feedwater nozzles in accordance with the requirements of ASME Section XI, Subsection IWB and the recommendation of General Electric (GE) NE-523-A71-0594. •Augmented Containment Inspection Program for Examinations Other Than Those Required By IWE-1241 JAF has implemented a sub-tier Augmented inspection plan, based on HPCI and RCIC actuation requiring ultrasonic examination of the Torus from the exterior surface

Item	Request	Response
244	AMP B.1.7-1 BWR Vessel Internals Program Identify all BWRVIP Reports including components that are within the scope of AMP B.1.7, "BWR Vessel Internals." Clarify whether BWRVIP-94 and BWRVIP-04 implementation guidelines are within the scope of this AMP.	The AMP was based on the previously reviewed and approved program described in NUREG-1801. The various applicable BWRVIP reports are listed under Scope of Program in NUREG-1801 Section XI.M9. BWRVIP-04 provides the recommended format and content of submittals to the United States Nuclear Regulatory Commission (NRC) for review and approval of core shroud repairs and BWRVIP-94 provides guidance on implementation of the BWRVIP reports. BWRVIP-94 is endorsed by procedure Entergy ENN-DC-135.
245	AMP B.1.7-2 BWR Vessel Internals Program Past experience at a BWR station has demonstrated that extended power uprates for BWRs may cause excessive vibrations of the facility's steam dryers and result in vibration-induced cracking (high cycle fatigue-induced cracking) of the components. The AMP indicates that Entergy has detected relevant, recordable cracking of the JAFNPP steam dryer. Clarify: (1) whether the steam dryers are within the scope of this AMP and what type of aging management strategy(including identification of the inspection method, inspection frequency, and inspection sample size) Entergy will be using to manage vibration-induced cracking of the steam dryer at JAFNPP. If the steam dryers are within the scope fo license renewal and Entergy is relying on the guidance of BWRVIP-139 to manage this aging effect, Entergy will need to provide a commitment to implement the version of BWRVIP-139 that is approved by the NRC, as the topical report is currently under review by the staff for approval.	Entergy will manage the steam dryers in accordance with BWRVIP-139 as approved by the NRC and accepted by the BWRVIP Executive Committee. LRA Section A.2.1.7 and Section B.1.7 will be revised to specify an enhancement to ensure the effects of aging on the steam dryer are managed in accordance with the guidelines of BWRVIP-139. This requires a LRA amendment. JAF LR Commitment Number 22 will require enhancements to the JAFNPP BWR Vessel Internals Program as described in LRA Section A.2.1.7 and Section B.1.7.

Item	Request	Response
246	AMP B.1.7-3 BWR Vessel Internals Program Confirm whether or not Entergy has modified the JAFNPP design to include any repair hardware assemblies for the JAFNPP core shroud, and if so, identify what type of repair hardware assemblies have been installed at the facility and identify which core shroud welds the repair hardware assemblies are assuming the loading conditions for and which welds are not covered by the repair hardware assemblies. Clarify, either directly or by reference to pertinent BWRVIP guidelines, what type of examinations (including examination methods, examination frequencies, and examination sample sizes) are being credited for aging management of both the JAFNPP core shroud structure and repair hardware assemblies.	During the 1994 Refuel Outage, ten (10) tie-rod assemblies with associated radial seismic restraints (bumpers) were added to the outside of the core shroud to ensure structural integrity of the core shroud in the event of postulated through wall cracking of the circumferential horizontal weld joints (See UFSAR Figure 3.3-19). The tie-rods attach between brackets mounted in holes recessed in the shroud top flange and holes in the shroud support shelf reinforcing gusset plates. The design of the preloaded tie-rods in conjunction with the radial seismic restraints (bumpers), which limit the lateral movement of the shroud, ensures that the core shroud will perform its design basis functions with through wall cracking (360 degree) at all the existing horizontal core shroud weld joints. (Section 3.3.4.1 of the UFSAR) JAFNPP manages the core shroud and core shroud repair hardware with the guidelines of BWRVIP-76, without exception. AMP B.1.7-3 will be enhanced to commit to the guidelines of BWRVIP-76, when approved by the NRC staff. This has been added to the JAF Commitment List.
247	AMP B.1.7-4a BWR Vessel Internals Program The operating experience for JAFNPP indicates that cracking has been detected in some of the vertical welds in the JAFNPP core shroud. Core shroud repair hardware assembly designs assume the tensile loading conditions for circumferential welds in core shrouds but do not assume the circumferential loading conditions (hoop stress conditions) for vertical welds in the shrouds. Since Entergy has detected recordable indications of cracking in the vertical welds of the core shroud, the staff seeks additional technical clarification for the following: a.) What type of cracking mechanism was determined to be the root cause of the cracking in the vertical welds;	a. Type of cracking mechanism found on the JAF core shroud vertical welds is typically IGSCC (i.e., cracking initiates on the heat-affected zone of the weld).

Item	Request	Response
248	AMP B.1.7-4b BWR Vessel Internals Program The operating experience for JAFNPP indicates that cracking has been detected in some of the vertical welds in the JAFNPP core shroud. Core shroud repair hardware assembly designs assume the tensile loading conditions for circumferential welds in core shrouds but do not assume the circumferential loading conditions (hoop stress conditions) for vertical welds in the shrouds. Since Entergy has detected recordable indications of cracking in the vertical welds of the core shroud, the staff seeks additional technical clarification for the following: b.) Identify what type of inspection methods were used to re-examine the impacted weld for signs of flaw growth, as visual examinations are not valid methods to verify whether flaw growth is occurring;	b. Belt-line welds SV4A, SV4B, SV5A and SV5B were inspected and sized by UT in R17 (October 2006). There were no indications noted for welds SV4A and SV4B. For welds SV5A and SV5B, there is close correlation of flaws from previously seen by EVT-1 in R14, with limited crack growth and no through wall indications. There are some additional flaws (short intermittent) at weld SV5A. All indications were determined acceptable
249	AMP B.1.7-4c BWR Vessel Internals Program The operating experience for JAFNPP indicates that cracking has been detected in some of the vertical welds in the JAFNPP core shroud. Core shroud repair hardware assembly designs assume the tensile loading conditions for circumferential welds in core shrouds but do not assume the circumferential loading conditions (hoop stress conditions) for vertical welds in the shrouds. Since Entergy has detected recordable indications of cracking in the vertical welds of the core shroud, the staff seeks additional technical clarification for the following: c.) Clarify why Entergy considers the relevant flaw indications to be acceptable for further service without mandating proper repair of the indications. Provide a technical justification to support your determination;	c. Core shroud welds are re-inspected per BWRVIP-76 criteria. An end of interval (EOI) inspection frequency is calculated for each weld based on conservative crack growth rate determination and hydraulics, as applicable. The flawed vertical welds at JAF have been determined to be acceptable for further service (CR-JAF-2006-04238 & 04287). These documents were available for on-site review.

Item	Request	Response
250	AMP B.1.7-4d BWR Vessel Internals Program The operating experience for JAFNPP indicates that cracking has been detected in some of the vertical welds in the JAFNPP core shroud. Core shroud repair hardware assembly designs assume the tensile loading conditions for circumferential welds in core shrouds but do not assume the circumferential loading conditions (hoop stress conditions) for vertical welds in the shrouds. Since Entergy has detected recordable indications of cracking in the vertical welds of the core shroud, the staff seeks additional technical clarification for the following: d.) If the indications in the vertical welds have been determined to be acceptable for further service, clarify and discuss what type of non-destructive examination method Entergy will be implementing to reexamine the vertical welds in the core shroud (including identification of the examination method, the examination frequency, and the sample size for the examinations). Clarify what type of repair contingencies Entergy will implement if the indications in the vertical welds are determined to be unacceptable for further service.	d. The flawed vertical welds at JAF have been determined to be acceptable for further service until RO18 (CR-JAF-2006-04238 & 04287) per BWRVIP-76 evaluation guidelines. An Entergy calculation for belt-line welds SV5A and SV5B will be prepared in 2007 (CR-JAF-2006-04238 CA 00003). The Entergy calculation will be performed in accordance with the guidelines of BWRVIP-76. The results of the Entergy calculation will be considered in determining inspection methods, sample size, and inspection frequency. Repair contingencies have not been determined since significant margin remains before repairs would be required. This has been added to the JAF Commitment List.

Item	Request	Response
251	AMP B.1.7-5 BWR Vessel Internals Program The current industry norm proposed by the BWR applicants to manage vibration-induced cracking or irradiation assisted stress corrosion cracking (IASCC) in the top guide structures of the reactor pressure vessels has been, in part, to commit to enhanced visual examinations (EVT-1) of 5-percent of the top guide cross hatch locations within 6 years of entering the period of extended operation (PEO) and an additional 5-percent of the locations within 12 years of entering the PEO. Confirm that Entergy will be implementing the inspection and flaw evaluation guidelines of BWRVIP-26 for management of IASCC and/or vibrational induced cracking in the JAFNPP top guide. In addition, confirm whether or not Entergy will be implementing, in accordance with a commitment on the application, the industry norm for inspecting the cross hatch locations in the JAFNPP top guide. If so, the staff requests that: (1) Entergy submit a commitment on the LRA that commits to performing EVT-1 inspections of 5-percent of top guide cross hatch area locations within 6 years of entering the PEO, and an additional 5-percent of the top guide cross hatch area locations within12 years of entering the PEO, and (2) provide a discussion and technical justification that clarifies how the program basis in the commitment is considered to be sufficient to manage IASCC in the top guide for years 12-20 of the PEO.	(1) Fifteen (15) percent of the top guide cross hatch area locations will be inspected using enhanced visual inspection technique, EVT-1, within the first 18 years of the period of extended operation, with at least one-third of the inspections to be completed within the first 6 years and at least two-thirds within the first 12 years of the period of extended operation. Locations selected for examination will be areas that have exceeded the neutron fluence threshold. JAF LR Commitment List will be provided. (2) Inspections of a total of 15 percent of the top guide cross hatch area locations within the first 18 years of the period of extended operation provides assurance that the program will be sufficient to manage IASCC in the top guide for years 12-20 of the PEO.

Item	Request	Response
252	AMP B.1.7-6a BWR Vessel Internals Program Exception 1 states that "JAFNPP provides an alternate inspection for the core plate rim hold-down bolts that is technically justified according to BWRVIP-94." BWRVIP-94 provides the BWRVIP's implementation guidelines and does not provide a BWRVIP-recommended inspection and flaw evaluation strategy for a particular BWR vessel internal components. Please discuss the following: a). Provide a technical and regulatory basis to justify why Entergy is deviating from implementing the flaw evaluation and inspection guidelines of Topical Report No. BWRVIP-25 and clarify why it is acceptable to use BWRVIP-94 as the basis for taking this exception, particularly when Topical Report BWRVIP-94 is the only implementation guideline document; b). Clarify and discuss what types of alternative inspection method, inspect frequency, and inspection sample size will be used to inspect the core plate rim hold down bolts in lieu of the recommended BWRVIP-25 examinations; c). Clarify, using a technical discussion and justification, how the examination method, inspection frequency, and inspection sample size for the alternative program will be capable of managing cracking in the core support plate rim hold-down bolts for the PEO.	JAFNPP developed technical justifications for deviation from the guidelines of BWRVIP-25 in accordance with the guidance given in Appendix A to BWRVIP-94. This appendix does not provide technical justification in and of itself, rather it provides administrative guidelines for processing a technical justification. Entergy is deviating from the guidelines of BWRVIP-25 because the method proposed for core plate rim hold down bolts is not feasible. JAFNPP plans to perform the inspections required by ASME Section XI as an alternate method for inspection of the core plate rim hold down bolts. The examination method, inspection frequency, and inspection sample size for the alternative inspection method will be in accordance with the requirements of ASME Section XI, Table IWB-2500-1, Examination Category B-N-2. LRA Section A.2.1.7 and Section B.1.7 will be revised to include the following enhancement. JAFNPP will perform inspections of the core plate rim hold down bolts in accordance with ASME Section XI Table IWB-2500-1, Examination Category B-N-2 or in accordance with a future NRC-approved revision of BWRVIP-25 that provides a feasible method of inspection. This requires a LRA amendment. License Renewal Commitment Number 22 specifies implementation of enhancements to the BWR Reactor Vessel Internals Program described in LRA Section A.2.1.7 and Section B.1.7.
255	AMP B.1.7-7 BWR Vessel Internals Program Exception 2 states that "A focused inspection of the bottom surface of the shroud support H9 weld" will be performed. The footnote for this inspection states that the examination will be done in accordance with BWRVIP guidelines. Confirm whether or not Entergy is referring to the inspection criteria for shroud support structures in Topical Report BWRVIP-38.	Yes, JAFNPP will inspect the H9 weld as recommended in BWRVIP-38 (flow chart on page 3-17).

Item	Request	Response
256	AMP B.1.7-8 BWR Vessel Internals Program Exception 3 states, in part, that the inspection of the top guide hold down assemblies at the 0□ and 180 azimuthal locations were deferred from refueling outage 16 (RO16) to refueling outage 17 (RO17) with technical justification. State what the BWRVIP-26 criteria are for inspecting these components and provide the details of the technical basis that was used to defer the examinations of the components to RO17 and a justification why this basis formed an acceptable reason to defer the examinations to RO17.	Deferral of the top guide hold down assemblies at the 0° and 180° from R16 to R17. At JAF, hold-down assemblies are inspected with a conservative decision making philosophy. In that, JAF has been inspecting the hold down assemblies despite BWRVIP-26-A, Figure A-1 showing that the FitzPatrick plant faulted vertical loads at hold down assemblies are on the demarcation line between "lift off" and "will not lift". Therefore, the hold down assemblies will not lift-off during a postulated seismic event.
257	AMP B.1.7-9 BWR Vessel Internals Program Exception 4 - The technical justification in this exception for justifying deferral of the augmented inspections for the jet pump assembly components covered in Footnote 2 does not credit any inspection-based aging management criteria for these components. Thus, the staff is unable at this point to accept this exception unless a commitment is made on the application to use the inspection-based criteria or acceptance by analysis-based criteria developed by the BWRVIP and approved by the NRC staff for these jet pump assembly components, or as implemented in accordance with a JAFNPP-specific inspection deferral justification for a given BWRVIP inspection criterion as approved by the staff at least two years prior to entering the EPO if a plant-specific deferral is being used to defer or delay implementation of a specific BWRVIP-inspection criterion.	Details of this justification (Deviation Disposition) are found in ER# JAF-05-34054, dated 3/17/06 , which will be available for review on site. JAFNPP inspected all twenty jet pump beams by UT in R17 (October 2006) with no recordable indications. JAFNPP replaced all twenty jet pump beams in 1992 with new material using lower preload to improve IGSCC resistance. The replacement beams are new (2nd) generation beams. The expected service life of these beams is >40 years with a 97.5% confidence interval that IGSCC initiation will not occur until after 40 years of service. Operating experience at Pilgrim Nuclear Station confirmed no cracking in the new generation beams after 15 years of service. JAFNPP visually examined (VT-1) these beams in 1994 (R11) at jet pumps 1 through 6 and 16 through 20. In 2002 (R15) JAF inspected jet pumps #5, #6, #19 and #20. Due to other priorities in the vessel, JAFNPP deferred the UT inspection of the first 50% of the jet pump beams from R16 to R17 (Fall 2006). The inspection of the remaining 50% of the beams was planned for RO18 (Fall 2008); however, all twenty beams were inspected in R17. The high resistance to IGSCC and the excellent operating history to date justified delaying inspection of the first 50% of the beams. In R17, JAF also performed UT on high priority welds using ID tooling for 360 degrees on jet pump diffuser and adapter/ lower ring assembly of all 20 jet pumps. Indications were recorded at welds DF-2 (JP #1 & 3) and AD-3b/DF-3 (JP #12 & 17). All indications were determined acceptable using guidelines of BWRVIP-41, Rev. 1 (CR-JAF-2006-04531).

Item	Request	Response
258	AMP B.1.13.2 -1 Fire Water The GALL XI.M27states that the aging management program applies to water based fire protection systems that consist of sprinklers, nozzles, fittings, valves, hydrants, hose stations, standpipes, water storage tanks, and above ground and underground piping.... The LRA does not mention the water storage tanks. Does JAFNPP have water storage tanks associated with its Fire Water System? If so, what is the justification for not including in AMP B.1.13.2 and how are the aging effects managed?	JAF does not utilize a water storage tank for fire protection water. The fire water source is Lake Ontario. Further details regarding the fire water system are provided in JAF-RPT-05-AMM14, Aging Management Review of Fire Protection – Water System, which was available for review on site.
259	AMP B.1.13.2 -2 Fire Water The exception for AMP B.1.13.2, "Parameters Monitored/Inspected" program element states that the periodic flow testing of the water system is performed in accordance with Section 11, Chapter 5 of the Fire Protection handbook. NUREG -1801, Revision 1, states that the periodic flow testing of the water system should be performed using the guidelines of NFPA 25. Describe the differences between these documents. Provide the technical basis why flow testing of the water system performed in accordance with Section 11, Chapter 5 of the Fire Protection handbook is acceptable.	The method of performing the flow testing is in accordance with Chapter 5, Section 11 of the Fire Protection Handbook, 14th Edition. This is the same as the flow test required by NFPA 25.
260	AMP B.1.13.2 -3 Fire Water The exception for AMP B.1.13.2, "Detection of Aging Effects" program element states that visual inspection, re-racking and replacement of gaskets in couplings occurs at least once per operating cycle. NUREG -1801, Revision 1, specifies an annual inspection frequency. Provide a technical basis why the proposed frequency is acceptable.	As indicated in LRA Section B.1.13.2, fire hoses are not subject to aging management review since they are periodically inspected, hydrotested, and replaced." This matches the SRP exclusion criterion of "typically replaced based on performance or condition monitoring." Gaskets are replaced along with the hoses and hence are also considered consumables that are not subject to aging management review.

Item	Request	Response
261	AMP B.1.13.2 -4 Fire Water The program description in GALL XI.M27 states " ...these systems are normally maintained at required operating pressure and monitored such that loss of system pressure is immediately detected....where as the LRA states "...many of these systems are normally maintained at required operating pressure and monitored....The use of the phrase 'many of these' infers that there are some fire water systems that are NOT normally maintained at required operating pressure. If the foregoing statement is true, what are the fire water systems that are NOT normally maintained at required operating pressures and why?	Deluge, dry pipe and preaction sprinkler systems are not maintained at normal system operating pressure. The systems are normally dry and will only fill with water when a fire is detected. The fire hose standpipe located in the MG set fan room is normally maintained dry due to the potential for freezing. If needed, the standpipe is filled and pressurized by use of a local valve.
262	AMP B.1.13.2 -5 Fire Water The fire hoses were excluded from aging management as an exception to NUREG 1801, Rev 1, as a category (c) consumable per the guidelines of NUREG 1800. Why wasn't it excluded as a category (d) consumable instead?	LRA Section B.1.13.2 states "the hoses are not subject to aging management since they are periodically inspected, hydrotested, and replaced." This matches the category (d) criterion of "typically replaced based on performance or condition monitoring."
263	AMP B.1.13.2 -6 Fire Water The enhancement for wall thickness evaluation of fire protection piping is identified in the Appendix A write-up in the present tense, meaning the inspections are being performed. However the enhancement is addressed in Appendix B (Detection of aging effects) in the future tense, meaning the inspections will be performed in the future (before the end of the current operating term). The Appendix A should be revised to address this future commitment.	Appendix A was written from the perspective of entry into the period of extended operation. At that time, all aging management programs will be in place. From that perspective, it is appropriate for the UFSAR supplement to be written in present tense. A list of commitments is provided during the license renewal review that clearly shows the commitments for program enhancements.

Item	Request	Response
264	AMP B.1.13.2 -7 Fire Water The enhancement for revising procedures to include inspections of hose reels for corrosion is not addressed in Appendix A. Appendix A should be revised to address this future commitment.	Section A.2.1 of the LRA states, "All aging management programs will be implemented prior to entering the period of extended operation." This includes enhancements to the Fire Water System Program. For additional clarification, LRA Appendix A will be revised as follows. Section A.2.1.14, Fire Water System Program, add "This program will be enhanced to include inspection of hose reels for corrosion. The acceptance criteria will be enhanced to verify no unacceptable signs of degradation. For sprinkler systems, this program will be enhanced to include visual inspection of spray and sprinkler system internals for evidence of corrosion. Acceptance criteria will be enhanced for these inspections to verify no unacceptable signs of degradaton. A sample of sprinkler heads will be inspected using guidance of NFPA 25 (2002 Edition) Section 5.3.1.1.1. This program will be enhanced to include wall thickness evaluations of fire protection piping using non-intrusive techniques (e.g., volumetric testing) to identify evidence of loss of material due to corrosion. These enhancements will be implemented prior to the period of extended operation." This requires a LRA amendment.
265	AMP B.1.13.2 -8 Fire Water FSAR Section 9.8.3.1.5 and LRA Section 2.3.3.5 states that a manually initiated water foam system is provided as backup to the HPCI pump room water spray system. Currently there is no discussion of aging management review performed for the foam system in the LRA. Please discuss the aging management review for the foam system. The staff requests the applicant to provide a technical justification of why an AMP is not required or provide an AMP that contains the required ten elements.	Aging management review of foam systems is provided in Table 3.3.2-5 (environment - fire protection foam) with discussion in Section 2.3.3.5. The aging effects from fire protection foam are less than the aging effects of raw water and are managed by the Fire Water System Program.

Item	Request	Response
266	AMP B.1.20 -1 Oil Analysis Program The basis provided for exceptions to "Parameters Monitored or Inspected" program element is not valid since the Flash Point of an industrial lubricant is an important test to determine if light-end hydrocarbons are getting into the oil through seal leaks or other means. It is an effective way to monitor seal performance in light end hydrocarbon compressors. Low Flash Points pose a safety hazard in the event of component failure that can generate heat above the flash point of the oil, such as bearing failure. Justify the reason for not monitoring the flash point of lubricating oil and why this exception is acceptable to manage the effects of aging for which it is credited.	The flash point test is performed at JAF for the emergency diesel engine oils in addition to filter residue or particle count, viscosity, total acid/base (neutralization number), water content, and metals content. The flash point test is one method for the detection of oil that has been contaminated with light-end hydrocarbons such as fuel oil. While it is important from an industrial safety perspective to monitor flash point, it has little significance with respect to the effects of aging. As such it is only utilized in scope components such as diesel engines which have the potential for hydrocarbon accumulation such as fuel oil. Flash point is determined for the lubricating oil of the West Diesel Fire Pump once per year. In addition, a 6 month oil sample is taken and tested to check for contaminants. The West Diesel Fire Pump has a scheduled 6 year oil change frequency, but will be changed more often if the 6 month sample deems necessary. The Security Diesel Generator oil is changed annually and therefore, does not require a flash point test. Therefore, the exception listed in the LRA B.1.20 is not required and will be removed. This requires an LRA amendment.
268	AMP B.1.13.1 -1 Fire Protection LRA Section 2.3.3.6 describes the carbon dioxide (CO2) fire suppression system as being in scope of the license renewal and subject to an AMR. The AMP for CO2 fire suppression system does not appear in LRA Section B.1.13.1, "Fire Protection Program." The NUREG-1801, GALL Report Section XI.M26, " Fire Protection," describes the requirements for aging management of the CO2 fire suppression system. It requires that an AMP be established to evaluate the periodic visual inspection and function test is performed at least once every six months to examine the signs of degradation of CO2 fire suppression system. Material conditions that may affect the performance of the system, such as corrosion, mechanical damage, or damage to dampers, are observed during these tests. The staff requests that the applicant describe AMP and operating experience for the CO2 fire suppression system in LRA Section B.1.13.1	As noted in Table 3.3.2-6 of the application, the aging effects of the fire protection - CO2 system components are managed by the Bolting Integrity Program (Section B.1.30) and by the Fire Protection Program (B.1.13.1). The Fire Protection Program is consistent with NUREG-1801 Section XI.M26 which as noted in the question includes activities to manage the effects of aging on the intended functions of the fire protection - CO2 system. A review of station operating experience identified no aging-related degradation adversely affecting the operation of the CO2 system. CO2 fire suppression valve position check and operational tests are performed quarterly (once per 92 days). In addition, CO2 storage tank level and pressure are checked monthly in accordance with surveillance test ST-76A. Full CO2 system functional tests are performed once per 24 months in accordance with the station's current licensing basis. An inspection of external surfaces of the CO2 fire suppression system is performed at least once every six months to check for signs of degradation. A reference to the plant CO2 fire suppression systems will be added in the program description of LRA Section B.1.13.1 (Fire Protection Program). In addition, an exception to the six-month periodicity listed in NUREG-1801 for the full CO2 system functional test will be added to LRA Section B.1.13.1 to perform this functional test on a 24-month basis as listed in the current licensing basis for JAF. This frequency is considered sufficient to ensure system availability and operability based on station operating history and to ensure that aging related effects will be properly managed through the period of extended operation. The NRC Staff, as documented in the SER for Oyster Creek, has accepted the position that, in the absence of aging-related events adversely affecting system operation and provided that visual inspections of component external surfaces are performed every six months, the periodicity specified in the current licensing basis for functional testing of the CO2 system is sufficient to ensure system availability and operability. These items each require an LRA amendment.

Item	Request	Response
269	AMP B.1.13.1 -2 Fire Protection UFSAR 9.8.3.11 states that Halon System is used for fire protection in the Emergency and Plant Information Computer (EPIC) Room where it is not desirable to use a water spray or a sprinkler system. Is this system credited for a safe shutdown in any fire scenarios to demonstrate compliance with 10 CFR 50.48? If so, provide a technical justification of why an AMP is not required or provide an AMP that contains the required ten elements.	The Emergency and Plant Information Computer (EPIC) system is not credited for a safe shutdown in any fire scenarios to demonstrate compliance with 10 CFR 50.48. Therefore, the Halon System has no intended function for license renewal.
271	AMP B.1.13.1 -4 Fire Protection The enhancements are not addressed in the Appendix A program description. Please provide justification or reasons for not placing the enhancements in section A.2.1.13 of the LRA?	Section A.2.1 of the LRA states, "All aging management programs will be implemented prior to entering the period of extended operation." This includes enhancements to the Fire Protection Program. For additional clarification, LRA Appendix A will be revised as follows. Section A.2.1.13, Fire Protection Program, add "This program will be enhanced to inspect fire barrier walls, ceilings, and floors at least once every refueling outage. Inspection results will be acceptable if there are no visual indications of degradation such as cracks, holes, spalling, or gouges. This program will be enhanced to inspect at least one randomly selected seal of each type every 24 months. These enhancements will be implemented prior to the period of extended operation." This requires a LRA amendment.
272	AMP B.1.13.1 -5 Fire Protection The "Operating Experience" section states that inspections and tests from 2000-2004 identified signs of degradation of fire barriers. Please describe the corrective actions taken to ensure that components will continue to perform its intended safety function.	The issues identified in the OE report deal specifically with fire door gaps that were beyond their required values and minor cracking found in masonry walls. These issues do not adversely impact the ability of the barriers to satisfy their fire protection function. In all cases the barriers or doors were repaired. Periodic inspections are performed to ensure any issues are identified and corrected in a timely manner.

Item	Request	Response
442	B.1.17-3 Fitzpatrick FSAR Section 8.2.1 states that an alternate source of AC power, from the 345kV system, is available to provide power to plant auxiliaries during plant shutdown. The power is supplied to plant 4.16kV emergency buses by back feeding from the 345kV system via main transformer, isolated phase bus duct, and the normal station transformer. Back feeding is identified as a qualified alternate source of AC power to 4.16kV safety buses and therefore, should be included in the scope of license renewal. Provide a technical justification why the alternate AC source to 4.16kV safety buses from the 345kV system does not need an AMP/	The three sources of normal AC power for JAF are the normal, reserve, and emergency sources. The normal source is the Normal Service Station Transformer (NSST) 71T-4. The reserve source is the Reserve Service Station Transformers (RSST) 71T-2 and 71T-3. The emergency source is the Emergency Diesel Generators. In Section 8.3 of the JAF UFSAR, the 115KV system has the safety objective to provide a supply of offsite power for the engineered safeguard loads. The 115KV system has the power generation objective to provide two sources of offsite AC power to the Plant Service AC Power Distribution System for plant startup, operating and shutdown power including adequate power to the emergency service buses for the safe shutdown of the reactor. The 115KV bus at JAF is energized from two 115KV transmission lines as shown in SAR Figure 8.3-2. This provides the GDC-17 criteria for the Reserve Service Station Transformers. Section 8.11 of the JAF UFSAR, addresses Station Blackout (SBO). Station Blackout (SBO) is defined in 10 CFR 50.2 as a complete loss of alternating current (AC) electric power to essential and non-essential switchgear buses. Offsite power is assumed to be lost concurrently with a main turbine trip and unavailability of the on-site emergency AC power system. Station Blackout does not include loss of AC power to buses fed by the station batteries through inverters and does not assume a concurrent single failure or design basis accident. Section 8.2.1 of the JAF UFSAR, states that "An alternate source of AC power, from the 345KV system, is available to provide power to plant auxiliaries during plant shutdown. The power is supplied to plant 4.16KV buses by back feeding from the 345KV system via main transformers, isolated phase bus duct, and the normal station service transformer. The main generator is isolated by removing the isolated phase bus duct disconnect links". This alternate source is only used during outages for maintenance on the Reserve Service Station Transformer. This source of offsite AC power is not credited for recovery from Station Blackout. The two sources of offsite AC power is the two independent 115KV lines that feed the RSST transformers. There is a cross feed circuit that can be closed to provide power to both of the 4.16KV safety buses in the plant in the case of loss of one 115KV line. This cross-tie can be closed in less than ten minutes when needed. This source will be much faster than installing the feedback source which takes at least 12 hours. No other source is needed or required.
443	B.1.25 - 1 Selective Leaching When is the one time inspection and hardness measurement mentionend in the "scope" of the program performed? Was this done before?	This is a new program that will be implemented prior to entering the period of extended operation as described in commitment 16. No inspections or hardness testing to identify the presence of selective leaching for components included in the scope of license renewal have been performed at the current time. Hardness testing of the components will be performed on the surface exposed to the environment with potential for causing selective leaching.
444	B.1.25 - 2 Selective Leaching What preventive actions does the applicant plan to take in reducing selective leaching to address GALL element?	In accordance with NUREG-1801 XI.M33 and AMP B.1.25 section B.2 there are no preventive actions associated with this program. This program is only an inspection and verification program. If selective leaching is detected during the inspections the corrective action program at JAF will initiate corrective actions. However, monitoring of water chemistry to control pH and concentration of corrosive contaminants and minimizing dissolved oxygen in water as part of the JAF Water Chemistry programs described in Appendix B Section B.1.29 of the JAF license renewal application are effective in reducing selective leaching.
445	B.1.25 - 3 Selective Leaching What acceptance criteria does the applicant plan to use for hardness testing?	This is a new program for which the acceptance criteria has not been developed. The implementation of this program including acceptance criteria is license renewal commitment 16 that will be implemented prior to the period of extended operation.

Item	Request	Response
446	B.1.25 - 4 Selective Leaching Provide industry operating experience considered for selective leaching program and plant specific operating experience for components in the program	Since this is a new program there is no plant specific operating experience for the program. A review of condition reports at JAF did not locate any examples of selective leaching occurring at the site. Within the industry Information Notice 84-71 documented the occurrence of graphitization of cast iron occuring in the salt water system at Calvert Cliffs Nuclear Plant. JAF does not have any salt water systems but will consider industry operating experience during the development of the program.
447	AMP B.1.23-1 "Reactor Head Closure Studs." NRC audit team requests clarification to exception listed for this program.	Add to wording of Note 1 for exception listed in B.1.23: This is applicable to the current (third) ISI interval which is based on the ASME Section XI Code 1989 version. The code of record for the fourth interval (2001 Edition / 2003 Addenda) has deleted the requirements for surface exams. This requires a revision to JAF-RPT-05-LRD02 and an amendment to the LRA.
448	Provide verification that the Medium Voltage Cables that go to the RHR and Core Spray Pump Motors are Environmentally Qualified.	A search was performed of the Electrical Cable and Raceway Information System Controlled Database (ECRIS) for cables going to the RHR and Core Spray Pump Motors to identify the Cable Marks for the Medium Voltage Cables (NFF-44, NFF-46, NFY-07 and NFY-08) The applicable environmental qualification files for these cable marks are identified. (QDR 06.10 for NFF-44 and NFF-46 and QDR 06.19 for NFY-07 and NFY-08). QDRs 06.10 and 06.19 identify the corresponding commodity IDs for the cables. (Cable Marks NFF-44 and NFF-46 are identified as CABLE-12 on the Environmental Qualification Component List (EQCL. Cable Marks NFY-07 and NFY-08 are identified as CABLE-25 on the EQCL.) CABLE-12 and CABLE-25 were verified listed on the EQCL.

Item	Request	Response
449	B.1.16.2-16 LRA Section A.2.1.18 provides the following UFSAR Supplement summary description for the ISI Program: The ISI Program is based on ASME Inspectin Program B (Section xi, IWA-2432), which has 10-year inspection intervals. Every 10 years the program is updated to the latest ASME Section XI code edition and addendum approved in 10CFR50.55a. On September 28, 1997, JAFNPP entered the third ISI interval. The code edition and addenda used for the third interval is the 1989 Edition with no Addenda. The program consists of periodic volumetic, surface, and visual examination of components and their supports for assessment, signs of degradation, flaw evaluation, and corrective actions. The JAFNPP is scheduled to enter the 4th 10-year ISI Interval in January 2007. The version of the ASME Code, Section XI frequired for the 4th 10-year ISI interval is the 2001 Edition of the ASME Code, Section XI, inclusive of the 2003 Addenda. The staff requests that the LRA Section A.2.1.18 be amended to delete the relevant information for the 3rd Ten-Year ISI interval for JAFNPP and to incorporate the relevant information for the 4th Ten-Year ISI Interval for JAFNPP.	LRA Section A.2.1.18 will be revised in a later update to delete the relevant information for the 3rd Ten-Year ISI interval for JAFNPP and to incorporate the relevant information for the 4th Ten-Year ISI Interval for JAFNPP. This requires a LRA amendment.
450	AMP B.1.14 -2 Flow-Accelerated Corrosion Has any inspection ever been performed on systems that have been excluded based on low operating time of <2% of plant operating time to make sure that there is no wear on these lines.	Yes. The FAC program is guided by industry and plant experiences. Portions not explicitly recommended but recognized, via industry and plant experiences, as having potential for FAC or Erosion have been included in the augmented portion of the JAF FAC Inspection program. In addition, regardless of system run time, if a component is analyzed using our predictive code (CHECWORKS SFA 2.1) and is found to have a low time to T-critical, it is included into our outage scope.

Item	Request	Response
451	AMP B.1.14 -3 Flow-Accelerated Corrosion Specify the number of inspection locations for piping.	There are 1729 modeled components in the JAF predictive code. To date, 456 individual components have been inspected. The selections are based on the shortest time to T-critical for those components with no inspection history and re-inspections for those components driven by a calculated remaining service life. The R-17 JAF outage scope included 85 large bore components for inspection. Of these 85, over 40% were first time inspections. This number of first time inspections was greatly influenced by Industry OE associated with the Mihama accident.
452	AMP B.1.14 -4 Flow-Accelerated Corrosion Provide the following: a. Percentage increase of inspection when unexpected thinning is detected. b. Basis for replacement of piping when wall thinning is at 30% of nominal wall thickness is detected (Class 1); and 20% of nominal wall thickness is detected (Class 2 and Class 3) c. Basis for replacement of piping when the wall thickness is at the threshold of the minimum thickness required by the code.	1. There is no specific percentage that is used for scope expansion when unexpected wear is detected. The locations are assessed individually. Scope expansion unexpected thinning is detected.provided by ENN-DC-315 R.1 Section 5.12 "Sample Expansion" 2. The Basis for replacement of piping when wall thinning is at 30% of nominal wall for Class 1 and 20% of nominal wall for Class 2 and Class 3 is given in Engineering Specification ENN-CS-S-008 'Pipe Wall Thinning Structural Evaluation.' The Methodology employed in writing ENN-CS-S-008 Has been conditionally accepted in Reg. Guide 1.147, Rev. 14. Entergy will adhere to all 5 conditions specified in the Reg. Guide. 3. Replacement is performed if the remaining service life does not support continued service based on Code minimums through the next operating cycle.

Item	Request	Response
454	AMP B.1.14 -6 Flow-Accelerated Corrosion Identify all JAF operating experience with regard to FAC requiring replacement Confirm that the FAC program is subject to appropriate quality assurance review or their equivalents Summarize the latest quality review determination.	1. There are a few recent examples of JAF operating experience (i.e. unusual system line-up, valve leaking by, etc) with regard to FAC requiring pipe replacement. They are as follows: - The piping downstream of 31LCV-122A "MSR DRAIN TANK 4A BYPASS DRAIN TO MAIN CNDSR LEVEL CNTRL VALVE" due to valve leaking by. - The piping downstream of 31MOV-CA2 "MSR A CROSS AROUND PIPING DRAIN VALVE" * It should be noted that in both instances, large bore and small, the pipe was replaced with non-susceptible materials. (SA335 p22) (2.25% Cr) 2. QA Audit QA-8-2005-JAF-1 dated March 9, 2005 conlcuded the following: Based on the sample reviewed, the auditors concluded that the scope element FAC Program is Satisfactory. 3. The two most recent FAC program assessments are as follows: - LO-JAFLO-2005-00069 / Focused Self Assessment / Sept. 26 thru Sept. 30, 2005 - LO-WPOLO-2003-00050 / Self-Assessment / Feb. 9 thru Feb. 13, 2004 In general, the following conclusions were drawn: - The FAC program is consistent with other FAC programs among the Entergy Nuclear South plants and throughout the industry. Any guidance provided by the NRC has been and is being followed appropriately. - Several strengths were identified in the level of documentation and ownership of data, details and content of the CHECWORKS models, and use of advanced structural methods as a standard practice to qualify thinned piping and components. - No weaknesses or deficiencies were identified that would indicate that the JAF FAC program could impact long-term monitoring of FAC or result in a challenge to nuclear or personnel safety, equipment reliability, or station performance. - There are no gaps between the JAF FAC program attributes and those of the applicable INPO Engineering Program Excellence Guide

Item	Request	Response
455	Generic Question Entergy is scheduled to enter the 4th 10-year ISI Interval for JAFNPP in January 2007. For the 4th 10-year ISI Interval Entergy is required under 10 CFR50.55a to update the ASME Section XI Code of record to the 2001 Edition of ASME Section XI, inclusive of the 2003 addenda. This is the Edition of Section XI endorsed in GALL. Clarify whether the 2001 edition of ASME Seciont XI, inclusive of the 2003 Addenda, will be the new ASME Section XI code of record for those JAFNPP AMPs reerenceing or crediting Section XI requirements. If an older edition of ASME Section XI will still be used for a particular AMP referencing or using ASME Section Section XI criteria, identify what the AMP is and justify its use for aging management as an exception to the Edition of Section XI endorsed in GALL. The version of the ASME Code, Section XI frequired for the 4th 10-year ISI interval is the 2001 Edition of the ASME Code, Section XI, inclusive of the 2003 Addenda. The staff requests that the LRA Section A.2.1.18 be amended to delete the relevant information for the 3rd Ten-Year ISI interval for JAFNPP and to incorporate the relevant information for the 4th Ten-Year ISI Interval for JAFNPP.	The 2001 edition of ASME Section XI, inclusive of the 2003 Addenda, will be the new ASME Section XI code of record for those JAFNPP AMPs referencing or crediting Section XI requirements. LRA Section A.2.1.18 will be amended with an update to delete the relevant information for the 3rd Ten-Year ISI interval for JAFNPP and to incorporate the relevant information for the 4th Ten-Year ISI Interval for JAFNPP. This will be revised during the annual update of the LRA.
456	AMP - General Comment The staff requests that each commitment docketed on the JAFNPP LRA be referenced in the appropriate LRA Appendix A UFSAR Supplement summary description section.	The JAF Commitment List has been revised to add the Appendix A reference to each commitment that involves Appendix A. The JAF Commitment List will be submitted with the first amendment.

Item	Request	Response
457	AMP B.1.13.1 Fire Protection GALL preventive action of the AMP states that normal fire protection programs include measures for mitigating or preventing fire events at the plant. Clarify whether the JAFNPP fire protection includes such measures, and if so, state what they entail. If such measures do not exist, justify why not identified as an exception to the preventive action element of the AMP with a technical basis.	The JAFNPP Fire Protection Program contains measures for the prevention and mitigation of fire events. Preventive programs such as ignition and combustible control are in place. Additionally, fixed and portable systems are present to assure early fire detection and suppression in areas based upon fire hazards present and safety significance. Safe shutdown strategies are present to ensure plant shutdown in the event of a single fire. Reference JAF Fire Hazards Analysis and the JAF Fire Protection Plan for a description of specific systems and/or administrative elements.
458	B.1.6 - 2 BWR Vessel ID Attachment Weld Identify the BWRVIPs used for "acceptance criteria" element of AMP B.1.6	The bases for the "Acceptance Criteria" element of AMP B.1.6 is BWRVIP-48-A, Section 3.3, "Inspection Acceptance Criteria". BWRVIP-14, BWRVIP-59 and BWRVIP-60 are used as applicable to evaluate crack growth
459	B.1.6 -3 BWR Vessel ID Attachment Weld CR-WPO-LO-2005-069 states that JAFNPP BWRVIP Program is not in compliance with the BWRVIP requirements. Clarify if all recommendations have been incorporated.	The following were the results of the BWRVIP Self-Assessment (CR-WPO-LO-2005-069). Area for Improvement #1 (AFI-1): Visual examination coverage was limited on many welds on the Core Spray and Jet Pump welds. In some cases, critical welds (8A/8B) were inspected with only 50% coverage. Actions to evaluate the vendor equipment to increase examination coverage and to provide expectations for coverage in the pre-job brief were implemented under CR-JAF-2005-03781 and 03832. AFI-2: There has been a decreasing trend in M-ratio for the last several cycles that is attributable to increasing flow resistance. This deviation was evaluated satisfactorily under CR-JAF-2005-03951. In addition, a recommendation was made to consider UT inspection for welds SV4a and SV4b and for other shroud welds in RO17 vs the visual examination that had been scheduled for RO17. These were subsequently included in the RO17 inspection scope per ER-JAF-05-33981. With the completion of these actions, the JAFNPP BWRVIP Program is now in full compliance with the BWRVIP requirements.

Item	Request	Response
460	AMP B.1.13.2 - Fire Water System Enhancements for the parameter monitored/ inspected and acceptance criteria uses the phrase "verify no significant corrosion". What is meant by this phrase?	Significant corrosion was intended to mean unacceptable signs of degradation. The first two enhancements listed for AMP B.1.13.2 will be revised to read as follows. Procedures will be enhanced to include inspection of hose reels for corrosion. Acceptance criteria will be enhanced to verify no unacceptable signs of degradation. Procedures for sprinkler systems will be enhanced to include visual inspection of spray and sprinkler system internals for evidence of corrosion. Acceptance criteria will be enhanced to verify no unacceptable signs of degradation. This requires an LRA amendment.
462	B.1.4-1 BWR Penetrations Is there a plant specific fatigue evaluation for the Standby Liquid Control Delta P sensing line as discussed in BWRVIP-27A.	The site has confirmed that there is no plant specific fatigue evaluation.
463	Provide a listing of the Medium Voltage cables installed and how they were screened for GALL XI.E3.	The list of Medium Voltage cables installed for JAF were provided to NRC. A summary of cable screening is listed below. The 4KV cables for RHR Service Water are located within a building and run in conduit that is surrounded by concrete. This conduit run is not underground and not susceptible to moisture. The Core Spray Cables and RHR Cables are EQ and managed by the EQ Program. There are some installed spare 4KV cables that are not connected and not energized. The EDG cables are in conduit in a building and are not in duct bank underground. The EDG cables are not energized >25% of the time. The 4KV Neutral Grounding Resistor Cabling is installed on the RSST transformers and is tied to plant ground. These cables are low voltage and not suseptable to moisture and water treeing. Therefore, JAF does not have any 4KV cables that would require a GALL XI.E3 program. The 4KV cables that are in scope of license renewal are managed by the GALL XI.E1 program.
464	Provide a testing method for the insulating oil in the Oil Filled Cable System.	JAF will revise the Oil Analysis Program to provide sampling and testing of the oil in the oil-filled cable system installed in the plant. This program will be based on the vendor testing requirements.

Item	Request	Response
465	B.1.17-1 Metal-Enclosed Bus Inspection JAF-RPT-05-LRD02 Page 23 of 279 under " Parameters Monitored/Inspected" states that " where applicable, enclosure assembly elastomers will be visually inspected and manually flexed to manage cracking and change in material properties." GALL referred structural monitoring program for inspecting the elastomers. Do you intend to inspect the enclosure assembly elastomer? If you do, remove the phrase "as applicable". If you do not, provide justification why elastomer is not subject to aging.	Enclosure assembly elastomers will be visually inspected. JAF-RPT-05-LRD02 and Appendix B.1.17 will be revised to omit the wording "where applicable". This requires a LRA amendment.
466	B.1.17-2 Metal-Enclosed Bus Inspection GALL XI.E4 under "Operating Experience" states that "industrial experience has shown that failures have occurred on MEBs caused by cracked insulation and moisture or debris buildup internal to the MEB. Experience also has shown that bus connections in the MEBs exposed to appreciable ohmic heating during operation may experience loosening due to repeated cycling of connected loads." JAF-RPT-05-LRD02 under the same attribute states that MEB Inspection Program at JAFNPP is a new program for which there is no operating experience. Address industrial and plant specific operating experience in the basis document	Appendix B.1.17 gives the correct "Operating Experience" discussion. JAF-RPT-05-LRD02 will be revised to agree with the "Operating Experience" discussion in Appendix B.

Item	Request	Response
467	B.1.18-1 Non-EQ Instrumentation Circuits Test Review. GALL XI.E2 under "Detection of Aging Effects" states that "in cases where a calibration or surveillance program does not include the cabling system in the testing circuit, or as an alternative to the review of calibration results, that the test frequency of these cables shall be determined by the applicant based on engineering evaluation, but the test frequency shall be at least once every ten years." The basis document page 30 of 279 under the same attribute states that the first test shall be completed before the period of extended operation and subsequent tests will occur at least every 10 years. Explain how engineering evaluation will be considered in evaluating the test frequency to be consistent with the GALL?	JAF-RPT-05-LRD02 will be revised to be consistent with Appendix B.1.18 as follows. "In accordance with the corrective action program, an engineering evaluation will be performed when test acceptance criteria are not met and corrective actions, including modified inspection frequency, will be implemented to ensure that the intended functions of the cables can be maintained consistent with the current licensing basis for the period of extended operation".
468	B.1.18-2 Non-EQ Instrumentation Circuits Test Review GALL XI.E2 under "Operating Experience" states that "the vast majority of site specific and industry wide operating experience regarding neutron flux instrumentation circuits is related to cable/connector issues inside of containment near the reactor vessel." JAF-RPT-05-LRD02 Page 32 of 279 under the same attribute states that the Non-EQ Instrumentation Circuits Review Program at JAFNPP is a new program for which there is no operating experience. Address industrial and plant specific operating experience in the basis document.	Appendix B.1.18 provides the correct "Operating Experience" discussion for this program. JAF-RPT-05-LRD02 will be revised to agree with Appendix B.1.18.

Item	Request	Response
469	B.1.19-1 Non-EQ Insulated Cables and Connections GALL XI.E1 under "Operating Experience" states that "operating experience has shown that adverse localized environment caused by heat or radiation for electrical cables and connections may exist next to or above (within three feet of) steam generators, pressurized or hot process pipes, such as feedwater lines." JAF-RPT-LRS02 Page 38 of 279 states that the Non-EQ Insulated Cables and Connections Program at JAFNPP is a new program for which there is not operating experience. Address industrial and plant specific operating experience in the basis document.	Appendix B.1.19 provides the correct "Operating Experience" discussion for this program. JAF-RPT-05-LRD02 will be revised to agree with Apendix B.1.19.
470	B.1.18-3 Non-EQ Instrumentation Circuits Test Review Program Clarify whether the tests include both cables and connections.	The testing for instrumentation circuits will include both cables and connections.
471	AMP - General Comment Appendix B - All programs in Appendix B state that the program "is comparable to" a GALL program. This is not acceptable. Appendix B needs to state that the program is new or existing and that it meets one of the following criteria: (1) Consistent with GALL (2) Consistent with GALL with enhancements, or (3) Consistent with GALL with exceptions The plant specific programs will not need this criteria.	JAF will revise Appendix B to clarify the "is comparable to " statements and to state if the program is new or existing. This requires a LRA amendment.