Item	Request	Response	Status
224	3.3.1-14-K-01 In many cases, beginning on page 3.3-61 for auxiliary systems, component types exposed to oil are managed using the oil analysis program. Please confirm that the VYNPS Oil Analysis AMP is consistent with GALL XI.M32, "One-Time Inspection," as well as with XI.M39, "Lubricating Oil Analysis."	LRA Amendment As stated in LRA Section 3.2.2.7, steel piping and components in auxiliary systems at VYNPS that are exposed to lubricating oil are managed by the Oil Analysis Program, which includes periodic sampling and analysis of lubricating oil to maintain contaminants within acceptable limits, thereby preserving an environment that is not conducive to corrosion. As stated in LRA Section B.1.20, the Oil Analysis Program is consistent with the program described in NUREG-1801, Section XI.M39, Lubricating Oil Analysis, with a minor exception. The Oil Analysis Program is not consistent with GALL XI.M32, "One-Time Inspection," nor are one-time inspections necessary to verify the effectiveness of the program. Metals are not corroded by the hydrocarbon components of lubricants. Lubricating oils are not good electrolytes and the oil film on the wetted surfaces of components tend to minimize the potential for corrosion. Corrosion in lube oil systems only occurs as the result of the presence of impurities or moisture. Therefore, an effective oil analysis program, which maintains impurities and moisture below specified limits, precludes the need for one-time inspections. Operating experience at VYNPS has confirmed the effectiveness of the Oil Analysis Program in maintaining moisture and impurities within limits such that corrosion has not and will not affect the intended functions of these components. In numerous past precedents (including NUREG-1828, Arkansas Nuclear One Unit 2 SER, Section 3.0.3.3.6, and NUREG-1831, Donald C. Cook SER, Section 3.0.3.3.8), the staff concluded that an effective oil analysis program, which maintains impurities and moisture below specified limits, is sufficient to demonstrate that the effects of aging will be adequately managed so that the intended functions will be maintained consistent with the current licensing basis for the period of extended operation. The One-Time Inspection program will be revised to include activities to confirm the effectiveness of the Oil Analysis and Diesel Fuel Monitoring programs.	Accepted

Item	Request	Response	Status
225	3.3.1-20-K-01 Beginning on page 3.3-166, many component types are managed using the diesel fuel monitoring program. Please confirm that the VYNPS Diesel Fuel Monitoring AMP is consistent with GALL XI.M32, "One-Time Inspection," as well as with XI.M30, "Fuel Oil Chemistry."	LRA Amendment As stated in LRA Section 3.2.2.9, loss of material due to general, pitting, crevice, and MIC for carbon steel piping and components exposed to fuel oil is managed by the Diesel Fuel Monitoring Program. This program includes sampling and monitoring of fuel oil quality to ensure levels of water, particulates, and sediment remain within the specified limits. Maintaining parameters within limits ensures that significant loss of material will not occur. Ultrasonic inspection of storage tank bottoms where water and contaminants accumulate will be performed to confirm the effectiveness of the Diesel Fuel Monitoring Program. As stated in LRA Section B.1.9, the Diesel Fuel Monitoring Program is consistent with the program described in NUREG-1801, Section XI.M3, Fuel Oil Chemistry Program, with minor exceptions. The Diesel Fuel Monitoring Program is not consistent with GALL XI.M32, "One-Time Inspection," nor are one-time inspections necessary to verify the effectiveness of the program. The Diesel Fuel Monitoring Program includes periodic cleaning, visual inspection, and ultrasonic inspection of storage tank bottoms where water and contaminants accumulate to confirm the effectiveness of the oil quality monitoring activities to preserve an environment that is not conducive to corrosion The One-Time Inspection program will be revised to include activities to confirm the effectiveness of the Oil Analysis and Diesel Fuel Monitoring programs. This requires and amendment to the LRA.	Accepted

Item	Request	Response	Status
226	3.3.1-21-K-01 On page 3.3-106, the component type 'heat exchanger (bonnet)'; on page 3.3-141, the component type 'heat exchanger (shell)'; and on page 3.3-78, the component type 'heat exchanger (shell)' are managed using the oil analysis program. Please confirm that the VYNPS Oil Analysis AMP is consistent with GALL XI.M32, "One-Time Inspection," as well as with XI.M39, "Lubricating Oil Analysis."	LRA Amendment As stated in LRA Section 3.2.2.7, steel piping and components in auxiliary systems at VYNPS that are exposed to lubricating oil are managed by the Oil Analysis Program, which includes periodic sampling and analysis of lubricating oil to maintain contaminants within acceptable limits, thereby preserving an environment that is not conducive to corrosion. As stated in LRA Section B.1.20, the Oil Analysis Program is consistent with the program described in NUREG-1801, Section XI.M39, Lubricating Oil Analysis, with a minor exception. The Oil Analysis Program is not consistent with GALL XI.M32, "One-Time Inspection," nor are one-time inspections necessary to verify the effectiveness of the program. Metals are not corroded by the hydrocarbon components of lubricants. Lubricating oils are not good electrolytes and the oil film on the wetted surfaces of components tends to minimize the potential for corrosion. Corrosion in lube oil systems only occurs as the result of the presence of impurities or moisture. Therefore, an effective oil analysis program, which maintains impurities and moisture below specified limits, precludes the need for one-time inspections. Operating experience at VYNPS has confirmed the effectiveness of the Oil Analysis Program in maintaining moisture and impurities within limits such that corrosion has not and will not affect the intended functions of these components. In numerous past precedents (including NUREG-1828, Arkansas Nuclear One Unit 2 SER, Section 3.0.3.3.6, and NUREG-1831, Donald C. Cook SER, Section 3.0.3.3.8), the staff concluded that an effective oil analysis program, which maintains impurities and moisture below specified limits, is sufficient to demonstrate that the effects of aging will be adequately managed so that the intended functions will be maintained consistent with the current licensing basis for the period of extended operation. The One-Time Inspection program will be revised to include activities to confirm the effectiveness of the Oil Analysis and Diesel Fuel Monitoring programs.	Accepted

Item	Request	Response	Status
227	3.3.1-23-K-01 Beginning on page 3.3-221, component types exposed to treated water are managed using water chemistry control - BWR. Please confirm that the VYNPS Water Chemistry - BWR AMP is consistent with GALL XI.M32, "One-Time Inspection," as well as with XI.M2, "Water Chemistry."	LRA Amendment As stated in LRA Section B.1.30.2, the Water Chemistry Control – BWR Program is consistent with the program described in NUREG-1801, Section XI.M2, "Water Chemistry." The One-Time Inspection Program, described in LRA Section B.1.21 includes inspections to verify the effectiveness of the water chemistry control aging management programs (Water Chemistry Control – Auxiliary Systems, Water Chemistry Control – BWR, and Water Chemistry Control – Closed Cooling Water) by confirming that unacceptable cracking, loss of material, and fouling is not occurring. As stated in LRA Section B.1.21, the One-Time Inspection Program is a new program which will be consistent with the program described in NUREG-1801, Section XI.M32, "One-Time Inspection." LRA Tables 3.1.1, 3.2.1, 3.3.1, and 3.4.1 indicate that the One-Time Inspection Program is credited along with the water chemistry control programs for line items for which GALL recommends a one-time inspection to confirm water chemistry control. For simplicity, the subsequent tables (Table 2's) do not list the One-Time Inspection Program each time a water chemistry control program is listed. However, since the One-Time Inspection Program is applicable to each water chemistry control program, it is also applicable to each line item that credits a water chemistry control program. To provide further clarification, the effectiveness of the Water Chemistry Control – Auxiliary Systems, BWR, and Closed Cooling Water programs is confirmed by the One-Time Inspection program. This requires an amendment to the license renewal application to change the Appendix A, SAR supplement descriptions for the Water Chemistry Control –Auxiliary Systems, BWR and Closed Cooling Water programs to explicitly state One-Time Inspection Program activities will confirm the effectiveness of these programs.	Accepted

Item	Request	Response	Status
228	3.3.1-25-K-01 On page 3.3-65, the component type 'heat exchanger (tubes)' and on page 3.3-129, the component type 'heat exchanger (tubes)' are managed using service water integrity. GALL recommends a plant-specific program. Please clarify how each of the attributes of SRP-LR Appendix A1 is to be addressed for this item. Edit from 5/11/2006 email - On page 3.3-65, the component type 'heat exchanger (tubes)' and on page 3.3-129, the component type 'heat exchanger (tubes)' are managed using service water integrity. GALL recommends a plant-specific program. Please clarify how service water integrity program manages this item.	Page 3.3-129 has multiple line items for heat exchanger (tubes) managed using Service Water Integrity. The response assumes this question refers to the line item for loss of material for heat exchanger (tubes) exposed to external condensation managed using Service Water Integrity since this line item matches the line item on page 3.3-65 for heat exchanger (tubes) managed using Service Water Integrity. These line items are for reactor building recirculation unit coolers, which are enclosed housing air-handling units with copper cooling coils (tubes). Raw water flows through the copper tubes, while external surfaces of the tubes are exposed to condensation. Consistent with NUREG-1801 line item VII.C1-3, loss of material on the internal surfaces of these copper heat exchanger tubes is managed by the Service Water Integrity Program. The Service Water Integrity Program, in accordance with NRC GL 89-13, includes a condition and performance monitoring program which inspects components for erosion, corrosion, and blockage and verifies the heat transfer capability of safety-related heat exchangers cooled by service water. Therefore, this program is equally as effective at managing loss of material on the external surfaces of the heat exchanger tubes as it is at managing loss of material on the internal surfaces of the tubes. However, the line items in question were compared with NUREG 1801 item VII.F1-16 (which recommends a plant-specific program) because NUREG 1801 Section VII.C1 does not address the external surfaces of copper alloy heat exchanger tubes containing raw water. As stated in LRA Section B.1.26, the Service Water Integrity Program is consistent with the program described in NUREG-1801, Section XI.M20, "Open-Cycle Cooling Water System," with minor exceptions. The 10 attributes of SRP-LR Appendix A1 for the Service Water Integrity Program are described in the Aging Management Program Evaluation Results (AMPER) Report, which is available for on-site review.	Closed

Item	Request	Response	Status
229	3.3.1-26-K-01 Beginning on page 3.3-80, the components exposed to fuel oil are managed using the oil analysis program. Please confirm that the VYNPS Diesel Fuel Monitoring AMP is consistent with GALL XI.M32, "One-Time Inspection," as well as with XI.M30, "Fuel Oil Chemistry." Edit from 5/11/2006 email - Beginning on page 3.3-80, the components exposed to lube oil are managed using the Oil Analysis program. Please confirm that the VYNPS Oil Analysis AMP is consistent with GALL XI.M32, "One-Time Inspection," as well as with XI.M39, "Lube Oil Chemistry."	LRA Amendment As stated in LRA Section 3.2.2.9, loss of material due to general, pitting, crevice, and MIC for carbon steel piping and components exposed to fuel oil is managed by the Diesel Fuel Monitoring Program. This program includes sampling and monitoring of fuel oil quality to ensure levels of water, particulates, and sediment remain within the specified limits. Maintaining parameters within limits ensures that significant loss of material will not occur. Ultrasonic inspection of storage tank bottoms where water and contaminants accumulate will be performed to confirm the effectiveness of the Diesel Fuel Monitoring Program. As stated in LRA Section B.1.9, the Diesel Fuel Monitoring Program is consistent with the program described in NUREG-1801, Section XI.M3, Fuel Oil Chemistry Program, with minor exceptions. The Diesel Fuel Monitoring Program is not consistent with GALL XI.M32, "One-Time Inspection," nor are one-time inspections necessary to verify the effectiveness of the program. The Diesel Fuel Monitoring Program includes periodic cleaning, visual inspection, and ultrasonic inspection of storage tank bottoms where water and contaminants accumulate to confirm the effectiveness of the oil quality monitoring activities to preserve an environment that is not conducive to corrosion. The One-Time Inspection program will be revised to include activities to confirm the effectiveness of the Oil Analysis and Diesel Fuel Monitoring programs.	Accepted

Item	Request	Response	Status
230	3.3.1-27-K-01 On page 3.3-69, the component type 'suction barrel' is managed using service water integrity. GALL recommends a plant-specific program. Please clarify how each of the attributes of SRP-LR Appendix A1 is addressed for this item.	Page 3.3-69 has multiple line items for suction barrel managed using Service Water Integrity. The response assumes this question refers to the line item for loss of material for suction barrel with an external environment of condensation since this line item references NUREG-1801 item VII.F1-1 which recommends a plant-specific program. These line items are for residual heat removal service water pump suction barrels which are made of AL6XN which is a type of stainless steel that is highly resistant to corrosion. The suction barrels are in contact with raw water internally and condensation externally. As can be seen in the other suction barrel line item, consistent with NUREG-1801 line item VII.C1-15, loss of material on the internal surfaces of the suction barrel is managed by the Service Water Integrity Program. The Service Water Integrity Program, in accordance with NRC GL 89-13, includes a condition monitoring program which inspects components such as pump barrels for erosion, corrosion, and blockage. Since the external environment of condensation is much milder than the internal environment of raw water, this program is equally as effective at managing loss of material on the external surfaces of the suction barrels as it is at managing loss of material on the internal surfaces of the barrels. However, the line item in question was compared with NUREG 1801 item VII.F1-1 (which recommends a plant-specific program) because NUREG 1801 Section VII.C1 does not address the external surfaces of stainless steel components containing raw water. As stated in LRA Section B.1.26, the Service Water Integrity Program is consistent with the program described in NUREG-1801, Section XI.M20, "Open-Cycle Cooling Water System," with minor exceptions. The 10 attributes of SRP-LR Appendix A1 for the Service Water Integrity Program are the same as the 10 attributes of the program described in NUREG-1801, Section XI.M20 with the exceptions described in LRA Appendix B, Section B.1.26	Closed

Item	Request	Response	Status
231	3.3.1-28-K-01 On page 3.3-102, the component type 'valve body' is managed using instrument air quality. Please clarify how the effectiveness of the IAQ program is to be verified.	Page 3.3-102 has multiple line items for valve body managed using Instrument Air Quality. The response assumes this question refers to loss of material for both copper alloy and stainless steel valves exposed to treated air on internal surfaces. As stated in LRA Section B.1.16, the Instrument Air Quality Program maintains humidity and particulates within acceptable limits, thereby preserving the environment of treated air that is not conducive to corrosion. Actions to verify the effectiveness of the program are not necessary. Corrosion in treated air systems only occurs as the result of the presence of impurities or moisture. Therefore, an effective instrument air quality program, which maintains impurities and moisture below specified limits, precludes the need for inspections. Operating experience at VYNPS has confirmed the effectiveness of the Instrument Air Quality Program in maintaining moisture and impurities within limits such that corrosion has not and will not affect the intended functions of these components. In a previously approved staff position (NUREG-1831, Donald C. Cook SER, Section 3.0.3.3.7), the staff concluded that an effective instrument air quality program, which maintains impurities and moisture below specified limits, is sufficient to demonstrate that the effects of aging will be adequately managed so that the intended functions will be maintained consistent with the current licensing basis for the period of extended operation. In another precedent (Millstone SER, Section 3.3B.2.3.12 and NUREG-1839, Point Beach SER, Section 3.2.2.3.1), on the basis of its review of current industry research and operating experience, the staff concluded that air on metal will not result in aging that will be of concern during the period of extended operation. The staff considers a dried air environment benign and that its contact with carbon steel, low-alloy steel, stainless steel, and cast stainless steel surfaces will not result in aging effects.	Closed

Item	Request	Response	Status
232	3.3.1-30-K-01 Beginning on page 3.3-61, the component types exposed to treated water are managed using water chemistry control - BWR. Please confirm that the VYNPS Water Chemistry - BWR AMP is consistent with GALL XI.M32, "One-Time Inspection," as well as with XI.M2, "Water Chemistry."	LRA Amendment As stated in LRA Section B.1.30.2, the Water Chemistry Control – BWR Program is consistent with the program described in NUREG-1801, Section XI.M2, "Water Chemistry." The One-Time Inspection Program, described in LRA Section B.1.21 includes inspections to verify the effectiveness of the water chemistry control aging management programs (Water Chemistry Control – Auxiliary Systems, Water Chemistry Control – BWR, and Water Chemistry Control – Closed Cooling Water) by confirming that unacceptable cracking, loss of material, and fouling is not occurring. As stated in LRA Section B.1.21, the One-Time Inspection Program is a new program which will be consistent with the program described in NUREG-1801, Section XI.M32, "One-Time Inspection." LRA Tables 3.1.1, 3.2.1, 3.3.1, and 3.4.1 indicate that the One-Time Inspection Program is credited along with the water chemistry control programs for line items for which GALL recommends a one-time inspection to confirm water chemistry control. For simplicity, the subsequent tables (Table 2's) do not list the One-Time Inspection Program each time a water chemistry control program is listed. However, since the One-Time Inspection Program is applicable to each water chemistry control program, it is also applicable to each line item that credits a water chemistry control program. To provide further clarification, the effectiveness of the Water Chemistry Control – Auxiliary Systems, BWR, and Closed Cooling Water programs is confirmed by the One-Time Inspection program. This requires an amendment to the license renewal application to change the Appendix A, SAR supplement descriptions for the Water Chemistry Control –Auxiliary Systems, BWR and Closed Cooling Water programs to explicitly state One-Time Inspection Program activities will confirm the effectiveness of these programs.	Accepted

Item	Request	Response	Status
233	3.3.1-31-K-01 On page 3.2-50 in ESF and page 3.3-146 in auxiliary systems, component types exposed to treated water are managed using water chemistry control - BWR. Please confirm that the VYNPS Water Chemistry - BWR AMP is consistent with GALL XI.M32, "One-Time Inspection," as well as with XI.M2, "Water Chemistry."	LRA Amendment As stated in LRA Section B.1.30.2, the Water Chemistry Control – BWR Program is consistent with the program described in NUREG-1801, Section XI.M2, "Water Chemistry." The One-Time Inspection Program, described in LRA Section B.1.21 includes inspections to verify the effectiveness of the water chemistry control aging management programs (Water Chemistry Control – Auxiliary Systems, Water Chemistry Control – BWR, and Water Chemistry Control – Closed Cooling Water) by confirming that unacceptable cracking, loss of material, and fouling is not occurring. As stated in LRA Section B.1.21, the One-Time Inspection Program is a new program which will be consistent with the program described in NUREG-1801, Section XI.M32, "One-Time Inspection." LRA Tables 3.1.1, 3.2.1, 3.3.1, and 3.4.1 indicate that the One-Time Inspection Program is credited along with the water chemistry control programs for line items for which GALL recommends a one-time inspection to confirm water chemistry control. For simplicity, the subsequent tables (Table 2's) do not list the One-Time Inspection Program each time a water chemistry control program is listed. However, since the One-Time Inspection Program is applicable to each water chemistry control program, it is also applicable to each line item that credits a water chemistry control program. To provide further clarification, the effectiveness of the Water Chemistry Control – Auxiliary Systems, BWR, and Closed Cooling Water programs is confirmed by the One-Time Inspection program. This requires an amendment to the license renewal application to change the Appendix A, SAR supplement descriptions for the Water Chemistry Control –Auxiliary Systems, BWR and Closed Cooling Water programs to explicitly state One-Time Inspection Program activities will confirm the effectiveness of these programs.	Accepted
234	3.3.1-51-K-01 On page 3.3-132, the component type 'piping' is managed using water chemistry control - auxiliary systems. Please confirm that GALL v2 item VII.F1-8 is intended (not VIII.F1-8).	Partial Duplicate of next question.	Closed
235	3.3.1-51-K-01 On page 3.3-131, the component type 'humidifier housing' and on page 3.3-132, the component type 'piping' is managed using water chemistry control - auxiliary systems. Please confirm that GALL v2 item VII.F1-8 is intended (not VIII.F1-8).	LRA Amendment That is correct. The NUREG-1801 Vol. 2 Item should be VII.F1-8 rather than VIII.F1-8 for these lines.	Accepted

Item	Request	Response	Status
236	3.4.1-M-01 In LRA Table 3.4.1, Item Number 3.4.1-22, the applicant states that their existing "System Walkdown Program",..."manages the loss of material for steel bolting through the use of visual inspections...". How does the applicant intend to address the potential loss of bolting material for subject bolting (normally flange bolting) that cannot be readily seen – "visually inspected" – since most such bolting is usually covered by insulation/flashing material? Added Edit from 5/11/2006 email - Note: See generic question 2.	As stated in LRA Section B.1.28, the System Walkdown Program is consistent with the program described in NUREG-1801, Section XI.M36, "External Surfaces Monitoring." In accordance with this program description, 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. EPRI aging assessment field 1007933 guide was reviewed by the staff.	Closed
237	3.4.1-M-02 In reference to Question 3.4.1-1 above, it is the staff's present understanding that the applicant currently intends to develop a "GALL-recommended" bolting integrity program. If such a program is eventually developed, will it include inspections of plant condensate and feedwater system bolting; i.e., specifically flange bolting?	License Renewal Commitment #34 LRA Amendment A Bolting Integrity Program is under development that will address the aging management of bolting in the scope of license renewal including in scope flange bolting for the feedwater and condensate systems.	Accepted

Item	Request	Response	Status
238	3.4.1-M-03 The staff has recently discovered – during the April VYNPS AMP audit – that plant main condenser tubing contains an admiralty brass-type of material which contains copper & zinc. Such material – copper & zinc - has been known to leach out of condenser tubing via either by direct raw water erosion of the inside of the condenser tubes and/or by way of phenomena known as "de-zincification." Recent third-party chemistry control audits of VYNPS have presented evidence that both copper and zinc ions are currently leaching out of the main condenser tubing and have been leaching out at a measurable rate for the last five (5) years. However; as noted in VYNPS LRA Table 3.4.1, Item Number 3.4.1-35, the applicant stated that; "....there are no copper alloy components subject to selective leaching in the steam and power conversion systems...". What does the applicant intend to do to reduce and/or eliminate the apparent measurable and continued leaching out of copper and zinc ions from the main condenser tubing? What does the applicant intend to do to eliminate and/or mitigate the introduction of these ions (primarily the copper ions) into the reactor core areas of the plant? Edit from 5/11/2006 email - The staff has recently discovered – during the April VYNPS AMP audit – that plant main condenser tubing contains an admiralty brass-type of material which contains copper & zinc. Such material – copper & zinc - has been known to leach out of condenser tubing via either by direct raw water erosion of the inside of the condenser tubes and/or by way of phenomena known as "de-zincification." Recent third-party chemistry control audits of VYNPS have presented evidence that both copper and zinc ions are currently leaching out of the main condenser tubing and have been leaching out at a measurable rate for the last five (5) years. However; as noted in VYNPS LRA Table 3.4.1, Item Number 3.4.1-35, the applicant stated that; "....there are no copper alloy components subject to selective leaching in the steam and power conversion systems...". What does the applicant intend to do to reduce and/or eliminate the apparent measurable and continued leaching out of copper and zinc ions from the main condenser tubing? What does the applicant intend to do to eliminate and/or mitigate the introduction of these ions (primarily the copper ions) into the reactor core areas of the plant?	LRA Table 3.4.1, Item Number 3.4.1-35 states that a Selective Leaching Program is not applicable because there are no copper alloy components subject to selective leaching in the steam and power conversion systems. This statement was intended to mean that there are no copper alloy components requiring an aging management review that are subject to selective leaching in the steam and power conversion systems. A summary of the aging management review of the main condenser may be seen in LRA Table 3.4.2-1. As shown in this table and explained in plant-specific note 401, aging management of the main condenser is not based on analysis of materials, environments and aging effects. Condenser integrity required to perform the post-accident intended function (holdup and plate-out of MSIV leakage) is continuously confirmed by normal plant operation. This intended function does not require the condenser to be leak-tight, and the post-accident conditions in the condenser will be essentially atmospheric. Since normal plant operation assures adequate condenser pressure boundary integrity, the post-accident intended function to provide holdup volume and plate-out surface is assured. Previously approved staff positions (NUREG-1796, Dresden and Quad Cities SER, Section 3.4.2.4.4, and NUREG-1769, Peach Bottom SER, Section 3.4.2.3), concluded that main condenser integrity is continually verified during normal plant operation and no aging management program is required to assure the post-accident intended function. Therefore, loss of material due to leaching of copper and zinc ions from the main condenser tubing is not an aging effect requiring management for the condenser tubes. Leaching of copper and zinc ions from the main condenser tubing is also not a license renewal issue related to aging of other components managed by the Water Chemistry Control – BWR Program and exposed to the copper and zinc ions from the condenser. BWRVIP-130, BWR Vessel Internals Project BWR Water Chemistry Guidelines – 2004 Revision, states that an assessment of risk to the fuel should be completed if feedwater copper values are above 0.1 ppb based on a quarterly average, or if zinc values are above 0.4 ppb based on a quarterly average. These recommendations are followed by VYNPS and there have been no fuel failures attributed solely to elevated feedwater copper or zinc in the last 20 years. Since the fuel is periodically replaced, it is not subject to aging management review. Therefore, leaching of copper and zinc ions from the main condenser tubing is not a license renewal issue related to aging of fuel. The leaching of zinc ions from the condenser has actually been beneficial in that it has helped to mitigate out-of-core dose rates. In fact, many BWRs are injecting zinc into the feedwater system to control out-of-core dose rates. VYNPS is planning to start zinc injection towards the end of 2006. Zinc also has a synergistic beneficial effect along with hydrogen water chemistry resulting in increased resistance of stainless steel and other alloys to intergranular stress corrosion cracking (IGSCC). BWRVIP-130 also states that since soluble copper acts as a cathodic reactant like dissolved oxygen, copper can exacerbate corrosion	Closed

phenomenon such as IGSCC. However, VYNPS injects low levels of hydrogen in a Noble metal environment to mitigate IGSCC by keeping stainless steel electrochemical potential (ECP) values less than -230 mV relative to the standard hydrogen electrode. VYNPS has made significant efforts to reduce the amount of copper entering the reactor over the past 10 years. Where cycle average feedwater copper was once around 0.8 ppb, it is now near 0.3 ppb. Feedwater copper values for the first 4 months of 2006 were <0.2 ppb.

Since VYNPS is maintaining ECP values in the desired range and has maintained feedwater copper levels as low as achievable, VYNPS is following BWRVIP guidance for feedwater copper. No other impacts of high copper and zinc levels were identified in BWRVIP-130. Plant procedures assure that VYNPS will continue to follow BWRVIP guidance for water chemistry. Therefore, further action is not necessary to address leaching of zinc and copper from condenser tubing for the period of extended operation.

VYNPS technical justification for continued operation of Entergy Northwest - Vermont Yankee (ENVY) with feedwater copper >0.2 ppb revision #1 was reviewed by the staff.

Item	Request	Response	Status
239	3.4.2-M-01 The staff has recently discovered, in the applicant's LRA, "Auxiliary Systems - Miscellaneous Systems" Tables 3.3.2-13-02 and 3.3.2-13-13, that the applicant intends to use their existing Water Chemistry Control (BWR) Program to control loss of material in their condensate and feedwater systems; i.e., loss of material in carbon steel piping subjected to steam temperatures >220 degrees F. For these systems, the GALL recommends the implementation of both a Water Chemistry Control AND a One-Time Inspection Program to identify and mitigate loss of material in system piping. Does the applicant intend to implement a One-Time Inspection Program as well as their existing Water Chemistry Control Program to both identify and mitigate the loss of material in their condensate and feedwater systems? If yes, does the applicant intend to formally produce a commitment to implement both programs? If the applicant does not intend to implement both a One-Time Inspection and Water Chemistry Control Program, why not? Edit from 5/11/2006 email - The staff has recently discovered, in the applicant's LRA, "Auxiliary Systems - Miscellaneous Systems" Tables 3.3.2-13-02 and 3.3.2-13-13, that the applicant intends to use their existing Water Chemistry Control (BWR) Program to control loss of material in their condensate and feedwater systems; i.e., loss of material in carbon steel piping subjected to steam temperatures >220 degrees F. For these systems, the GALL recommends the implementation of both a Water Chemistry Control AND a One-Time Inspection Program to identify and mitigate loss of material in system piping. Does the applicant intend to implement a One-Time Inspection Program as well as their existing Water Chemistry Control Program to both identify and mitigate the loss of material in their condensate and feedwater systems? If yes, does the applicant intend to formally produce a commitment to implement both programs? If the applicant does not intend to implement both a One-Time Inspection and Water Chemistry Control Program, why not?	License Renewal Commitment #16 LRA Amendment LRA Table 3.3.1 indicates that the One-Time Inspection Program is credited along with the water chemistry control programs for line items for which GALL recommends a one-time inspection to confirm water chemistry control. For simplicity, the subsequent tables (Table 2's) do not list the One-Time Inspection Program each time a water chemistry control program is listed. However, since the One-Time Inspection Program is applicable to each water chemistry control program, it is also applicable to each line item that credits a water chemistry control program. To provide further clarification, the effectiveness of the Water Chemistry Control – Auxiliary Systems, BWR, and Closed Cooling Water programs is confirmed by the One-Time Inspection program. This requires an amendment to the license renewal application to change the Appendix A, SAR supplement descriptions for the Water Chemistry Control –Auxiliary Systems, BWR and Closed Cooling Water programs to explicitly state One-Time Inspection Program activities will confirm the effectiveness of these programs. Also, license renewal commitment 16 has been issued to implement the One-Time Inspection Program as described in LRA Section B.1.21. A commitment to implement the Water Chemistry Control – BWR Program is not necessary as this is an existing program, which does not require enhancement.	Accepted

Item	Request	Response	Status
240	3.4.2-M-02 The staff has recently discovered, in the applicant's LRA, Table 3.4.2-1; "Main Condenser and MSIV Leakage Pathway – Heat Exchanger Tubes," that the applicant intends to use their existing Water Chemistry Control (BWR) Program to control any loss of material in stainless steel (SS) condenser tubes; i.e., loss of material in SS piping (tubing) subjected to steam temperatures >270 degrees F. For these systems and any future modified systems, the GALL recommends implementation of both a Water Chemistry Control AND a One-Time Inspection Program to identify and mitigate loss of material in system piping (tubing). Does the applicant intend to implement a One-Time Inspection Program as well as their existing Water Chemistry Control Program to both identify and mitigate loss of material from any future modified heat exchanger tubing that could contain stainless steel that could be subjected to steam (or high temperature and high pressure water) temperatures >270 degrees F? If yes, does the applicant intend to formally produce a commitment to implement both programs? If the applicant does not intend to implement both a One-Time Inspection and Water Chemistry Control Program for future, modified condensers, why not? Edit from 5/11/2006 Email - The staff has recently discovered, in the applicant's LRA, Table 3.4.2-1; "Main Condenser and MSIV Leakage Pathway – Heat Exchanger Tubes," that the applicant intends to use their existing Water Chemistry Control (BWR) Program to control any loss of material in stainless steel (SS) condenser tubes; i.e., loss of material in SS piping (tubing) subjected to steam temperatures >270 degrees F. For these systems and any future modified systems, the GALL recommends implementation of both a Water Chemistry Control AND a One-Time Inspection Program to identify and mitigate loss of material in system piping (tubing). Does the applicant intend to implement a One-Time Inspection Program as well as their existing Water Chemistry Control Program to both identify and mitigate loss of material from any future modified heat exchanger tubing that could contain stainless steel that could be subjected to steam (or high temperature and high pressure water) temperatures >270 degrees F? If yes, does the applicant intend to formally produce a commitment to implement both programs? If the applicant does not intend to implement both a One-Time Inspection and Water Chemistry Control Program for future, modified condensers, why not?	License Renewal Commitment #16 LRA Amendment LRA Table 3.4.1 indicates that the One-Time Inspection Program is credited along with the water chemistry control programs for line items for which GALL recommends a one-time inspection to confirm water chemistry control. For simplicity, the subsequent tables (Table 2's) do not list the One-Time Inspection Program each time a water chemistry control program is listed. However, since the One-Time Inspection Program is applicable to each water chemistry control program, it is also applicable to each line item that credits a water chemistry control program. To provide further clarification, the effectiveness of the Water Chemistry Control – Auxiliary Systems, BWR, and Closed Cooling Water programs is confirmed by the One-Time Inspection program. This requires an amendment to the license renewal application to change the Appendix A, SAR supplement descriptions for the Water Chemistry Control –Auxiliary Systems, BWR and Closed Cooling Water programs to explicitly state One-Time Inspection Program activities will confirm the effectiveness of these programs. Also, license renewal commitment 16 has been issued to implement the One-Time Inspection Program as described in LRA Section B.1.21. A commitment to implement the Water Chemistry Control – BWR Program is not necessary as this is an existing program, which does not require enhancement.	Accepted

Item	Request	Response	Status
241	3.4.2-M-03 The staff has recently discovered, in the applicant's LRA, "Table 3.3.2-13-9; "Circulating Water System," that the applicant intends to use their existing Periodic Surveillance and Periodic Maintenance (PSPM) Program to control loss of material in their circulating water condenser tubing (interior); i.e., loss of material in copper alloy material (>15% zinc) subjected to raw water conditions. For this system, the GALL recommends the implementation of an Open-Cycle Cooling Water Control Program to identify and mitigate loss of material in system piping. Does the applicant intend to implement only the PSPM Program to both identify and mitigate loss of material in the main condenser tubes rather than a "GALL-recommended" Open-Cycle Cooling Water Control Program? If yes, does the applicant intend to formally produce a commitment to modify and implement the PSPM Program for control of material loss from the main condenser tubing? If the applicant does not intend to implement both a PSPM and "GALL-recommended" Open-Cycle Cooling Water Control Program, why not? Edit from 5/11/2006 email - The staff has recently discovered, in the applicant's LRA, "Table 3.3.2-13-9; "Circulating Water System," that the applicant intends to use their existing Periodic Surveillance and Periodic Maintenance (PSPM) Program to control loss of material in their circulating water condenser tubing (interior); i.e., loss of material in copper alloy material (>15% zinc) subjected to raw water conditions. For this system, the GALL recommends the implementation of an Open-Cycle Cooling Water Control Program to identify and mitigate loss of material in system piping. Does the applicant intend to implement only the PSPM Program to both identify and mitigate loss of material in the main condenser tubes rather than a "GALL-recommended" Open-Cycle Cooling Water Control Program? If yes, does the applicant intend to formally produce a commitment to modify and implement the PSPM Program for control of material loss from the main condenser tubing? If the applicant does not intend to implement both a PSPM and "GALL-recommended" Open-Cycle Cooling Water Control Program, why not?	LRA Table 3.3.2-13-9 does contain a line item for loss of material in copper alloy tubing subjected to raw water conditions. However, this line item does not represent the circulating water condenser tubing. Rather, it represents copper alloy instrument tubing in the circulating water system in cooling tower #2, cell 1 that requires aging management review due to potential spatial interaction. A summary of the aging management review of the main condenser may be seen in LRA Table 3.4.2-1. As shown in this table and explained in plant-specific note 401, VYNPS does not intend to implement an aging management program for the main condenser. Aging management of the main condenser is not based on analysis of materials, environments and aging effects. Condenser integrity required to perform the post-accident intended function (holdup and plate-out of MSIV leakage) is continuously confirmed by normal plant operation. This intended function does not require the condenser to be leak-tight, and the post-accident conditions in the condenser will be essentially atmospheric. Since normal plant operation assures adequate condenser pressure boundary integrity, the post-accident intended function to provide holdup volume and plate-out surface is assured. Previously approved staff positions (NUREG-1796, Dresden and Quad Cities SER, Section 3.4.2.4.4, and NUREG-1769, Peach Bottom SER, Section 3.4.2.3), concluded that main condenser integrity is continually verified during normal plant operation and no aging management program is required to assure the post-accident intended function.	Closed
242	3.5.1-13-W-1 In Table 3.5.2-1 on Page 3.5-50 of the LRA, for component Bellows (reactor vessel and drywell, one of the AMPs shown is CII-IWE, which is a plant-specific AMP. A Note C has been assigned to this AMR line item, component is different, but consistent with material, environment, aging effect, and aging management program for NUREG-1801 line item. AMP is consistent with NUREG-1801 AMP description. Provide drawings showing how the LRA line item bellows are different from the GALL Table 1 Line Item 3.5.1-13 bellows. Explain how the plant-specific VYNPS CII-IWE AMP is consistent with the GALL specified AMP.	LRA Amendment Table 3.5.2-1 on Page 3.5-50 of the LRA, for component Bellows (reactor vessel and drywell) is not consistent with the referenced NUREG-1801 Vol. 2 item. The Table 3.5.2-1 line item "Bellows (reactor vessel and drywell)" and the corresponding line item in Table 2.4-1 should be deleted. The reactor vessel and drywell bellows perform no license renewal intended function. These components are not safety-related and are not required to demonstrate compliance with regulations identified in 10 CFR 54.4(a)(3). Failure of the bellows will not prevent satisfactory accomplishment of a safety function. Leakage, if any, through the bellows is directed to a drain system that prevents the leakage from contacting the outer surface of the drywell shell.	Accepted

Item	Request	Response	Status
243	3.5.1-16-W-1 In Table 3.5.2-1 on page 3.5-54 of the LRA for component Drywell floor liner seal, the AMP shown is Structures Monitoring. The applicant is asked to verify that the CII-IWE AMP will not be used instead to manage the aging of the moisture barrier.	LRA Amendment The aging management activity will be the same whether included under the umbrella of the Structures Monitoring Program or under the umbrella of the CII-IWE Program, For clarification, the CII-IWE Program will manage the effects of aging on the moisture barrier through the period of extended operation. Note E remains the correct note since the CII-IWE Program is plant specific. The LRA will be amended as follows: Table 3.5.2-1 will be updated to reflect the AMP as CII-IWE Table line Item 3.5.1-16 will be updated to read: "The aging effects cited in the NUREG-1801 item are loss of sealing and leakage. Loss of sealing is a consequence of the aging effects cracking and change in material properties. For VYNPS, the Containment Leak Rate Program manages cracking and change in material properties for the primary containment seal and gaskets. The Inservice Inspection -IWE manages cracking and change in material properties for the primary containment moisture barrier." Also see Response #76	Accepted
244	3.5.1-44-W-1 In Table 3.5.2-6 on Page 3.5-80 of the LRA, for component seals and gaskets (doors, manways and hatches), material rubber in a protected from weather environment; the aging effects are cracking and change in material properties. One of the aging management programs shown is Structures Monitoring. The GALL line item referenced is III.A6-12 and the Table 1 reference is 3.5.1-44. The note shown is E, different AMP than shown in GALL. However, GALL Line Item III.A6-12 and Table 1 Line Item 3.5.1-44 both specify the Structures Monitoring Program. Explain why the note shown is not A instead of E for the lower half of this AMR line item.	LRA Amendment Table 3.5.2-6 on Page 3.5-80 of the LRA, for component seals and gaskets (doors, manways and hatches), material rubber in a protected from weather environment; the aging effects are cracking and change in material properties. The LRA will be clarified to indicate that Note "A" applies to the line for SMP.	Accepted
245	3.5.1-45-W-1 In Table 3.5.2-5 on Page 3.5-67 of the LRA, for component Vernon Dam external walls above/below grade, material concrete in an exposed to fluid environment; the AMP shown is Vernon Dam FERC Inspection. The referenced GALL line item for all three environments is III.A6-7. GALL Line Item III.A6-7 states the following under AMP: Chapter XI.S7, "Regulatory Guide 1.127, Inspection of Water-Control Structures Associated with Nuclear Power Plants" or the FERC/US Army Corp of Engineers dam inspections and maintenance programs. Since one of the AMPs under this GALL line item is FERC dam inspections, explain why the note assigned to the LRA AMR line item is E instead of A; consistent with GALL.	RAI 3.6.2.2.N-08 The Vernon Dam FERC Inspection Program was described as a plant-specific program in Appendix B of the application because there is no program description in NUREG-1801. As a plant-specific program, we selected Note E. Note A would be an acceptable alternative.	Closed

Item	Request	Response	Status
246	3.5.1-47-W-1 In Table 3.5.2-5 on Page 3.5-66 of the LRA, for component Vernon Dam structural steel, material carbon steel in an exposed to weather, protected from weather, and exposed to fluid environment; the AMP shown is Vernon Dam FERC Inspection. The referenced GALL line item for all three environments is III.A6-11. GALL Line Item III.A6-11 states the following under AMP: Chapter XI.S7, "Regulatory Guide 1.127, Inspection of Water-Control Structures Associated with Nuclear Power Plants" or the FERC/US Army Corp of Engineers dam inspections and maintenance programs. Since one of the AMPs under this GALL line item is FERC dam inspections, explain why the note assigned to the three LRA AMR line items is E instead of A; consistent with GALL.	RAI 3.6.2.2.N-08 The Vernon Dam FERC Inspection Program was described as a plant-specific program in Appendix B of the application because there is no program description in NUREG-1801. As a plant-specific program, we selected Note E. Note A would be an acceptable alternative.	Closed
247	3.5.1-58-W-1 In Table 3.5.2-6 on Page 3.5-71 of the LRA, for component conduit, material galvanized steel in a protected weather environment; the aging effect is none. The GALL line item referenced is III.B2-5, which is for the following components: Support members; welds; bolted connections; support anchorage to building structure. Explain why the LRA AMR line item has a Note A shown instead of a Note C, different component with respect to the GALL line item. Or as an alternative, a letter Note A with a number note explaining that the component is different.	NUREG-1801 does not mention every type of component that may be subject to aging management review (e.g., conduit is not in NUREG-1801) nor does the terminology used at a specific plant always align with that used in GALL. Consequently, matching plant components to NUREG-1801 components is occasionally subjective. In this particular case, conduit, which has no specific function other than to support and protect cable, was considered a support member and Note A was applied. The use of either Note A or C has no real impact on the aging management review results.	Closed
248	3.5.1-58-W-2 In Table 3.5.2-6 on Page 3.5-72 of the LRA, for component electrical and instrument panels and enclosures, material galvanized steel in a protected from weather environment; the aging effect is none. The GALL line item referenced is III.B3-3, which is for the following components: Support members; welds; bolted connections; support anchorage to building structure. Explain why the LRA AMR line item has a Note A shown instead of a Note C, different component with respect to the GALL line item. Or as an alternative, a letter Note A with a number note explaining that the component is different.	LRA Amendment NUREG-1801 does not mention every type of component that may be subject to aging management review (e.g., panel is not in NUREG-1801) nor does the terminology used at a specific plant always align with that used in GALL. Consequently, matching plant components to NUREG-1801 components is occasionally subjective. In this particular case, panels, which have no specific function other than to support and protect electrical equipment, was considered a support member and Note A was applied. The use of either Note A or C has no real impact on the aging management review results. Note "A" will be changed to Note "C" for component electrical and instrument panels and enclosures, material galvanized steel in a protected from weather environment in Table 3.5.2-6 on Page 3.5-72 of the LRA. No change is required to the other entries for this line item.	Accepted
249	3.5.1-58-W-3 In Table 3.5.2-6 on Page 3.5-73 of the LRA, for component flood curb, material galvanized steel in a protected from weather environment; the aging effect is none. The GALL line item referenced is III.B5-3, which is for the following components: Support members; welds; bolted connections; support anchorage to building structure. Explain why the LRA AMR line item has a Note A shown instead of a Note C, different component with respect to the GALL line item. Or as an alternative, a letter Note A with a number note explaining that the component is different.	LRA Amendment Unlike the conduits and panels compared to supports in questions 3.5.1-58-W-1 and W-2, the component flood curb should not have been considered a match. Note C should be applied here; although the use of either Note A or C has no real impact on the aging management review results. Note "A" will be changed to Note "C" for component flood curb, material galvanized steel in a protected from weather environment in Table 3.5.2-6 on Page 3.5-73 of the LRA. No change is required to the other entries for this line item.	Accepted

Item	Request	Response	Status
250	3.5.1-8-W-1 In Table 3.5.2-1 on Page 3.5-53 of the LRA for component Torus shell with the aging effect cracking-fatigue, the note assigned is E. Note E is consistent with NUREG-1801 material, environment, and aging effect but a different aging management program is credited. Explain why this note is E when the AMP shown for this line item is TLAA and the referenced GALL Line Item II.B1.1-4 also specifies a TLAA.	LRA Amendment Note A should be applied here. The LRA will be amended to indicate Note A.	Accepted
251	3.5.2-2-W-1 In Table 3.5.2-2 on Page 3.5-57 of the LRA, for component Spent fuel pool storage racks, material stainless steel in an exposed to fluid environment; the aging effect is loss of material. Explain by what aging mechanism loss of material occurs and why the aging effect is not cracking.	As shown in Table 3.5.2-2, the aging effect for component spent fuel pool storage racks is loss of material. The specific aging mechanism is pitting and crevice corrosion because stainless steels are susceptible to this aging mechanism when exposed to oxygenated water in a treated water environment. Cracking is not an aging effect requiring management for stainless steel in the spent fuel pool because cracking due to stress corrosion is dependent on temperature (>140°F). The spent fuel pool treated water environment is less than 140°F.	Closed
252	3.5.2-4-W-1 In Table 3.5.2-4 on Page 3.5-61 of the LRA, for component Blowout or blow-off panels, material aluminum in an exposed to weather environment; the aging effect is none. Reference question A-W-13 and explain how this component is protected from constant wetting and drying conditions.	As identified in the response to question A-W-13, loss of material due to pitting and crevice corrosion of aluminum components in an outdoor environment is not applicable if the atmospheric environment is non-aggressive. Plant-specific Note 503 provides the basis for concluding the environment is non-aggressive. In this non-aggressive environment, the occasional wetting and drying from normal outdoor weather does not result in significant loss of material in aluminum components, hence, there are no aging effects requiring management.	Closed
253	3.5.2-4-W-2 In Table 3.5.2-4 on Page 3.5-61 of the LRA, for component Steel Piles, material carbon steel in an exposed to weather environment; the aging effect is none. Note 504 discusses steel piles driven into soils (a soil environment, not a weather environment) with no significant effects due to corrosion. Explain how the soil environment relates to the weather environment to justify no aging effect.	As identified in Table 3.5.2-4 on Page 3.5-61 of the LRA, for steel piles, material carbon steel in an exposed to weather environment; the aging effect is none. Although a soil environment is not identified, the listed environment, exposed to weather, is intended to include both an above grade environment and a below grade environment as described in Table 3.0-2 of the application. The below grade environment applies to the steel piles. As such the statement made in Note 504 is applicable.	Closed
254	3.5.2-5-W-1 In Table 3.5.2-5 on Page 3.5-65 of the LRA, for component N2 tank steel supports, material stainless steel in an exposed to weather environment; the aging effect is none. Reference question A-W-13 and explain how this component is protected from constant wetting and drying conditions.	As identified in the response to question A-W-13, loss of material due to pitting and crevice corrosion of stainless steel components in an outdoor environment is not applicable if the atmospheric environment is non-aggressive. Plant-specific Note 503 provides the basis for concluding the environment is non-aggressive. In this non-aggressive environment, the occasional wetting and drying from normal outdoor weather does not result in significant loss of material in stainless steel components, hence, there are no aging effects requiring management.	Closed
255	3.5.2-5-W-2 In Table 3.5.2-5 on Page 3.5-65 of the LRA, for component Transmission towers, material galvanized steel in an exposed to weather environment; the aging effect is none. Reference question A-W-13 and explain how this component is protected from constant wetting and drying conditions.	LRA Amendment As identified in the response to question A-W-13, loss of material is the aging effect requiring management and the Structures Monitoring Program is the aging management program. This is consistent NUREG-1801 Vol. 2 Item III.B4-7, summarized in Table 1 Item 3.5.1-50, and Note C applies.	Accepted

Item	Request	Response	Status
256	3.5.2-5-W-3 In Table 3.5.2-5 on Page 3.5-67 of the LRA, for component Vernon Dam external walls, floor slabs and interior walls, material concrete in a protected from weather environment; the aging effect shown is none with the AMP shown as Vernon Dam FERC Inspection. VYNPS discusses throughout its LRA Section 3.5 further evaluations that VYNPS concrete does not have aging effects because the quality of the concrete used during construction was to the standards of ACI-318 and ACI 201.2R. Vernon Dam is a very old structure and was not built by the owners of VYNPS. Provide documentation and justification that the quality of the concrete used at Vernon Dam is also to the standards of ACI-318 and ACI 201.R such that the AMR statement None for aging effects of the Dam concrete is justified.	RAI 3.6.2.2.N-08 Since quality of concrete used at Vernon Dam has not been confirmed, it would have been more appropriate to show for the associated aging effects for the line items in question. However, the same aging management activity, the FERC inspection, is still appropriate to manage aging effects associated with the Vernon Dam concrete components.	Closed
257	3.5.2-6-W-1 In Table 3.5.2-6 on Page 3.5-71 of the LRA, for component conduit, material galvanized steel in an exposed to weather environment; the aging effect is none. Reference question A-W-13 and explain how this component is protected from constant wetting and drying conditions.	LRA Amendment As identified in the response to question A-W-13, loss of material is the aging effect requiring management and the Structures Monitoring Program is the aging management program. This is consistent NUREG-1801 Vol. 2 Item III.B4-7, summarized in Table 1 Item 3.5.1-50, and Note C applies.	Accepted
258	3.5.2-6-W-2 In Table 3.5.2-6 on Page 3.5-71 of the LRA, for component conduit support, material galvanized steel in an exposed to weather environment; the aging effect is none. Reference question A-W-13 and explain how this component is protected from constant wetting and drying conditions.	LRA Amendment As identified in the response to question A-W-13, loss of material is the aging effect requiring management and the Structures Monitoring Program is the aging management program. This is consistent NUREG-1801 Vol. 2 Item III.B4-7, summarized in Table 1 Item 3.5.1-50, and Note C applies.	Accepted
259	3.5.2-6-W-3 In Table 3.5.2-6 on Page 3.5-72 of the LRA, for component electrical and instrument panels and enclosures, material galvanized steel in an exposed to weather environment; the aging effect is none. Reference question A-W-13 and explain how this component is protected from constant wetting and drying conditions.	LRA Amendment As identified in the response to question A-W-13, loss of material is the aging effect requiring management and the Structures Monitoring Program is the aging management program. This is consistent NUREG-1801 Vol. 2 Item III.B4-7, summarized in Table 1 Item 3.5.1-50, and Note C applies.	Accepted
260	3.5.2-6-W-4 In Table 3.5.2-6 on Page 3.5-75 of the LRA, for component Vents and louvers, material aluminum in an exposed to weather environment; the aging effect is none. Reference question A-W-13 and explain how this component is protected from constant wetting and drying conditions.	As identified in the response to question A-W-13, loss of material due to pitting and crevice corrosion of aluminum components in an outdoor environment is not applicable if the atmospheric environment is non-aggressive. Plant-specific Note 503 provides the basis for concluding the environment is non-aggressive. In this non-aggressive environment, the occasional wetting and drying from normal outdoor weather does not result in significant loss of material in aluminum components, hence, there are no aging effects requiring management.	Closed

Item	Request	Response	Status
261	3.5.2-6-W-5 In Table 3.5.2-6 on Page 3.5-76 of the LRA, for component Anchor bolts, material stainless steel in an exposed to weather environment; the aging effect is none. Reference question A-W-13 and explain how this component is protected from constant wetting and drying conditions.	As identified in the response to question A-W-13, loss of material due to pitting and crevice corrosion of stainless steel components in an outdoor environment is not applicable if the atmospheric environment is non-aggressive. Plant-specific Note 503 provides the basis for concluding the environment is non-aggressive. In this non-aggressive environment, the occasional wetting and drying from normal outdoor weather does not result in significant loss of material in stainless steel components, hence, there are no aging effects requiring management.	Closed
262	3.5.2-6-W-6 In Table 3.5.2-6 on Page 3.5-78 of the LRA, for component structural bolting, material stainless steel in an exposed to weather environment; the aging effect is none. Reference question A-W-13 and explain how this component is protected from constant wetting and drying conditions.	As identified in the response to question A-W-13, loss of material due to pitting and crevice corrosion of stainless steel components in an outdoor environment is not applicable if the atmospheric environment is non-aggressive. Plant-specific Note 503 provides the basis for concluding the environment is non-aggressive. In this non-aggressive environment, the occasional wetting and drying from normal outdoor weather does not result in significant loss of material in stainless steel components, hence, there are no aging effects requiring management.	Closed
263	3.5.2-6-W-7 In Table 3.5.2-6 on Page 3.5-78 of the LRA, for component structural bolting, material galvanized steel in an exposed to weather environment; the aging effect is none. Reference question A-W-13 and explain how this component is protected from constant wetting and drying conditions.	LRA Amendment As identified in the response to question A-W-13, loss of material is the aging effect requiring management and the Structures Monitoring Program is the aging management program. This is consistent NUREG-1801 Vol. 2 Item III.B4-7, summarized in Table 1 Item 3.5.1-50, and Note C applies.	Accepted
264	3.5.2-6-W-8 In Table 3.5.2-6 on Page 3.5-80 of the LRA, for component water stops, material PVC in a protected from weather environment; the aging effect is none. By definition the component stops water, so it could be exposed to water. In LRA Table 3.5.2-4 on Page 3.5-64 for component Cooling tower fill, material PVC, environment exposed to fluid environment, the aging effects listed are cracking and change in material properties. Provide a technical basis why PVC water stops do not have any aging effects which need aging management when they could be exposed to a fluid environment also. Provide the specification that called for PVC water stops during construction instead of rubber.	The PVC water stops identified in Table 3.5.2-6 on Page 3.5-80 of the LRA are used in the cooling tower reinforced concrete basin and are not exposed to the same environment as the cooling tower fill material. Therefore the aging effects are not the same. The aging effects attributed to PVC water stops are evaluated based upon Section 7.0 of the Structural Tools. Exposure to water for these commodities is insignificant, since the concrete encapsulating the PVC water stop and the protection provided by the surrounding concrete, provides ample protection such that aging management is not required. USFAR Fig 12.2-33 (G-200357) "Cooling Tower No. 2 Basin Plan View" identifies the use of PVC water stops at VYNPS.	Closed
265	3.5.2-6-W-9 In Table 3.5.2-6 on Page 3.5-78 of the LRA, for component Fire proofing, material Pyrocrete in a protected from weather environment; the aging effect is none. Provide a technical basis why Pyrocrete does not have any aging effects in the environment listed.	Pyrocrete (used for fire proofing) is cement base composite material. Pyrocrete is not identified in NUREG-1801. As such, our technical evaluation of pyrocrete in determining applicable aging effects was the same as that for concrete which is based on EPRI 1002950, Aging Effects for Structures And Structural Components (Structural Tools), Revision 1, Section 5. Accordingly, no aging effects were determined for pyrocrete protected from weather. However, as indicated In Table 3.5.2-6 on Page 3.5-78 of the LRA, the Fire Protection Program and Structures Monitoring Program will confirm the absence of significant aging effects throughout the period of extended operation.	Closed

Item	Request	Response	Status
266	A-W-01 LRA Table 3.5.1, Item Number 3.5.1-5, has the following statement under the discussion column: The drywell steel where the drywell shell is embedded is inspected in accordance with the Containment Inservice Inspection (IWE) Program and Structures Monitoring Program. This is an impossible inspection. Change this discussion statement to agree with LRA Section 3.5.2.2.1.4 that states: The drywell steel shell and the moisture barrier where the drywell shell becomes embedded in the drywell concrete floor are inspected in accordance with the Containment Inservice Inspection (IWE) Program and Structures Monitoring Program.	LRA Amendment For LRA Table 3.5.1, Item 3.5.1-5, the discussion column should read, "The drywell steel shell and the moisture barrier where the drywell shell becomes embedded in the drywell concrete floor are inspected in accordance with the Containment Inservice Inspection (IWE) Program. To be consistent, LRA Section 3.5.2.2.1.4, should indicate that the drywell to floor moisture barrier will be inspected under the Containment Inservice Inspection (IWE) Program. The inspection is part of the Containment Inservice Inspection (IWE) Program and will be retained as part of that program through the period of extended operation. The LRA will be amended as stated by formal correspondence.	Accepted

Item	Request	Response	Status
267	A-W-02 LRA Table 3.5.1, Item Number 3.5.1-9, has the following statement under the discussion column: Not applicable. See Section 3.5.2.2.1.6. However, the following statement is made in LRA Section 3.5.2.2.1.6: "Fatigue TLAAs for the steel drywell, torus, and associated penetrations are evaluated and documented in Section 4.6." The components associated with LRA Table 3.5.1, Item Number 3.5.1-9 are: penetration sleeves, penetration bellows; suppression pool shell, unbraced downcomers. Explain how Item number 3.5.1-9 is not applicable when a fatigue TLAA has been performed for the torus and penetrations. Explain why the vent line, vent header and vent line bellows are not listed in LRA Sections 3.5.2.2.1.6 and 4.6 as referenced in Table 3.5.1, Line Item 3.5.1-8.	LRA Amendment The LRA will be amended to reflect the following changes. Fatigue analyses have been evaluated for the torus, drywell to torus vent system, and torus penetrations. The following line for the torus penetrations will be added to Table 3.5.2-1: Torus mechanical penetrations PB, SSR Carbon steel□Protected from weather Cracking (fatigue) TLAA-metal fatigue□II.B4-4 (C-13) 3.5.1 9A The evaluation of the drywell to torus vent system fatigue analysis determined that it was not a TLAA. The significant contributor to fatigue of the vent system is post-LOCA chugging, a once in plant-life event. As there will still be only one design basis LOCA for the life of the plant, including the period of extended operation, this analysis is not based on a time-limited assumption and is not a TLAA. Since fatigue for the vent system is event driven and is not an age related effect, the following line will be deleted from Table 3.5.2-1: Drywell to torus vent system PB, SSR Carbon steel Protected from weather Cracking (fatigue) TLAA-metal fatigue□II.B1.1-4 (C-21) 3.5.1 8 A The discussion column entry for Table 3.5.1 item 3.5.1-8 will be changed to state: Fatigue analysis is a TLAA for the torus shell. Fatigue of the torus to drywell vent system is event driven and the analysis is not a TLAA. See Section 3.5.2.2.1.6. The discussion column entry for Table 3.5.1 item 3.5.1-9 will be changed to state: Fatigue analysis is a TLAA for the torus penetrations. See Section 3.5.2.2.1.6. Section 3.5.2.2.1.6 will be changed to read as follows: TLAA are evaluated in accordance with 10 CFR 54.21(c) as documented in Section 4. Fatigue TLAAs for the torus and associated penetrations are evaluated and documented in Section 4.6. Section 3.5.2.3, Time-Limited Aging Analyses, will be changed to state: TLAA identified for structural components and commodities include fatigue analyses for the torus and torus penetrations. These topics are discussed in Section 4.6.	Accepted

Item	Request	Response	Status
268	A-W-03 LRA Table 3.5.1, Item Number 3.5.1-12, under the discussion column, does not make reference to LRA Section 3.5.2.2.1.8 for further evaluation. Explain why this link is not made to the further evaluation section. Explain the need for augmented ultrasonic exams to detect fine cracks since a CLB fatigue analysis does exist.	LRA Amendment A link from items 3.5.1-12 and 3.5.1-13 will be added to section 3.5.2.2.1.8. Section 3.5.2.2.1.8 should state: Cyclic loading can lead to cracking of steel and stainless steel penetration bellows, and dissimilar metal welds of BWR containments and BWR suppression pool shell and downcomers. Cracking due to cyclic loading is not expected to occur in the drywell, torus and associated penetration bellows, penetration sleeves, unbraced downcomers, and dissimilar metal welds. A review of plant operating experience did not identify cracking of the components, and primary containment leakage has not been identified as a concern. Nonetheless the existing Containment Leak Rate Program with augmented ultra sonic exams and Containment Inservice Inspection – IWE, will continue to be used to detect cracking. Observed conditions that have the potential for impacting an intended function are evaluated or corrected in accordance with the corrective action process. The Containment Inservice Inspection – IWE and Containment Leak Rate programs are described in Appendix B.	Accepted
269	A-W-04 LRA Table 3.5.1, Item Number 3.5.1-13, under the discussion column, does not make reference to LRA Section 3.5.2.2.1.8 for further evaluation. Explain why this link is not made to the further evaluation section. Explain the need for augmented ultrasonic exams to detect fine cracks since a CLB fatigue analysis does exist.	LRA Amendment See response to Item 268.	Accepted
270	A-W-05 LRA Table 3.5.1, Item Number 3.5.1-16, under the discussion column, states that seals and gaskets are not included in the Containment Inservice Inspection Program at VYNPS. One of the components for this item number is moisture barriers. Explain how VYNPS seals the joint between the containment drywell shell and drywell concrete floor if there is no moisture barrier. Explain why the inspection of this joint is not part of the Containment Inservice Inspection Program at VYNPS.	LRA Amendment VYNPS uses a moisture barrier to seal the joint between the containment drywell shell and drywell concrete floor. Moisture barrier is listed in LRA table 3.5.2-1 as drywell floor liner seal. Aging effects on the drywell moisture barrier will be managed under the CII-IWE program (also see audit question 3.5.1-16-W-1 above). For clarity, drywell floor liner seal will be changed to drywell shell to floor seal (moisture barrier). (Also see audit questions #76 and 243 which address changes to the LRA)	Accepted

Item	Request	Response	Status
271	A-W-06 LRA Table 3.5.1, Item Number 3.5.1-17, under the discussion column, states that locks, hinges, and closure mechanisms are active components and are therefore not subject to an aging management review. Provide any license renewal regulatory guidance document or previous LRA NRC SER that has ever stated that locks, hinges, and closure mechanisms are active components. If locks, hinges, and closure mechanisms are active components at VYNPS, provide an itemized list of these active components with their qualified life or specified time period of replacement. Explain how VYNPS tracks the active life of these components before replacement.	It may be a misnomer to refer to these components as active components since 10CFR54.21(a)(1)(i) does not refer to active or passive components, but rather excludes components from aging management review that perform an intended function, as described in § 54.4, with moving parts or with a change in configuration or properties. Locks, hinges, and closure mechanisms perform their functions with moving parts. This exception is not based on a qualified life or specified time period of replacement for a component. 10CFR54.21(a)(1)(ii) provides a separate exclusion for components that are replaced based on a qualified life. Other precedents for locks, hinges, and closure mechanisms as active components that have received approval by the NRC are found in Peach Bottom(NUREG 1769, Section 3.0.3.14.2 Pg 3-58) and Millstone (NUREG 1838, Section 3.3A.2.1.4 Pg 3-245)	Closed
272	A-W-07 LRA Table 3.5.1, Item Number 3.5.1-21, under the discussion column, states that VYNPS plant operating experience has not identified fretting or lock up due to mechanical wear for the drywell head and downcomers. Plant operating experience does not find fretting or lock up due to mechanical wear, inspections do. Explain if VYNPS does not currently inspect for wear of the drywell head and downcomer pipes under the CLB using the Containment Inservice Inspection Program. If VYNPS does currently inspect these components for wear, justify not performing these same inspections during an extended license period. If required, provide drawings showing the spacial distance between components such that fretting cannot occur.	Condition reports are a primary source of operating experience documentation reviewed for license renewal. Condition reports document negative inspection results. NUREG-1801 defines neither fretting nor lockup and further confuses the subject by stating that fretting and lockup are caused by mechanical wear which is an aging mechanism resulting in the aging effect loss of material. The definition in NUREG-1801, Section IX.E, merely states that fretting and lockup is an aging effect along with a cause, but doesn't say what it is or what it looks like. As indicated in the line item for drywell head in Table 3.5.2-1, the Containment Inservice Inspection-IWE Program and the Containment Leak Rate Program manage loss of material. Loss of material is the aging effect caused by mechanical wear. VYNPS inspects the drywell head and downcomers (Torus vent system) per the requirements of ASME Section XI. In addition, the drywell head is a stationary or fixed component and the downcomers are stationary, well-braced components and the spatial distance between connecting components makes it unlikely for fretting and lockup to occur.	Closed
273	A-W-08 LRA Table 3.5.1, Item Number 3.5.1-11, under the discussion column, states that cracking due to stress corrosion cracking for stainless steel vent line bellows is not applicable. Explain if the VYNPS Containment Inservice Inspection Program and Containment Leak Rate Program are used currently to detect cracking of stainless steel vent line bellows by inspection and testing. Explain why it is not more appropriate to take credit for these two programs to detect cracking without the need for additional enhanced examinations then to say not applicable.	The NUREG-1801 referenced programs involve visual inspections and leak testing which are not optimum methods for managing SCC. Therefore, when possible, it is more appropriate to assess the conditions and identify whether the applicable aging effects require management. As stated in Section 3.5.2.2.1.7, stress corrosion cracking is not an aging effect requiring management for the penetration sleeves and bellows, since the conditions necessary for SCC do not exist. However these components are evaluated for other aging effects requiring management, such as cracking, as shown in Table 3.5.2-1.	Closed

Item	Request	Response	Status
274	A-W-09 LRA Table 3.5.1, Item Number 3.5.1-26, under the discussion column, states that freeze-thaw is not an applicable aging mechanism for these groups of structures at VYNPS. Provide documentation showing the weathering conditions (weathering index) for VYNPS and the specification requiring concrete to have an air content of 3% to 6% and water to cement ratio of 0.35 to 0.45.	VYNPS inaccessible and accessible concrete areas are designed in accordance with American Concrete Institute (ACI) specification ACI 318-63, Building Code Requirements for Reinforced Concrete. VYNPS concrete also meets requirements of later ACI guide ACI 201.2R-77, Guide to Durable Concrete, since both documents use the same American Society for Testing and Material (ASTM) standards for selection, application and testing of concrete. VYNPS concrete was provided with air content between 3% and 5% and a water/cement ration between 0.44 and 0.60 (Ref. VYNPS site specification EBASCO 15-65, Sections 7.0 and 12.5). VYNPS is located at severe weathering region (weathering index >100 day-inch/yr) as indicated in ASTM C33, FIG. 1. Although the water/cement ratio falls outside the listed range of 0.35 to 0.45, given all parameters associated with concrete mix design VYNPS concrete meets the quality requirements of ACI to ensure acceptable concrete is obtained. Nonetheless concrete will be managed under the aging management programs identified in the 3.5.2 tables.	Closed
275	A-W-10 For LRA Table 3.5.1, Item Number 3.5.1-27, provide documentation showing that inaccessible areas concrete was constructed in accordance with the recommendations in ACI 201.2R-77.	For construction of concrete, VYNPS site Specification EBASCO 15-65, Concrete Large Work, identifies the same ASTM standards for achieving durable concrete as those identified in ACI 201.2R77, "Guide to durable concrete."	Closed
276	A-W-11 For LRA Table 3.5.1, Item Number 3.5.1-33, provide the maximum temperatures that concrete experiences in Group 1 through 5 structures.	The VYNPS concrete is expected to experience average general area temperature of 150°F and local area maximum temperature less than 200°F. The drywell cooling system recirculates the drywell atmosphere through heat exchangers to maintain ambient temperature in the drywell between 135 and 165°F (average 150°F). (Ref VYNPS UFSAR 5.2.3.2 and 10.12.3) The concrete temperature around piping penetrations for high temperature lines, such as the steam lines and other reactor system lines is protected by piping insulation and air gaps. (Ref UFSAR 5.2.3.4.2).	Closed
277	A-W-12 [Follow-up Question] The applicant is asked to verify that there are no non-metallic (rubber) vibration isolation elements used to structurally support the emergency diesel generator, HVAC system equipment, and miscellaneous mechanical equipment and that all vibration isolation to systems attached to these components is by expansion joints and flexible connections. [Original Question] LRA Table 3.5.1, Item Number 3.5.1-41, under the discussion column, states that no vibration isolation elements at VYNPS are in scope and subject to aging management review. Explain the lack of vibration isolation elements for HVAC system components, the emergency diesel generator and miscellaneous mechanical equipment.	[Original Response] LRA Table 3.5.1 relates only to structures and structural supports. Thus, the statement that no vibration isolation elements are in scope and subject to aging management review applies only to structural vibration isolation elements. Vibration isolation elements for mechanical system components are subject to aging management review. For example, LRA Table 3.3.2-4 contains expansion joint in the emergency diesel generator system and LRA Table 3.3.2-10 contains duct flexible connections and expansion joints in heating, ventilation, and air conditioning systems. (New Response) As stated in Table 3.5.1 Line Item 3.5.1-41, there are no non-metallic (rubber) vibration isolation elements used to structurally support the EDG, HVAC system equipment, and miscellaneous mechanical equipment that is within the scope of license renewal. Vibration isolation to systems attached to these components is by expansion joints and flexible connections.	Closed

Item	Request	Response	Status
278	A-W-13 LRA Table 3.5.1, Item Number 3.5.1-50, under the discussion column, states that loss of material due to pitting and crevice corrosion of groups B2 and B4 galvanized steel, aluminum, and stainless steel components in an outdoor air environment is not applicable at VYNPS. NUREG-1833 on Page 93 for Item TP-6 states an approved precedent exists for adding this material, environment, aging effect, and program combination to the GALL Report. As shown in RNP SER Section 3.5.2.4.3.2, galvanized steel and stainless steel in an outdoor air environment could result in loss of material due to constant wetting and drying conditions. Aluminum would also be susceptible to a similar kind of aging effect in the outdoor environment. Provide a discussion of the actual group B2 and B4 galvanized steel, aluminum, and stainless steel VYNPS components which are within the scope of license renewal and exposed to an outdoor air environment. Discuss the location of these components at VYNPS and how they are protected from constant wetting and drying conditions.	LRA Amendment Loss of material due to pitting and crevice corrosion of aluminum and stainless steel components in an outdoor environment is not applicable if the atmospheric environment is non-aggressive. The ambient environment at VYNPS is not chemically polluted by vapors of sulfur dioxide or other similar substances and the external environment does not contain saltwater or high chloride content. In this non-aggressive environment, the occasional wetting and drying from normal outdoor weather does not result in any significant loss of material in, aluminum or stainless steel components. The conclusion that no aging effects require management for these materials in an outdoor air environment is supported by operating experience and by previously approved staff positions documented in the Farley SER (NUREG-1825, page 3-314). Components that may be considered in the B2 and B4 grouping consists of those line items in Table 3.5.2-6 including the plant specific Note 503. Note 503 provides the basis for concluding the environment is non-aggressive and the conclusion that there are no aging effects requiring management. The aging management review results for galvanized steel components in outdoor air should indicate loss of material as an aging effect with structures monitoring as the aging management program. The following discussion applies to the discussion column entry for item 3.5.1-50. Consistent with NUREG-1801 for galvanized steel components in outdoor air. The Structures Monitoring Program will manage loss of material. Loss of material is not an applicable aging effect for stainless steel or aluminum components in outdoor air. The ambient environment at VYNPS is not chemically polluted by vapors of sulfur dioxide or other similar substances and the external environment does not contain saltwater or high chlorides. Therefore, loss of material due to pitting and crevice corrosion is not an aging effect requiring management for aluminum and stainless steel components exposed to the external environment.	Accepted

Item	Request	Response	Status
279	A-W-14 LRA Table 3.5.1, Item Number 3.5.1-52, under the discussion column, states that loss of mechanical function due to the listed mechanisms is not an aging effect. Proper design prevents distortion, overload, and fatigue due to vibratory and cyclic thermal loads. Explain how loss of mechanical function due to corrosion is not an aging effect which needs to be managed for the period of extended operation. If proper design prevents distortion, overload, and fatigue due to vibratory and cyclic thermal loads, explain if there has never been a component failure at VYNPS due to any of these conditions. Explain if there has never been a component failure in the nuclear industry due to any of these conditions. Explain where sliding support bearing and sliding support surfaces are used in component groups B2 and B4 at VYNPS and provide the environment they are exposed to.	LRA Amendment Loss of material due to corrosion is an aging effect that can cause a loss of intended function. Loss of mechanical function would be considered a loss of intended function. Loss of mechanical function is not an aging effect, but is the result of aging effects. There have been component failures in the industry due to distortion, overload, and excessive vibration. Such failures typically result from inadequate design or events rather than the effects of aging. Failures due to cyclic thermal loads are very rare for structural supports due to their relatively low temperatures. The sliding surface material used at VYNPS is lubrite, which is a corrosion resistant material. Components are inspected under ISI-IWF for torus saddle supports and Structures Monitoring Program for the lubrite components of radial beam seats. Plant operating experience has not identified failure of lubrite components used in structural applications. No current industry experience has identified failure associated with lubrite sliding surfaces. Components associated with B2 grouping are limited to the torus radial beam seats and support saddles. There are no sliding support surfaces associated with the B4 component grouping for sliding surfaces at VYNPS. LRA Table 3.5.1, Item 3.5.1-52 will be revised to read as follows. "Loss of mechanical function due to the listed mechanisms is not an aging effect. Such failures typically result from inadequate design or operating events rather than from the effects of aging. Failures due to cyclic thermal loads are rare for structural supports due to their relatively low temperatures."	Accepted

Item	Request	Response	Status
280	A-W-15 LRA Table 3.5.1, Item Number 3.5.1-54, under the discussion column, states that loss of mechanical function due to the listed mechanisms is not an aging effect. Proper design prevents distortion, overload, and fatigue due to vibratory and cyclic thermal loads. Explain how loss of mechanical function due to corrosion is not an aging effect which needs to be managed for the period of extended operation. If proper design prevents distortion, overload, and fatigue due to vibratory and cyclic thermal loads, explain if there has never been a component failure at VYNPS due to any of these conditions. Explain if there has never been a component failure in the nuclear industry due to any of these conditions. Explain what VYNPS inspects for during VT-3 visual examinations of groups B1.1, B1.2 and B1.3 components under its Inservice Inspection Program during its current license and also anticipated VT-3 visual examinations during its possible extended license period.	LRA Amendment The discussion for Item Number 3.5.1-54 was not saying that failures have not occurred, but that loss of mechanical function is not an aging effect. For license renewal, Entergy identifies a number of aging effects that can cause loss of intended function. Loss of intended function includes loss of mechanical function. The loss of function is not considered an aging effect. Aging effects that could cause loss of mechanical function for components in Item Number 3.5.1-54 are addressed elsewhere in the aging management reviews. For example, loss of material due to any mechanism is addressed in Table 3.5.2-6 under listings for component and piping supports ASME Class 1, 2, 3 and MC (Page 3.5-70), and component and piping supports (Page 3.5-71). Component failures at VYNPS and in the nuclear industry have certainly occurred due to overload (typically caused by an event such as water hammer) or vibratory and cyclic thermal loads. Because of the low operating temperatures, failures due to cyclic thermal loads are extremely rare for structural commodities. Failures due to distortion or vibratory loads have also occurred due to inadequate design, but rarely if ever, due to the normal effects of aging. LRA Table 3.5.1, Item 3.5.1-54 will be revised to state: Loss of mechanical function due to distortion, dirt, overload, fatigue due to vibratory, and cyclic thermal loads is not an aging effect requiring management. Such failures typically result from inadequate design or events rather than the effects of aging. Loss of material due to corrosion, which could cause loss of mechanical function, is addressed under Item 3.5.1-53 for Groups B1.1, B1.2, and B1.3 support members."	Accepted
281	A-W-16 LRA Table 3.5.1, Item Number 3.5.1-10, under the discussion column, states that cracking due to stress corrosion cracking for stainless steel penetration sleeves and penetration bellows is not applicable. Explain if the VYNPS Containment Inservice Inspection Program and Containment Leak Rate Program are used currently to detect cracking of stainless steel penetration sleeves and penetration bellows by inspection and testing. Explain why it is not more appropriate to take credit for these two programs to detect cracking without the need for additional enhanced examinations then to say not applicable.	The NUREG-1801 referenced programs involve visual inspections and leak testing which are not optimum methods for managing SCC. Therefore, when possible, it is more appropriate to assess the conditions and identify whether the applicable aging effects require management. As stated in section 3.5.2.2.1.7, stress corrosion cracking is not an aging effect requiring management for the penetration sleeves and bellows, since the conditions necessary for SCC do not exist. However these components are evaluated for aging effects requiring management, such as cracking, as shown in Table 3.5.2-1 (Reference item for Drywell to torus vent line bellows).	Closed
282	A-W-17 LRA Table 3.5.1, Item Number 3.5.1-34, under the discussion column, does not make reference to LRA Section 3.5.2.2.2.4 (1) for further evaluation. Explain why this link is not made to the further evaluation section.	LRA Amendment NUREG-1800, Item Number 3.5.1-34 indicates that further evaluation is necessary only for aggressive environments. No reference was provided to further evaluation in LRA Section 3.5.2.2.2.4 (1) since the VYNPS environment is not aggressive as noted in LRA Table 3.5.1, Item Number 3.5.1-34, under the discussion column. LRA Table 3.5.1, Line Item 3.5.1-34 discussion will be revised to add "See Section 3.5.2.2.2.4(1)".	Accepted

Item	Request	Response	Status
283	A-W-18 LRA Table 3.5.1, Item Number 3.5.1-35, under the discussion column, does not make reference to LRA Section 3.5.2.2.2.4 (2) for further evaluation. Explain why this link is not made to the further evaluation section. Provide a copy of ACI-301 as listed under the discussion.	LRA Amendment Due to an administrative error the reference to ACI should have been ACI 318 and not ACI 301. LRA Table 3.5.1, Item 3.5.1-35 discussion will be revised to refer to ACI 318. For clarification, a reference to Section 3.5.2.2.2.4(2) will also be added to the discussion. See also Response 284	Accepted
284	A-W-19 LRA Table 3.5.1, Item Number 3.5.1-36, under the discussion column, does not make reference to LRA Section 3.5.2.2.2.4 (3) for further evaluation. Explain why this link is not made to the further evaluation section. The statement: "See Section 3.5.2.2.2.1 (5) for additional discussion" needs further clarification that this section is for Groups 1-5, 7-9, however it would apply to accessible Group 6 concrete. Explain why LRA Section 3.5.2.2.2.4 (3) lists cracking of concrete due to Stress Corrosion Cracking (SCC).	LRA Amendment LRA Table 3.5.1, Line item Number 3.5.1-36 discussion will be revised to read as follows. Reaction with aggregates is not an applicable aging mechanism for VYNPS concrete components. See Section 3.5.2.2.2.1(5) (although for Groups 1-5, 7, 9 this discussion is also applicable for Group 6). See Section 3.5.2.2.2.4(3) additional discussion. Nonetheless, the Structures Monitoring Program will confirm the absence of aging effects requiring management for VYNPS Group 6 concrete components. Due to an administrative oversight, the heading of LRA Section 3.5.2.2.2.4 (3) inadvertently lists cracking of concrete due to Stress Corrosion Cracking (SCC). This section heading should have begun with "Cracking Due to Expansion and Reaction with Aggregates...". Stress corrosion cracking is not discussed in the body of this section.	Accepted
285	A-W-20 LRA Table 3.5.1, Item Number 3.5.1-37, under the discussion column, states not applicable and makes reference to Section 3.5.2.2.2.4(3). Section 3.5.2.2.2.4(3) discusses inaccessible areas only. Explain why VYNPS under the discussion section for Item Number 3.5.1-37 does not state: "Nonetheless, the Structures Monitoring Program will confirm the absence of aging effects requiring management for VYNPS Group 6 concrete components." This would apply to above grade concrete, like in Line Item 3.5.1-36 for accessible concrete.	LRA Amendment For clarification, LRA Table 3.5.1, Item Number 3.5.1-37, will be revised to state the following. "Not applicable. Nonetheless the Structures Monitoring Program will confirm the absence of aging effects requiring management for VYNPS Group 6 concrete components. See Section 3.5.2.2.2.4(3)".	Accepted
286	A-W-21 LRA Table 3.5.1, Item Number 3.5.1-40, under the discussion column, states: "Plant experience has not identified reduction in concrete anchor capacity or other concrete aging mechanisms. Nonetheless, the Structures Monitoring Program will confirm absence of aging effects requiring management for VYNPS concrete components." The project team cannot find an AMR line item in Table 2 for this component (Building concrete at locations of expansion and grouted anchors; grout pads for support base plates). Provide the Table 2 number, LRA page number, and component for where this AMR line item is evaluated and shown.	LRA Amendment Building concrete at locations of expansion and grouted anchors; grout pads for support base plates are shown as "foundation" and "Reactor vessel support pedestal" in LRA Table 3.5.2-1 (page 3.5-54), "foundation" in Tables 3.5.2-2 thru 3.5.2-5 (pages 3.5-58, 3.5-60, 3.5-62, and 3.5-66), and as 'Equipment pads/foundations" in Table 3.5.2-6 (page 3.5-78). Further evaluation is provided in LRA section 3.5.2.2.2.6(1), page 3.5-14. LRA Table 3.5.1, Item Number 3.5.1-40 discussion will be revised to add "See Section 3.5.2.2.2.6(1)".	Accepted

Item	Request	Response	Status
287	3.1.1-19-P-02 Please clarify the basis for omitting the leak-off lines themselves from Table 3.1.2-1.	The head seal leak detection lines are not part of the pressure vessel but are included in Table 3.1.2-3 with other reactor coolant pressure boundary piping. They are included on page 3.1-67 with piping and fittings <4"NPS. Plant specific note 104 identifies the applicability of this aging management review result to the leak detection line.	Closed
288	3.1.1-25-P-01 Please clarify the basis for omitting the jet pump sensing lines from Table 3.1.2-2	The jet pump sensing lines do not appear in Table 3.1.2-2 (Reactor Vessel Internals Summary of Aging Management Evaluation) because the jet pump sensing lines inside the vessel are not subject to aging management review. These lines are not required to maintain pressure boundary and hence have no license renewal intended function. The jet pump sensing lines outside the vessel are included with the piping <4" in Table 3.1.2-3.	Closed
289	3.1.1-40-P-02 On page 3.1-41, for the stainless incore housings, please confirm that the correct GALL item is referenced.	Many NUREG-1801, Volume 2 items are very similar in terms of materials, environment, aging effect and aging management program. Where a NUREG-1801 item lists the same component, the choice is straightforward. Where NUREG-1801 does not match the specific component, the selection of the item to compare to the aging management review results is somewhat arbitrary. In this case, the components were considered a subset of the reactor vessel (hence the listing within the reactor vessel table) and the comparison was made to the cracking item within the NUREG-1801 BWR reactor vessel table that best (subjectively) represented the incore housings.	Closed
290	3.1.1-41-P-02 On page 3.1-41 and 3.1-43, the GALL items referenced in this AMR are for stainless steel and nickel-based alloy components that may be subject to SCC. It does not appear to be appropriate for low-alloy steel. Is there a more suitable GALL item?	The material for these components is identified as low allow steel with stainless steel cladding. The material exposed to the internal environment of reactor coolant (treated water) is the stainless steel cladding. When evaluating surface aging effects such as cracking and loss of material, the stainless steel cladding is the material that must match the NUREG-1801 item. NUREG-1801 item IV.A1-1 provides the best match for the material, environment and aging effect combination within the BWR reactor vessel table. The applicable material for the external environment (air) is low alloy steel (or "steel" in NUREG-1801 terms).	Closed

Item	Request	Response	Status
291	3.1.1-41-P-04 On page 3.1-52, the component type 'thermal sleeves, feedwater inlets (N4)' is managed using inservice inspection and water chemistry control - BWR. How are the thermal sleeves to be inspected?	LRA Amendment The feedwater nozzle thermal sleeves are in Table 3.1.2-1 with an intended function of pressure boundary. Cracking of the thermal sleeves is managed by Inservice Inspection and Water Chemistry Control – BWR. Further review of the thermal sleeve design (to determine exactly how ISI inspects them) determined that the VY sleeves are not welded in place, rather they are an interference fit. As such, there is no weld to the pressure boundary piping that can be examined by ISI. Given that there is no pressure boundary weld, these sleeves are not part of the pressure boundary. As such they have no intended function for License Renewal, and with no intended function they are not subject to aging management review1. Therefore, Vermont Yankee will amend the License Renewal Application to indicate that the feedwater thermal sleeves are not subject to aging management review. 1 The feedwater thermal sleeves have no non-safety affecting safety related (a2) function. They are completely contained within the feedwater piping and cannot spray or leak on other equipment. The feedwater thermal sleeves are a part of the feedwater piping inside the vessel, and failure of that piping does not defeat the delivery of water to the vessel annulus, as any leakage also goes to the vessel annulus.	Accepted
292	3.1.1-51-P-01 On page 3.1-60, the CASS jet pump castings exposed to treated water are managed. Please confirm that GALL item IV.B1-11 applies, and whether there is a cast orificed fuel support or CRD component that is also managed this way.	Same question on #217.	Closed

Item	Request	Response	Status
293	3.3.1-32-K-01 Beginning on page 3.3-94, many component types are managed using the diesel fuel monitoring program. Please confirm that the VYNPS Diesel Fuel Monitoring AMP is consistent with GALL XI.M32, "One-Time Inspection," as well as with XI.M30, "Fuel Oil Chemistry."	LRA Amendment As stated in LRA Section 3.2.2.9, loss of material due to general, pitting, crevice, and MIC for carbon steel piping and components exposed to fuel oil is managed by the Diesel Fuel Monitoring Program. This program includes sampling and monitoring of fuel oil quality to ensure levels of water, particulates, and sediment remain within the specified limits. Maintaining parameters within limits ensures that significant loss of material will not occur. Ultrasonic inspection of storage tank bottoms where water and contaminants accumulate will be performed to confirm the effectiveness of the Diesel Fuel Monitoring Program. As stated in LRA Section B.1.9, the Diesel Fuel Monitoring Program is consistent with the program described in NUREG-1801, Section XI.M3, Fuel Oil Chemistry Program, with minor exceptions. The Diesel Fuel Monitoring Program is not consistent with GALL XI.M32, "One-Time Inspection," nor are one-time inspections necessary to verify the effectiveness of the program. The Diesel Fuel Monitoring Program includes periodic cleaning, visual inspection, and ultrasonic inspection of storage tank bottoms where water and contaminants accumulate to confirm the effectiveness of the oil quality monitoring activities to preserve an environment that is not conducive to corrosion. The One-Time Inspection program will be revised to include activities to confirm the effectiveness of the Oil Analysis and Diesel Fuel Monitoring programs.	Accepted

Item	Request	Response	Status
294	3.3.1-33-K-01 Beginning on page 3.3-71, several component types in a lube oil environment are managed using the VYNPS oil analysis program. Please confirm that the VYNPS Oil Analysis AMP is consistent with GALL XI.M32, "One-Time Inspection," as well as with XI.M39, "Lubricating Oil Analysis." See 3.3.1-14-K-01	LRA Amendment As stated in LRA Section 3.2.2.7, steel piping and components in auxiliary systems at VYNPS that are exposed to lubricating oil are managed by the Oil Analysis Program, which includes periodic sampling and analysis of lubricating oil to maintain contaminants within acceptable limits, thereby preserving an environment that is not conducive to corrosion. As stated in LRA Section B.1.20, the Oil Analysis Program is consistent with the program described in NUREG-1801, Section XI.M39, Lubricating Oil Analysis, with a minor exception. The Oil Analysis Program is not consistent with GALL XI.M32, "One-Time Inspection," nor are one-time inspections necessary to verify the effectiveness of the program. Metals are not corroded by the hydrocarbon components of lubricants. Lubricating oils are not good electrolytes and the oil film on the wetted surfaces of components tends to minimize the potential for corrosion. Corrosion in lube oil systems only occurs as the result of the presence of impurities or moisture. Therefore, an effective oil analysis program, which maintains impurities and moisture below specified limits, precludes the need for one-time inspections. Operating experience at VYNPS has confirmed the effectiveness of the Oil Analysis Program in maintaining moisture and impurities within limits such that corrosion has not and will not affect the intended functions of these components. In numerous past precedents (including NUREG-1828, Arkansas Nuclear One Unit 2 SER, Section 3.0.3.3.6, and NUREG-1831, Donald C. Cook SER, Section 3.0.3.3.8), the staff concluded that an effective oil analysis program, which maintains impurities and moisture below specified limits, is sufficient to demonstrate that the effects of aging will be adequately managed so that the intended functions will be maintained consistent with the current licensing basis for the period of extended operation. The One-Time Inspection program will be revised to include activities to confirm the effectiveness of the Oil Analysis and Diesel Fuel Monitoring programs.	Accepted

Item	Request	Response	Status
295	3.3.1-38-K-01 Beginning on page 3.3-138, SCC of many stainless steel components exposed to reactor coolant above 140F is managed by the water chemistry - BWR program. Provide documentation that demonstrates that these are outside the scope of the BWR SCC program. Also, please clarify how the effectiveness of the AMP will be verified. (Since some of these components are <NPS 4, the review team understands that they are outside the scope of the BWR SCC program. However, it is not clear whether OTI for small-bore piping will be used or the OTI included in the VYNPS water chemistry programs.	LRA Amendment LRA Table 3.3.2-11 includes stainless steel post-accident sampling system (PASS) sample line tubing and valves that are exposed to treated water or steam from the reactor coolant system on internal surfaces. The components are less than 4" NPS and are outside the Class I reactor coolant system (RCS) pressure boundary. They are, therefore, outside the scope of the BWR SCC program. Aging of the PASS sample line tubing and valves is managed by the Water Chemistry Control – BWR Program, which is verified by the One-Time Inspection Program. To provide further clarification, the effectiveness of the Water Chemistry Control – Auxiliary Systems, BWR, and Closed Cooling Water programs is confirmed by the One-Time Inspection program. This requires an amendment to the license renewal application to change the Appendix A, SAR supplement descriptions for the Water Chemistry Control –Auxiliary Systems, BWR and Closed Cooling Water programs to explicitly state One-Time Inspection Program activities will confirm the effectiveness of these programs. However, inspections performed under the small-bore piping activity, which applies to components within the Class-I RCS pressure boundary, will also provide data useful for evaluating the condition of these downstream components.	Accepted
296	3.3.1-40-K-01 On page 3.3-97, a carbon steel tank is addressed. Please describe how the system walkdown program will satisfy the recommendations of GALL AMP XI.M29, "Aboveground Steel Tanks."	The tanks described on page 3.3-97 are diesel fuel oil tanks with external protective coatings. The attributes in GALL AMP XI.M29, "Aboveground Steel Tanks" include preventive measures to mitigate corrosion by protecting the external surface of steel tanks with paint or coatings in accordance with standard industry practice. This program relies on periodic system walkdowns to monitor degradation of the protective paint or coating. This program also monitors corrosion at inaccessible locations such as the tank bottom by thickness measurement. The System Walkdown Program provides the preventive measures to protect the external accessible surfaces by visual inspection of carbon steel tanks to identify degradation of coatings, sealants, and caulking plus indications of leakage. Readily accessible tank surfaces are inspected at least once per refueling cycle and are normally performed more frequently. Corrosion at inaccessible locations of the tank is addressed by thickness measurements conducted as part of the Diesel Fuel Monitoring Program. This program applies to the concrete (ext) environment for the tank bottom as shown on page 3.3-97. Protective coatings on accessible external surfaces are repaired as part of the corrective action process following periodic inspection. Corrective action is taken as necessary on the tank bottom should minimum wall requirements not be maintained. These combined actions satisfy the requirements of the GALL AMP XI.M29, "Aboveground Steel Tanks".	Closed

Item	Request	Response	Status
297	3.3.1-47-K-01 Beginning on page 3.3-72, gray cast iron and carbon steel exposed to treated water is managed using the WC-CCW program. GALL recommends performance monitoring to confirm the effectiveness of the CCCW program. Please identify an acceptable alternative method that will be used to verify the effectiveness of the WC - CCW program.	LRA Amendment The One-Time Inspection Program, described in LRA Section B.1.21 includes inspections to verify the effectiveness of the water chemistry control aging management programs (Water Chemistry Control – Auxiliary Systems, Water Chemistry Control – BWR, and Water Chemistry Control – Closed Cooling Water) by confirming that unacceptable cracking, loss of material, and fouling is not occurring. As stated in LRA Section B.1.21, the One-Time Inspection Program is a new program which will be consistent with the program described in NUREG-1801, Section XI.M32, "One-Time Inspection." LRA Tables 3.1.1, 3.2.1, 3.3.1, and 3.4.1 indicate that the One-Time Inspection Program is credited along with the water chemistry control programs for line items for which GALL recommends a one-time inspection to confirm water chemistry control. For simplicity, the subsequent tables (Table 2's) do not list the One-Time Inspection Program each time a water chemistry control program is listed. However, since the One-Time Inspection Program is applicable to each water chemistry control program, it is also applicable to each line item that credits a water chemistry control program. To provide further clarification, the effectiveness of the Water Chemistry Control – Auxiliary Systems, BWR, and Closed Cooling Water programs is confirmed by the One-Time Inspection program. This requires an amendment to the license renewal application to change the Appendix A, SAR supplement descriptions for the Water Chemistry Control –Auxiliary Systems, BWR and Closed Cooling Water programs to explicitly state One-Time Inspection Program activities will confirm the effectiveness of these programs.	Accepted
298	3.3.1-58-K-01 On page 3.3-121, loss of material from external surfaces of a tank is managed using the system walkdown program instead of the fire protection program. Since the tank in question is in the FP system, please confirm that the FP AMP does not manage this aging effect.	License Renewal Commitment #30 This tank is in the CO2 system. The system walkdown program was selected since it is the program that is the most used for managing external aging effects of components in almost all systems similar to the External Surfaces Monitoring Program in GALL. Inspections in this program must be performed at least once per refueling. The GALL AMP XI.M26, Fire Protection requires visual inspection once every six months for CO2 system components where the system walkdown frequency is once each refueling cycle. Since aging effects for this tank external surface in indoor air would be manifested over several years, it was determined that this variation in inspection frequency is not significant such that system walkdown was still appropriate. However, per license renewal commitment 30, VYNPS will perform CO2 system walkdowns every six months starting no later than the beginning of the period of extended operation.	Accepted

Item	Request	Response	Status
299	3.3.1-68-K-01 On page 3.3-194, loss of material from carbon steel components is managed using PS&PM. Please explain the intended function (pressure boundary) of the instrument air system and how it relates to the a(2) category to which the system has been assigned. Also, please explain how this GALL v2 item was chosen, since it invokes a fire protection AMP.	For components included for (a)(2) the pressure boundary function is two fold. The first is the pressure boundary of the passive component that ensures that the component cannot spatially interact through spray or leakage onto a safety related components. The second applies for non-safety components connected to safety related components where the non-safety components provide structural support for the safety related such that loss of pressure boundary would be indicative of structural integrity. For the carbon steel components containing untreated water that are managed by PSPM the pressure boundary function is only for preventing spray or leakage. The instrument air system is an auxiliary system. This GALL item was chosen because in chapter VII for Auxiliary systems it was the best match for a material, environment, aging effect combination. A note E was selected since a different program than Fire Protection was invoked.	Closed
300	3.3.1-68-K-02 [Original Question] On page 3.3-213, loss of material from carbon steel components is managed using OTI. Please explain how this GALL v2 item was chosen, and justify the use of OTI for carbon steel exposed to raw water as opposed to a periodic inspection. [Follow-up Question] Looking for commitment to do more than OTI for carbon steel exposed to raw water.	LRA Amendment [Original Response] The environment for these components is untreated water from the radwaste system which is defined in table 3.0-1 of the LRA as water that was originally treated but now may contain contaminants. Carbon steel in treated water is not expected to experience any significant aging effects. As a result this untreated water environment is not expected to result in significant aging such as loss of material, however a one time inspection will be performed to confirm the absence of significant aging effects. If significant aging is found to be occurring the corrective action program will determine the need for future inspections including a periodic inspection or possible replacement. This GALL line item was chosen since the radwaste system is an auxiliary system in GALL chapter VII. For the material, environment, and aging effect combination of this item, (where untreated water is equivalent to raw water) this line item was the most appropriate. A note E was selected since a different program was used. No LRA Amendment for the "original" question. See below. [Follow-up Response] The "untreated water" environment for the carbon steel and copper alloy radwaste system components in LRA Table 3.3.2-13-32 is originally treated water that may now contain contaminants that could result in an aggressive environment. Therefore, the aging management program will be changed from One-Time Inspection to Periodic Surveillance and Preventive Maintenance for managing loss of material for carbon steel and copper alloy components in the radwaste system exposed to untreated water (LRA Table 3.3.2-13-32). This requires a change to the LRA.	Accepted

Item	Request	Response	Status
301	3.3.1-68-K-03 [Follow-up Question] Looking for commitment to do more than OTI for carbon steel exposed to raw water. [Original Question] Beginning on page 3.3-206, loss of material from carbon steel components is managed using OTI. Please justify the use of OTI for carbon steel exposed to raw water as opposed to a periodic inspection.	[Original Question] The components in question are in the potable water system. Potable water, though not treated in accordance with a GALL program such as water chemistry, is treated to an extent before used at the site such that it is acceptable for human consumption. However, since it is not monitored by the site it was identified as untreated water which is defined in table 3.0-1 of the LRA as water that was originally treated but now may contain contaminants. Carbon steel in treated water is not expected to experience any significant aging effects. As a result this untreated water environment is not expected to result in significant aging such as loss of material which could impact the intended function of the component. However a one time inspection will be performed to confirm the absence of significant aging effects. If significant aging is found to be occurring the corrective action program will determine the need for future inspections including a periodic inspection or possible replacement. (New Response): The "untreated water" environment for the carbon steel potable water system components in LRA Table 3.3.2-13-29 Is not "raw water"; it is actually treated water. Water for this system comes from four onsite wells and is monitored and treated to meet the regulations of the state of Vermont. It was labeled "untreated water" because conductivity and dissolved oxygen are not monitored. However, carbon steel is not expected to experience significant aging effects in a treated water environment. As indicated in the LRA, a One-Time Inspection of carbon steel potable water system components exposed to "untreated water" will be performed to confirm the absence of significant aging effects. Therefore, a commitment to do more to manage aging of these components is not necessary. CLOSED TO RAI 3.3.1-68-K-03	Closed
302	3.3.1-69-K-01 On page 3.3-104, loss of material from stainless steel components is managed using FP. Please explain why the filter and filter housing are managed with the fire protection program instead of the fire water system program.	The stainless steel filters and filter housings exposed to raw water on page 3.3-106 are filters that support the operation of the diesel fire pump by filtering the cooling source to the engine. The Fire Protection Program performs tests and inspections of the diesel engine and its support components and is therefore credited for management of these components.	Closed
303	3.3.1-70-K-01 Beginning on page 3.3-106, loss of material from copper alloy components in raw water is managed using FP. Please explain why these components are managed with the fire protection program instead of the fire water system program.	The tubing exposed to raw water on page 3.3-106 supports the operation of the diesel fire pump by supplying the cooling water source to diesel engine. The Fire Protection Program performs tests and inspections of the diesel engine and its support components and therefore is credited for management of these components.	Closed

Item	Request	Response	Status
304	3.3.1-70-K-02 [Follow-up Question] Looking for commitment to do more than OTI for carbon steel exposed to raw water. [Original Question] On page 3.3-213, loss of material from copper alloy components in raw water is managed using OTI. Please explain the basis for applying an OTI program instead of the fire water system program.	LRA Amendment [Original Response] The environment for these components is untreated water from the radwaste system which is defined in table 3.0-1 of the LRA as water that was originally treated but now may contain contaminants. Since this component is not in the fire protection system the use of the fire protection program is not appropriate. Copper alloy in treated water is not expected to experience any significant aging effects. Because this untreated water began as treated water it is also not expected to result in significant aging such as loss of material which could impact the intended function of the component. However a one time inspection was chosen to confirm the absence of significant aging effects. If significant aging is found to be occurring the corrective action program will determine the need for future inspections including a periodic inspection or possible replacement. (New Response) The "untreated water" environment for the carbon steel and copper alloy radwaste system components in LRA Table 3.3.2-13-32 Is originally treated water that may now contain contaminants that could result in an aggressive environment. Therefore, the aging management program will be changed from One-Time Inspection to Periodic Surveillance and Preventive Maintenance for managing loss of material for carbon steel and copper alloy components in the radwaste system exposed to untreated water (LRA Table 3.3.2-13-32).	Accepted
305	3.3.1-83-K-01 On page 3.3-107, fouling of copper alloy heat exchanger tubes in raw water is managed using FP, where GALL suggests OCCW. Please identify the specific heat exchanger to which this AMR applies, and the basis for the choice of AMP.	The heat exchangers represented are the fire pump diesel jacket water heat exchanger and the gear box oil cooler. Both heat exchangers use water from the fire water system (raw water) for cooling. The Fire Protection Program performs tests and inspections of the diesel engine. Since these heat exchangers are part of the fire diesel it is appropriate to manage fouling with the Fire Protection Program which tests the engine and its auxiliaries.	Closed
306	3.3.2-04-01-K-01 On page 3.3-78, fouling of aluminum heat exchanger fins in air is managed using PSM. Please provide the procedure under which fouling is monitored.	These fins are part of the emergency diesel generator air coolers that are reviewed in VY-AMRM-13. The diesel generators are tested periodically in procedure OP 4126 "Diesel Generators Surveillance". This is an extensive test procedure that includes verification of local diesel operating conditions including the intercooler air temperature during diesel operation. The monitoring of this temperature within temperature limits confirms the proper operation of the intercooler which provides the indication that fouling that can impact the diesel performing its intended function is not occurring. The data is recorded in the Diesel Generator Operating Data" at the end of OP4126 and page 1 of 6 has the intercooler air temperature with normal range and acceptance criteria shown.	Closed

Item	Request	Response	Status
307	3.3.2-04-03-K-01 On page 3.3-79, fouling of copper exchanger tubes in air is managed using PSM. Please provide the procedure under which fouling is monitored.	These tubes are part of the emergency diesel generator air coolers that are reviewed in VY-AMRM-13. The diesel generators are tested periodically in procedure OP 4126 "Diesel Generators Surveillance". This is an extensive test procedure that includes verification of local diesel operating conditions including the intercooler air temperature during diesel operation. The monitoring of this temperature within temperature limits confirms the proper operation of the intercooler which provides the indication that fouling that can impact the diesel performing its intended function is not occurring.	Closed
308	B.1.16-P-02 GALL recommends an AMP that is consistent with GALL AMP XI.M24, "Compressed Air Monitoring." VYNPS uses a plant specific AMP, B.1.16, Instrument Air Monitoring Program," which does not include the pressure testing that is suggested by the GALL AMP. What program will be used to perform pressure testing of the instrument air system?	The Instrument Air Quality program at VYNPS is a plant specific program. Through monitoring of air quality, the Instrument Air Quality Program maintains instrument air free of significant contaminants and water, thereby preventing loss of material. This approach to manage loss of material is more effective than leakage monitoring using pressure testing. Pressure testing of components detects leakage that would be an indication of loss of the pressure boundary intended function. This testing does not ensure that their passive intended function of maintaining pressure boundary is managed. As a result, the Instrument Air Quality program at VYNPS does not include pressure testing of components. However, by maintaining the instrument air system free of significant contaminants and water, the Instrument Air Quality Program is more effective than pressure testing for managing loss of material in the instrument air system.	Closed
309	3.1.1-01-P-02 Generic Question 1: VY LRA identified that cracking fatigue credits TLAA – metal fatigue for almost all the components in RCS (Section 3.1). In Appendix C, BWRVIP applicant's action items (AAIs) identified that there is no plant-specific TLAAs. Please clarify the difference between AMR and AAIs. Note: This question applied to all Sections (3.1 thru 3.6). If TLAA was credited in the LRA, the TLAA analysis should be available to support the AMR.	LRA Amendment Under Entergy's approach, the Section 3 table entries listing Cracking-fatigue with TLAA – metal fatigue only indicate that the component meets the screening criteria (temperature) for fatigue, and should be reviewed to determine the existence of TLAA (metal fatigue analyses). That review is documented in Section 4 of the LRA. Based on requirements of the license renewal rule, Section 4 includes discussion of only those entries that concluded there were associated TLAA. This resulted in numerous "TLAA – metal fatigue entries in Section 3 with no corresponding discussion in Section 4. Entergy will modify the tables in Section 3 to delete the "TLAA – metal fatigue" entries for which there is no TLAA discussed in Section 4.	Accepted

Item	Request	Response	Status
310	B.3.2.2-H1-01 In LRA Table 3.2.2-1 on page 3.2-34, the applicant proposed to manage the loss of material of carbon steel, in a treated water environment, using Water Chemistry Control - BWR Program. NUREG-1801 recommends the Water Chemistry Control - BWR along with a One-Time Inspection Program. The staff request the applicant provide justification for only using the Water Chemistry Control - BWR Program.	LRA Amendment As stated in LRA Section B.1.30.2, the Water Chemistry Control – BWR Program is consistent with the program described in NUREG-1801, Section XI.M2, "Water Chemistry." The One-Time Inspection Program, described in LRA Section B.1.21 includes inspections to verify the effectiveness of the water chemistry control aging management programs (Water Chemistry Control – Auxiliary Systems, Water Chemistry Control – BWR, and Water Chemistry Control – Closed Cooling Water) by confirming that unacceptable cracking, loss of material, and fouling is not occurring. As stated in LRA Section B.1.21, the One-Time Inspection Program is a new program which will be consistent with the program described in NUREG-1801, Section XI.M32, "One-Time Inspection." LRA Tables 3.1.1, 3.2.1, 3.3.1, and 3.4.1 indicate that the One-Time Inspection Program is credited along with the water chemistry control programs for line items for which GALL recommends a one-time inspection to confirm water chemistry control. For simplicity, the subsequent tables (Table 2's) do not list the One-Time Inspection Program each time a water chemistry control program is listed. However, since the One-Time Inspection Program is applicable to each water chemistry control program, it is also applicable to each line item that credits a water chemistry control program. To provide further clarification of the Water Chemistry Control - Auxiliary Systems, BWR, and Closed Cooling Water programs is confirmed by the One-Time Inspection program. This requires an amendment to the license renewal application to change the Appendix A, SAR supplement descriptions for the Water Chemistry Control - Auxiliary Systems, BWR and Closed Cooling Water programs to explicitly state One-Time Inspection Program activities will confirm the effectiveness of these programs.	Accepted
311	B.3.2.2-H1-02 In LRA Table 3.2.2-1 on page 3.2-33, the applicant proposed using the Water Chemistry Control - BWR Program to manage cracking in treated water environment. Please give justification why the Aging Management Program credited is not in accordance with the NUREG-1801 recommended program.	The component in question is assumed to be the cyclone separator with an aging effect of cracking that credits GALL line item V.D2-29. The GALL line item chosen for this component specifies the BWR SCC program in addition to Water Chemistry. The BWR SCC program is applicable to all BWR piping and piping welds made of austenitic SS and nickel alloy that is 4 in. or larger in nominal diameter and contains reactor coolant at a temperature above 93°C (200°F) during power operation, regardless of code classification. The components included in this line item are less than 4" NPS and are outside the reactor coolant system (RCS) pressure boundary. They are, therefore, outside the scope of the BWR SCC program. As a result the Water Chemistry Control – BWR program is used alone. As stated in LRA Section B.1.30.2, the Water Chemistry Control – BWR Program is consistent with the program described in NUREG-1801, Section XI.M2, "Water Chemistry." The One-Time Inspection Program, described in LRA Section B.1.21 includes inspections to verify the effectiveness of the water chemistry control aging management programs (Water Chemistry Control – Auxiliary Systems, Water Chemistry Control – BWR, and Water Chemistry Control – Closed Cooling Water) by confirming that unacceptable cracking, loss of material, and fouling is not occurring.	Closed

Item	Request	Response	Status
312	B.3.2.2-H1-03 In LRA Table 3.2.2-1 on page 3.2-34, the applicant proposed to manage the loss of material of gray cast iron, in a treated water environment, using Water Chemistry Control - Closed Cooling Water Program. The applicant states the program is consistent with NUREG-1801 with one exception, there is not performance and functional testing. The staff request the applicant provide justification on why the Water Chemistry Control - Closed Cooling Water Program is used for this line item.	LRA Amendment As stated in LRA Section B.1.20.3, passive intended functions of pumps, heat exchangers and other components will be adequately managed by the Water Chemistry Control - Closed Cooling Water Program through monitoring and control of water chemistry parameters. Control of water chemistry ensures that loss of material will not occur in gray cast iron components in a treated water environment. Also the one-time inspection program described in LRA Section B.1.21 includes inspections to verify the effectiveness of all the water chemistry control aging management programs by confirming that unacceptable cracking, loss of material, and fouling is not occurring. In most cases, functional and performance testing verifies that component active functions can be accomplished and as such would be included as part of Maintenance Rule (10CFR50.65). Passive intended functions of pumps, heat exchangers and other components will be adequately managed by the closed cooling water chemistry program through monitoring and control of water chemistry parameters. The use of the Water Chemistry Control - Closed Cooling Water and One time inspection programs are effective programs to manage loss of material for gray cast iron in a treated water environment. To provide further clarification of the Water Chemistry Control - Auxiliary Systems, BWR, and Closed Cooling Water programs is confirmed by the One-Time Inspection program. This requires an amendment to the license renewal application to change the Appendix A, SAR supplement descriptions for the Water Chemistry Control - Auxiliary Systems, BWR and Closed Cooling Water programs to explicitly state One-Time Inspection Program activities will confirm the effectiveness of these programs.	Accepted
313	B.3.2.2-H1-04 In Section 3.2 of the LRA the applicant uses Water Chemistry Control - Closed Cooling Water Program as an Aging Management Program. The program is stated to be consistent with NUREG-1801 Closed Cycle-Cooling Water System with one exception. Please provide justification why the Water Chemistry Control - Closed Cooling Water Program is used without the recommended testing and inspection to monitor the effects of corrosion and SCC on the intended function of components.	LRA Amendment To provide further clarification of the Water Chemistry Control - Auxiliary Systems, BWR, and Closed Cooling Water programs is confirmed by the One-Time Inspection program. This requires an amendment to the license renewal application to change the Appendix A, SAR supplement descriptions for the Water Chemistry Control - Auxiliary Systems, BWR and Closed Cooling Water programs to explicitly state One-Time Inspection Program activities will confirm the effectiveness of these programs.	Accepted

Item	Request	Response	Status
314	B.3.2.2-H1-05 In Table 3.2 in Section 3.2 of the LRA the applicant uses Water Chemistry Control - BWR Program to manage the aging effect of cracking on stainless steel material. NUREG-1801 recommends Water Chemistry and BWR Stress Corrosion Cracking Program. Please provide justification why the applicant is not in accordance with the recommended NUREG-1801.	It cannot be determined exactly which line items are referred to but the BWR SCC program is applicable to all BWR piping and piping welds made of austenitic SS and nickel alloy that is 4 in. or larger in nominal diameter and contains reactor coolant at a temperature above 93°C (200°F) during power operation, regardless of code classification. The piping components included in section 3.2 with temperatures above 200 this line item are less than 4" NPS and are outside the reactor coolant system (RCS) pressure boundary. They are, therefore, outside the scope of the BWR SCC program. As a result the Water Chemistry Control – BWR program is used alone. As stated in LRA Section B.1.30.2, the Water Chemistry Control – BWR Program is consistent with the program described in NUREG-1801, Section XI.M2, "Water Chemistry." The One-Time Inspection Program, described in LRA Section B.1.21 includes inspections to verify the effectiveness of the water chemistry control aging management programs (Water Chemistry Control – Auxiliary Systems, Water Chemistry Control – BWR, and Water Chemistry Control – Closed Cooling Water) by confirming that unacceptable cracking, loss of material, and fouling is not occurring.	Closed

Item	Request	Response	Status
315	B.3.2.2-H1-06 In Table 3.2.2-4 in Section 3.2 of the LRA, the applicant uses Oil Analysis Program to manage carbon steel in a lube oil environment with loss of material as the aging effect. Please provide justification to the staff why the Table 2 line items do not have an inspection program to evaluate detection of aging effects as recommended by NUREG-1801.	LRA Amendment As stated in LRA Section 3.2.2.7, steel piping and components in auxiliary systems at VYNPS that are exposed to lubricating oil are managed by the Oil Analysis Program, which includes periodic sampling and analysis of lubricating oil to maintain contaminants within acceptable limits, thereby preserving an environment that is not conducive to corrosion. As stated in LRA Section B.1.20, the Oil Analysis Program is consistent with the program described in NUREG-1801, Section XI.M39, Lubricating Oil Analysis, with a minor exception. The Oil Analysis Program is not consistent with GALL XI.M32, "One-Time Inspection," nor are one-time inspections necessary to verify the effectiveness of the program. Metals are not corroded by the hydrocarbon components of lubricants. Lubricating oils are not good electrolytes and the oil film on the wetted surfaces of components tend to minimize the potential for corrosion. Corrosion in lube oil systems only occurs as the result of the presence of impurities or moisture. Therefore, an effective oil analysis program, which maintains impurities and moisture below specified limits, precludes the need for one-time inspections. Operating experience at VYNPS has confirmed the effectiveness of the Oil Analysis Program in maintaining moisture and impurities within limits such that corrosion has not and will not affect the intended functions of these components. In numerous past precedents (including NUREG-1828, Arkansas Nuclear One Unit 2 SER, Section 3.0.3.3.6, and NUREG-1831, Donald C. Cook SER, Section 3.0.3.3.8), the staff concluded that an effective oil analysis program, which maintains impurities and moisture below specified limits, is sufficient to demonstrate that the effects of aging will be adequately managed so that the intended functions will be maintained consistent with the current licensing basis for the period of extended operation. The One-Time Inspection program will be revised to include activities to confirm the effectiveness of the Oil Analysis and Diesel Fuel Monitoring programs.	Accepted
316	When Entergy Vermont Yankee (ENVY) goes to the period of extended operation, how will ENVY analyze and evaluate the equipment in the Electrical Equipment Qualification (EQ) program for 60 years per 10 CFR 54.21? Include in the response that the environmental conditions (both ambient and accident) resulting from EPU will be used as the bases for the analysis and evaluation going forward. Also confirm that the approach described in the response to this question is consistent with the ENVY LRA.	VYNPS will continue to use the analysis and evaluation techniques described in 10 CFR 50.49 and IEEE 323. The equipment in the EQ program is both active and passive. The EQ program documentation has recently been updated to reflect the normal and accident environments under EPU conditions. The program considers equipment degradation from EPU radiation dose, normal and accident (LOCA, HELB) temperatures as well as cycling, pressure, humidity, etc. For the period of extended operation, the EQ program requires VYNPS to update the EQ documentation to reflect the additional service life. The environmental conditions (both ambient and accident) resulting from EPU are the basis for evaluations and analysis going forward. This is consistent with the description of the EQ program in the VYNPS LRA.	Closed

Item	Request	Response	Status
317	LRA-4.6 Torus Piping a. Is VY bounded by MPR 751? Please provide a statement indicating that the estimate of the total number of 60 year SRV actuations used in the design fatigue analysis remains valid and conservative, based on the actual SRV actuations counted through 2005. b. Is VY still bounded by MPR 751 after power uprate?	a. Per the MPR 751 excerpt provided below, all domestic Mark 1 BWRs appear to meet MPR 751 for both current operating and license renewal terms. It should be noted that VY-SRV operation has been very low and therefore SRV valve cycling and related attached piping has been very low. VY has not had a leaking SRV's since the early 1980's. VY only functionally tests its SRVs once per cycle during reactor shutdown. Based on discussions with Operations, VY has had two SRV actuations events of note e.g.: - Loss of Normal Power Event (1990). - Loss of Switchyard Insulator Event (2005). VY replaces all of its 4 installed SRVs every refueling cycle with readied spares. This refurbishment strategy has ensured that inadvertent SRV operation has been minimized. MPR-751 - Results and Conclusions Relevant to SRV piping (To NRC by GE letter MFN—I87—82 dated 11/30/82). 3.0 RESULTS AND CONCLUSIONS This section contains the results of the fatigue evaluations performed on over 30 torus piping systems. These systems were selected by each A/E as representative of the most highly stressed torus piping systems in their respective plants. Thirty percent of these were SRV discharge lines and the remainder were lines attached to the torus with sizes ranging from 2-inch to 24-inch. All torus piping systems had a fatigue usage less than 0.5. The fatigue evaluation results, which are tabulated in Table 3-1, are summarized as follows: SRV Discharge Piping: Percent less than 0.3 fatigue usage —— 72.7% Percent less than 0.5 fatigue usage —— 100% A very conservative methodology has been developed for fatigue analysis of Mark I Class 2 piping. The fact that the calculated fatigue usage factors are low coupled with the very conservative approach used to develop the fatigue analysis methodology shows that fatigue is not a concern for attached piping. Thus this report answers the concern expressed by the NRC regarding the effect of cyclic mechanical loads on fatigue. Accordingly, there is no need for a complete evaluation of torus piping fatigue on a plant-unique basis. B. Yes. There are no significant changes in the function or performance of the SRVs for EPU conditions. The SRV sizes, Rx dome pressure, SRV set points remain the same as for original licensed power. Also, checked flow conditions at the exit of the SRVs limits any significant increase in flow for the SRV discharge piping. Reference VY-RPT-05-00087, Rev.0. EPU Task Report for ER 04-1409. Additional Information: Based on a review of plant operating records, VYNPS has estimated approximately 150 actuations of a safety relief valve in 35 years of operation. Extrapolating this number to 60 years gives less that 260 lifts, or less than 65 lifts per valve. This is less than 1% of the analyzed 7500 lifts.	Closed

Item	Request	Response	Status
318	The CUF values in LRA Table 4.3-1 that are based on NUREG CR 6260 are not applicable to VY and need to be removed and the issue addressed. Please clarify the commitment made to perform a fatigue re-analysis to be used to address environmental impact. The re-analysis needs to be made to a single code date.	License Renewal Commitment #27 LRA Amendment LRA table 4.3-1 will be amended to remove the NUREG/CR-6260 values. LRA table 4.3-3 will be amended to enter "NA" for the CUFs for the core spray safe end, feedwater piping, RHR return piping, and RR piping tee entries. VYNPS will replace these entries with VYNPS-specific values as discussed below. For the NUREG/CR-6260 locations, VYNPS will determine CUFs incorporating the potential effects of reactor water environment by applying Fen factors to valid CUFs determined by one of the following methods. 1□For locations with existing fatigue analysis, use the existing CUF. 2□More limiting VYNPS-specific locations with a valid CUF may be substituted for the NUREG/CR-6260 locations. 3□Representative CUF values from other plants or from NUREG/CR-6260 may be used if they are adjusted to or envelope the VYNPS-specific external loads. 4□An analysis using an NRC-approved version of the ASME code may be performed for the NUREG/CR-6260 location to determine a valid CUF. Commitment 27 will be revised to indicate a due date of 2 years prior to the period of extended operation and to include reference to performing the analysis to an NRC-approved version of the ASME code.	Accepted

Item	Request	Response	Status
319	LRA Page 4.3-3 and 4 - A) Discuss how VY developed the condensed list of transients provided in Table 4.3-2 from the complete list in the design spec. Also provide a copy of the design-spec(s) with the complete list of transients for NRC review. B) LRA Pg 4.3-4 Modify the statement on the bottom of Pg 4.3-4 that the TLAA remains valid except for exceptions where CUF including EAF for 60 years exceed 1.0. Please discuss the exceptions.	LRA Amendment A) The condensed list of transients in Table 4.3-2 was developed to simplify cycle tracking by the plant operations staff. The basis for reducing the number of transients tracked is contained in Calculations VYC-378 Rev.0 and Rev.1. Attachment 1 of VYC-378 Rev.1 is titled "Recommendations for Tracking/Limiting Reactor Transient Events for Vermont Yankee Nuclear Power Station, November 13,1987. The complete list of design transients is contained in Attachment 1 pgs 24 to 27 and 31 to 32. Copies of VYC-378 Rev.0 and Rev.1 were provided for review. The updated Reactor Vessel Specification for Extended Power Uprate is GE Specification No. 26A6019 Rev.1 dated 6/2/2003. It is supplemented by the original GE Reactor Vessel Design Specification No. 21A1115 Rev.4 issued 10/21//69. Copies of both specifications were provided for review. B) The last paragraph of Section 4.3.1.1 will be clarified as follows. The VYNPS Fatigue Monitoring Program will assure that the allowed number of transient cycles is not exceeded. The program requires corrective action if transient cycle limits are approached. Consequently, the TLAA (fatigue analyses) based on those transients will remain valid for the period of extended operation in accordance with 10 CFR 54.21(c)(1)(i). However, when the effects of reactor coolant environment on fatigue are added to the existing fatigue analyses, several locations have a projected cumulative usage factor in excess of 1.0. See section 4.3.3 for further discussion of the effects of reactor water environment on fatigue.	Accepted
320	LRA Page 4.3-5 Ensure that Reference 4.3-1 is correct. If not, provide the correct reference.	LRA Amendment The correct reference is letter BVY96-96, not 96-48. The originator, addressee, title and date were correct, only the letter number was wrong. The following is the correct citation for Reference 4.3-1. 4.3-1 Sojka, R. E. (VYNPS), to USNRC Document Control Desk, "Response to Request for Additional Information Regarding Vermont Yankee Core Shroud Modification," BVY 96- 96, letter dated August 7, 1996.	Accepted
321	LRA Section 4.3.1.2 - Reconcile/revise the discrepancy in Section 3 tables and Section 4.0 on whether a plant-specific analysis is performed.	LRA Amendment Tables 3.1.2-1, 3.1.2-2, and 3.1.2-3 will be revised to eliminate "TLAA - metal fatigue" whenever there is no corresponding TLAA in Section 4.0. This requires an amendment to the LRA. Close item to #309.	Closed

Item	Request	Response	Status
322	LRA Section 4.3.1.3 - Table 4.3-1 stated that piping that no plant specific fatigue analysis was found/performed for RHR to RR Tee. However, Section 4.3.1.3 says that such analysis was performed. Please resolve this discrepancy.	LRA Amendment The statement in Section 4.3.1.3 was taken from GE calculations 23A5569 (RR Loop A Stress Analysis) and 23A5570 (RR Loop B Stress Analysis). Upon review of the RR piping replacement project records, no such fatigue analyses were located. The statement was made as part of the GE template for these calculations as many plants were replacing the RR piping to the ASME Section III code. VYNPS replaced their piping to the original B31.1 code rather than ASME Section III and no plant specific analysis was performed for VYNPS. Unfortunately the statement was not deleted from the report and the statement was then quoted in the LR application. This requires an amendment to the LRA to achieve consistency between Section 4.3.1.3 and Table 4.3-1. In addition, we will modify section 4.3.2 to make changes consistent with 4.3.1.3. We will add a statement summarizing Section 2.2.2 of LRPD-06 that none of the non-class 1 non-piping components have TLAA. Section 4.3.1.3 and 4.3.2 should read as follows. 4.3.1.3 Class 1 Piping and Components VYNPS replaced reactor recirculation (RR) system piping in 1986. Also replaced were connecting portions of the residual heat removal (RHR) system piping. The new piping was designed and analyzed to ANSI B31.1 but was inspected and tested to ASME Section III requirements. Stress analyses for the reactor recirculation system were performed to B31.1 requirements. B31.1 does not require a detailed fatigue analysis that calculates a CUF, but allows up to 7000 cycles with a stress reduction factor of 1.0 in the stress analyses. The 7000 thermal cycle assumption is valid and bounding for 60 years of operation. Therefore, the pipe stress calculations are valid for the period of extended operation in accordance with 10 CFR 54.21(c)(1)(i). There are no TLAA for Class 1 non-piping components other than the reactor vessel as none of them are designed to codes that require fatigue analyses. UFSAR Section 4.6.3 states that the main steam isolation valves are designed for 40 years based on 100 cycles of operation the first year and 50 cycles of operation per year thereafter. This statement may be interpreted to imply a TLAA. This TLAA will remain valid through the period of extended operation per 10 CFR 54.21(c)(1)(i). The MSIVs will not exceed 2050 cycles in 60 years (34 cycles per year). 4.3.2 Non-Class 1 Fatigue The design of safety class 2 and 3 piping systems incorporates the Code stress reduction factor for determining acceptability of piping design with respect to thermal stresses. The design of ASME B31.1 Code piping also incorporates stress reduction factors based upon an assumed number of thermal cycles. In general, 7000 thermal cycles are assumed, leading to a stress reduction factor of 1.0 in the stress analyses. VYNPS evaluated the validity of this assumption for 60 years of plant operation. The results of this evaluation indicate that the 7000 thermal cycle assumption is valid and bounding for 60 years of operation. Therefore, the pipe stress calculations are valid for the period of extended operation in accordance with 10 CFR 54.21(c)(1)(i). There are no TLAA for any non-class 1 non-piping components as none of	Accepted

them are built to codes that require fatigue analyses.
Some applicants for license renewal have estimated that piping in the primary sampling system will have more than 7000 thermal cycles before the end of the period of extended operation. The sampling system is used to take reactor coolant samples every 96 hours during normal operation. However, the normal samples are taken from the RWCU filter influent, where the water has already been cooled. Thus normal sampling does not cause a thermal cycle. Alternate samples may be taken directly from the B discharge header of the reactor recirculation system via containment penetration X-41; however, this is an infrequently performed procedure and this piping, designed to ASME B31.1, will not exceed 7000 cycles prior to 60 years of operation.

The deletion of the RHR to RR tee CUF from table 4.3-3 will leave a blank for this component. Other deletions will be made from this table per database question 318. VYNPS will complete the table per License Renewal commitment #27 as explained in response to item 318.

Item	Request	Response	Status
323	Does VY plan to perform Environmentally Assisted Fatigue (EAF) on plant specific locations or NUREG 6260 locations? Does the revised FW nozzle analysis (Table 4.3-3) include high cycle fatigue? If not, please explain why.	VY plans to review the NUREG-6260 locations versus the VY plant configuration, and confirm whether they represent the limiting locations for VY. VY will then calculate Environmentally Assisted Fatigue (EAF) Cumulative Usage Factors (CUFs) for the NUREG-6260 locations and supplement these with plant-specific limiting locations as required. See Commitment No. 27. The revised FW nozzle analysis, documented in Structural Integrity Associates Report SIR-04-020, does not include high cycle fatigue. The analysis evaluates the feedwater nozzle for the design transients contained in GE specifications No. 21A1115, "Reactor Pressure Vessel", and No. 26A6019, Revision 1, " Reactor Vessel – Extended Power Uprate". The design transients do not include "high cycle" fatigue. High cycle fatigue in BWR Feedwater nozzles is attributable to leakage of relatively cold feedwater around the thermal sleeve mixing with the hot water in the annulus returning from the steam dryer and steam separator. The mixing of the cold feedwater and the hot water in the annulus results in rapid thermal cycling in the nozzle blend (inner radius) region. The rapid thermal cycling causes cracks to develop in the stainless steel clad on the blend radius. Subsequent system cycling can cause these surface cracks to grow into the nozzle base metal. In response to Generic Letter 80-095 and NUREG-0619, VY performs inspections on the feedwater nozzles. To support the inspection frequency requirements, calculation VYC-1005, "Crack Growth Calculation for Vermont Yankee Feedwater Nozzles" was developed. This calculation is a fatigue crack growth calculation of a postulated flaw in the blend region. Inspections are scheduled prior to the postulated flaw growing to 20% of the ASME Section XI maximum allowable flaw size. The current version of the calculation is VYC-1005, Revision 2. The methodology used is in compliance with GE BWR Owners Group Topical Report "Alternate BWR Feedwater Nozzle Inspection Requirements", GE-NE-523-A71-0594, Revision 1, August 1999, and the NRC Final Safety Evaluation (TAC No. MA6787) dated March 10, 2000. In summary, VYNPS manages this aging by monitoring system thermal cycles and periodically inspecting to assure cracking has not initiated. The NRC has previously reviewed and approved this approach, reference Letter D.H. Dorman (USNRC) to D.A Reid (VYNPC), Subject: Evaluation of Request for Relief from NUREG-0619 for VYNPS dated 2/6/95, (TAC No. M88803). CLOSED TO RAI 4.3-H-02	Closed
324	GE Spec - Clarify how code case N-415 on alternate rules for pressure relief devices relates to fatigue evaluation described in the final T0302 Vessel Integrity Report.	The reference in T0302 is not to an ASME Code Case; it is to paragraph N-415 of Section III of the 1965 version of the code. Section N-415 is titled "Analysis of Cyclic Operation" and is applicable as referenced.	Closed
325	GE Spec - Provide for review only, proprietary versions of NEDC-32424P-A (Reference 1.1) NEDC-32523P-A (Reference 1.2)	Copies of these reports have been provided.	Closed

Item	Request	Response	Status
326	Please provide the fatigue analysis as referenced in the EPU-FSAR: - PUSAR Table 3.7	There is no reactor vessel internals fatigue analysis using the 1986 ASME Section III code as a guideline. The fatigue analysis listed in the PUSAR is Task 0303 and it references NEDC-32424P-A and NEDC-32523P-A; copies of these analyses were provided in response to question 325.	Closed
327	Do you have any plans to use "Fatigue-Pro" other than for cycle counting? If so, explain and supplement application as appropriate.	Current plans for implementing FatiguePro at VY are to use Stress Based Fatigue (SBF) monitoring for the Feedwater Nozzles. Automated or manual cycle counting (CBF) are planned for the remaining components. Components identified for automated CBF were selected using the following criteria; components with a design basis usage factor greater 0.40 for 40 yrs, Class 1 piping components or where field experience suggests that a fatigue concern exists. The transient data acquisition capabilities in FatiguePro may be used for future development of SBF models and/or operational transient cycle counting for components as required to address operational changes and/or environmentally assisted fatigue concerns.	Closed
328	B.1.13-M-01 The staff has discovered, as a result of previous discussions with the applicant, that the VY FAC program calculations are very specific in terms of calculations, as compared to other wall thickness applicants that we have reviewed. Please provide us with a couple of examples of these calculations.	Provided RFO 25 (Fall 2005) large bore inspection report evaluations for inspection nos. 2005 -01, 2005-02, 2005-09, 2005-10,2005-36, and 2005-37: and small bore evaluations 05-SB02 and 05_SB03. Also provided a copy of RFO outage inspection report VY-RPT-06-000002 Rev.0.	Closed
329	B.113-M-02 The staff has also noted in their review of the LRA, that the VY program operational experience appears to be above average in discovery and identification of FAC-related issues. Please provide us with a couple of examples of piping FAC discovery using the present program.	Provided scoping / planning worksheets for both RFO 25 and RFO 26. These list FAC industry OE evaluation for VY.	Closed
330	3.1.1-19-P-03 How does Vermont Yankee do volumetric examinations of small bore piping socket welds?	License Renewal Commitment #16 VYNPS performs visual examinations of these welds as required by Section XI of the ASME code. The One-Time Inspection program will also include destructive or non-destructive examination of one (1) socket welded connection using techniques proven by past industry experience to be effective for the identification of cracking in small bore socket welds. Should an inspection opportunity not occur (e.g., socket weld failure or 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.	Accepted

Item	Request	Response	Status
331	3.2.2-H1.07 In Table3.2.2-1 of Section 3.2 in the LRA System Walkdown Program is used to manage loss of material in the bolting components. Please provide justification why System Walkdown Program instead of NUREG-1801 is recommended Bolting Integrity Program.	License Renewal Commitment #34 LRA Amendment The System Walkdown Program is used to manage loss of material in bolting through the use of visual inspections that are performed at least once per refueling cycle. The GALL Bolting Integrity Program XI.M18 also credits the system walkdown program for the detection of leakage in bolted joints which could lead to loss of material but does not specify an inspection frequency. The application of the System Walkdown program to manage loss of material is therefore consistent with the GALL XI.M18 program. In addition, a Bolting Integrity Program is in development that will address the aging management of bolting in the scope of license renewal. The Bolting Integrity Program will be implemented prior to the period of extended operation in accordance with commitment number 34.	Accepted
332	3.2.2-H1-08 In Table 3.2.2-1 on Page 3.2-35 of the LRA, can the applicant provide justification why Service Water Integrity Program is used to manage cracking in stainless steel raw water environment? The scope of the program does not include cracking as a managed effect. What controlled techniques will be used to manage cracking?	The component in question is the heat exchanger tubes in the RHR heat exchanger. These tubes are cooled by service water and can be exposed to temperatures above the threshold for stress corrosion cracking on the RHR side of the tubes. Since this heat exchanger is cooled by service water it is part of the Service Water Integrity program. In LRPD-02 section 4.20.B.1.b the scope of this program includes the aging effect of cracking. As described in section 4.20.B.4.b under Detection of Aging Effects, heat exchanger tubes are eddy current tested to detect the presence of cracking. The RHR heat exchanger tubes identified by this line item are periodically eddy current tested which would detect the presence of cracking.	Closed
333	3.2.2-H1-09 In Table 3.2's of the LRA, please justify the use of System Walkdown Program on bolting components with loss of material aging effect. The NUREG-1801 recommends Bolting Integrity Program please justify your position on these Section 3.2 line items.	License Renewal Commitment #34 LRA Amendment The System Walkdown Program is used to manage loss of material in bolting through the use of visual inspections that are performed at least once per refueling cycle. The GALL Bolting Integrity Program XI.M18 also credits the system walkdown program for the detection of leakage in bolted joints which could lead to loss of material but does not specify an inspection frequency. The application of the System Walkdown program to manage loss of material is therefore consistent with the GALL XI.M18 program. In addition, a Bolting Integrity Program is in development that will address the aging management of bolting in the scope of license renewal. The Bolting Integrity Program will be implemented prior to the period of extended operation in accordance with commitment number 34.	Accepted
334	3.3.1-37-K-01 Please provide documentation of the material(s) used in the RWCU system, including welds.	This item concerns materials susceptible to IGSCC that would have been the subject of Generic Letter 88-01. A copy of the VYNPS response to G.L. 88-01 was provided for review as were drawings of the RWCU system and the Piping specification. Based on the information in the response to G.L. 88-01, none of the piping in the RWCU system is susceptible to IGSCC. Therefore, the GALL BWR Reactor Water Cleanup System Program XI.M25 is not required for aging management.	Closed

Item	Request	Response	Status
335	3.3.1-61-W-1 In Table 3.5.2-6 on page 3.5-80 of the LRA for component Penetration sealant, material elastomer in a protected from weather environment; the aging effects are cracking and change in material properties. Two AMPs are shown, Fire Protection and Structures Monitoring. The referenced GALL line item is VII.G-1 and the Table 1 line item is 3.3.1-61. GALL line item VII.G-1 is for component Fire barrier penetration seals. In the LRA on page 3.3-49 for table 1 line item 3.3.1-61-W-1 There is this sentence in the discussion: Cracking and the change in material properties of elastomer seals are managed by the Fire Protection Program. Explain why this AMR line item is not split into two lines: (1) penetration sealant (fire) with AMP Fire Protection, GALL reference VII.G-1, Table 1 line item 3.3.1-61 and a note B as well as (2) penetration sealant (flood, radiation) with AMP Structures Monitoring, GALL reference III.A6-12, Table 1 line item 3.5.1-44 and a note C.	LRA Amendment In Table 3.5.2-6 on Page 3.5-80 of the LRA, the aging effects for component Penetration sealant, material elastomer in a protected from weather environment are cracking and change in material properties. For clarification, this component line item will be separated into two line items as follows. In Table 3.5.2-6 on Page 3.5-80 of the LRA, the aging effects for component Penetration sealant, material elastomer in a protected from weather environment are cracking and change in material properties. For clarification, this component line item will be separated into two line items as follows. Delete line item: Penetration sealant (fire, flood, radiation) - EN, FB, FLB, PB, SNS - Elastomer - Protected from weather - Cracking Change in material properties - Fire protection Structures Monitoring - III.A6-12 (TP-7) - 3.5.1-44 - C Add line items: Penetration sealant (fire) - EN, FB, PB, SNS - Elastomer - Protected from weather - Cracking Change in material properties - Fire Protection - VII.G-1(A-19) - 3.3.1-61 - B Penetration sealant (flood, radiation) - EN, FLB, PB, SNS - Elastomer - Protected from weather - Cracking Change in material properties - Structures Monitoring - III.A6-12 (TP-7) - 3.5.1-44 - C	Accepted

Item	Request	Response	Status
336	3.3.1-61-W-2 "In Table 3.5.2-6 on page 3.5-80 of the LRA for component Seismic isolation joint, material elastomers in a protected from weather environment; the aging effects are cracking and change in material properties. The AMP shown is Fire Protection. The referenced GALL line item is VII.G-1 and the Table 1 line item is 3.3.1-61. GALL line item VII.G-1 is for component Fire barrier penetration seals. In the LRA on page 3.3-49 for table 1 line item 3.3.1-61 there is this sentence in the discussion: ""Cracking and the change in material properties of elastomer seals are managed by the Fire Protection Program."" There is no mention of seismic gaps. In the LRA on page 3.5-39 for table 1 line item 3.5.1-44 there are these sentences in the discussion: ""Loss of sealing is a consequence of elastomer cracking and change in material properties. Component types include: moisture barrier, compressible joints and seals used for seismic gaps, and fire barrier seals. The Structures Monitoring Program manages cracking and change in material properties."" Since this discussion talks about seismic gaps and fire barrier seals, explain why this AMR line item does not show Structures Monitoring as the AMP instead of Fire Protection with GALL reference III.A6-12, Table 1 line item 3.5.1-44 with note C.	LRA Amendment In Table 3.5.2-6 on page 3.5-80 of the LRA, the aging effects for component Seismic isolation joint, material elastomers in a protected from weather environment are cracking and change in material properties. The AMP shown is Fire Protection. The referenced GALL line item is VII.G-1 and the Table 1 line item is 3.3.1-61. The following changes will be made. 1) Note C will be changed to Note 'E' 2) The discussion in Table line Item 3.3.1-61, Page 3.3-49 will be clarified to read as follows. "This line item was not used in the auxiliary systems tables. Fire barrier seals are evaluated as structural components in Section 3.5. Cracking and change in material properties of elastomer seals, including seismic isolation joints located in fire barriers, are managed by the Fire Protection Program." 3) An additional line item will be added to read as follows. Seismic isolation joint - SSR - Elastomer - Protected from weather - Cracking Change in material properties - Structures Monitoring - III.A6-12 (TP-7) - 3.5.1-44 - C	Accepted
337	3.3.1-63-W-1 In Table 3.5.2-6 on page 3.5-72 of the LRA for component Fire doors, material carbon steel in a protected from weather environment; the aging effect is loss of material. The referenced GALL line item is VII.G-3 and the Table 1 line item is 3.3.1-63. GALL line item VII.G-3 is for component Fire rated doors. Explain why the note is C, (different component but consistent with GALL otherwise) for this AMR line item, instead of note B (Consistent with GALL, but AMP takes exceptions)	LRA Amendment In Table 3.5.2-6 on Page 3.5-72 of the LRA, the aging effect for component Fire doors, material carbon steel in a protected from weather environment is loss of material. 'Note C' will be changed to 'Note B' since the component matches NUREG-1801 and the AMP has exceptions.	Accepted

Item	Request	Response	Status
338	3.3.1-71-K-01 Diesel system carbon steel piping, piping components, and piping elements exposed to air are to be inspected for loss of material. Please provide implementing procedures that are used to manage this aging effect.	It is understood that the line items being referred to are carbon steel components exposed to untreated air that credit the Periodic Surveillance and Preventive Maintenance (PSPM) program. The tasks that are proposed to perform the inspections of these components currently require enhancement to include the components and perform the inspection and are not available for review, but will be created prior to the period of extended operation. However, in Attachment 3 of LRPD-02 "Aging Management Program Evaluation Results" there is a listing of the activities included in the PSPM program. The line item in this table applicable to these components is listed under AMRM-13 Credited Activities (Emergency Diesel Generator System).. This listing provides the following information about each of the activities: - Procedure or activity to be enhanced or created, - scope of program, - parameters monitored or inspected, - detection of aging effects and acceptance criteria.	Closed
339	3.2.2-H1-10 In Table 3.2.2-7 of the LRA, why is Containment Leak Program used to manage loss of material in untreated water environment? Why is the Service Water Integrity not used to manage these line items?	The untreated water environment in these components is in the Drywell floor drains sump and equipment drains containment penetrations and is not service water which would be called out as an environment of raw water. Therefore, the service water program would not be appropriate to manage this component. Since this is a containment penetration it is tested as part of the Containment Leak Rate Program which performs containment penetration leak rate testing. The testing of this penetration confirms the integrity of the penetration and provides evidence that there are no significant aging effects present that could impact the ability of the containment penetration to perform its intended function of isolating containment. In addition, the penetration will be visually inspected during the testing process while connecting test equipment to confirm the lack of significant aging effects. As documented in LRPD-02 the Containment Leak Rate Program is supplemented by the Containment Inservice Inspection Program which performs inspections of containment including the penetrations.	Closed

Item	Request	Response	Status
340	3.3.2-H1-11 In the Standby Gas Treatment System the valve body and piping components in a raw water environment is managed by Periodic Surveillance and Preventive Maintenance Program, what procedures and following actions are used to manage this component?	It is understood that the line items being referred to are carbon/stainless steel components exposed to raw water that credit the Periodic Surveillance and Preventive Maintenance (PSPM) program. The tasks that are proposed to perform the inspections of these components currently require enhancement to include the components and perform the inspection and are not available for review, but will be created prior to the period of extended operation. However, in Attachment 3 of LRPD-02 "Aging Management Program Evaluation Results" there is a listing of the activities included in the PSPM program. The line item in this table applicable to these components is listed under AMRM-07 Credited Activities (Standby Gas Treatment System).. This listing provides the following information about each of the activities: Procedure or activity to be enhanced or created, scope of program, parameters monitored or inspected, detection of aging effects and acceptance criteria. The demister drainage system is captured in the PSPM program when it is developed. Provided copies of the following: Dwg G-191238, ME-118 (PM Basis) and various photos of the Standby Gas Treatment demister drainage system to demonstrate evidence of maintenance and inspection that is performed on the demister drainage system.	Closed
341	3.3.1-72-K-01 Steel HVAC and SWS system ducting and components exposed to condensation (internal surfaces) are to be inspected. Please provide the implementing procedures that are used to manage this aging effect.	It is understood that the line items being referred to are steel ducting and components exposed to condensation (int) that credit the Periodic Surveillance and Preventive Maintenance (PSPM) program. The tasks that are proposed to perform the inspections of these components currently require enhancement to perform the inspection and are not available for review but will be created prior to the period of extended operation. However, in Attachment 3 of LRPD-02 "Aging Management Program Evaluation Results" there is a listing of the activities included in the PSPM program. The line items in this table applicable to these components are listed under AMRM-19 credited activities (Heating, Ventilation and Air Conditioning System) and AMRM-11 credited activities (Service Water Systems) This listing provides the following information about each of the activities: Procedure or activity to be enhanced or created, scope of program, parameters monitored or inspected, detection of aging effects and acceptance criteria.	Closed

Item	Request	Response	Status
342	3.3.2-10-W-1 [Original Question] In Table 3.3.2-10 on page 3.3-126 of the LRA for component Duct flexible connection, material fiberglass in an Air indoor (int) environment; the aging effect is none. Provide the technical basis justifying that fiberglass material does not have any aging effects in an indoor air environment. [Follow-up Question] For other non-metallic components, two mechanisms of degradation (from sustained vibratory loading and from wear) were considered. Please clarify the basis for concluding that these aging mechanisms are not applicable to flexible duct connections of fiberglass.	LRA Amendment [Original Response] The aging effects were based on the Non-Class 1 Mechanical Implementation Guideline and Mechanical Tools, Revision 3, EPRI, Palo Alto, CA: 2001. 1003056 (The Mechanical Tools). The evaluation of aging effects for non-metallics in air is included in Appendix D of the Mechanical Tools. This section concludes for non-metallics other than elastomers there are no aging effects requiring management. [Follow-up Question Response] Response: As shown in LRA Section 3.3 tables, the elastomer components exposed to indoor air and subject to aging management review are duct flexible connections in the heating, ventilation, and air conditioning system (LRA Table 3.3.2-10). These connections are an elastomer coated fiberglass duct fabric installed between ventilation fans and ductwork to reduce vibration and noise resulting from operation of the fans. Loss of material due to wear occurs due to the relative motion between two surfaces. Since the connections are fixed at both ends and are not in contact with other components, they have no relative motion with other components that would produce an aging effect of loss of material due to wear. In accordance with GALL and the Structural Tools, sustained vibration loading is a mechanism that could lead to cracking of the fiberglass duct flexible connections. Since this component has an elastomer coating, VYNPS uses the Periodic Surveillance and Preventive Maintenance Program to manage cracking as a result of sustained vibratory loads as shown in LRA Table 3.3.2-10 Line Item [Duct flexible connection" Material / "elastomer"]. LRA Section 3.3.2.2.13 Loss of Material due to Wear will be revised to state the following, Wear is the loss of surface layers due to relative motion between two surfaces. At VYNPS, in the auxiliary systems, this specific aging effect is not applicable because the heating, ventilation, and air conditioning elastomer coated fiberglass duct flexible connections are fixed at both ends, precluding wear. This item is not applicable to VYNPS auxiliary systems.	Accepted
343	3.3.2-11-W-1 In Table 3.3.2-11 on page 3.3-135 of the LRA for component Diaphragm, material stainless steel in a silicone (ext) environment; the aging effect is none. Provide the technical basis justifying that stainless steel material does not have any aging effects in a silicone environment.	The aging effects were based on the Non-Class 1 Mechanical Implementation Guideline and Mechanical Tools, Revision 3, EPRI, Palo Alto, CA: 2001. 1003056 (The Mechanical Tools). The silicone fluid used in these instrument lines is a non-conductive and essentially inert fluid. The evaluation of aging effects for external surfaces is included in Appendix E of the Mechanical Tools. As can be seen in Appendix E Table 4-1, "Aging Effects Summary- External Surface", there are no aging effects requiring management for external stainless steel surfaces exposed to silicone due to the inherent resistance of stainless steel to aging effects when not wetted by water or exposed to aggressive chemicals.	Closed

Item	Request	Response	Status
344	3.3.2-13-40-W-1 In Table 3.3.2-13-40 on page 3.3-228 of the LRA for component Sight glass, material glass in a Sodium pentaborate solution (int) environment; the aging effect is none. Provide the technical basis justifying that glass material does not have any aging effects in a sodium pentaborate solution.	The aging effects were based on section 2.1.8 of Appendix A in the Non-Class 1 Mechanical Implementation Guideline and Mechanical Tools, Revision 3, EPRI, Palo Alto, CA: 2001. 1003056 (The Mechanical Tools). This section identifies for glass that there are no aging effects requiring management in a treated water environment as long as it is not in contact with hydrofluoric acid or caustics. The sight glass in question is on the test tank in the SLC system. The Test Tank and sight glass is filled with Demineralized Water (pH ~ 6.0 to 7.0) during testing, and the main SLC tank sodium pentaborate solution is also an essentially neutral solution (pH of 7.03)such that the sight glass can only be exposed to a neutral solution of treated water and sodium pentaborate that will not affect the glass.	Closed
345	3.3.2-13-9-W-1 In Table 3.3.2-13 on page 3.3-163 of the LRA for component bolting, material stainless steel in an air - outdoor (ext) environment; the aging effect is none. NUREG-1833 on page 93 for item TP-6 provides a new MEAP for stainless steel, in an Air-outdoor environment with an aging effect of loss of material/pitting and crevice corrosion. In the precedent/technical basis column for this new MEAP it is stated that an approved precedent exists for adding this material, environment, aging effect, and program combination to the GALL Report. As shown in RNP SER Section 3.5.2.4.3.2, galvanized steel and stainless steel in an outdoor air environment could result in loss of material due to constant wetting and drying conditions. Discuss the location of the circulating water system bolting components at VYNPS and how they are protected from constant wetting and drying conditions.	LRA Amendment This is an error in the LRA for this line item. Stainless steel that is exposed to outdoor air and wet/dry cycling is subject to loss of material. This correction requires an amendment to the LRA to identify loss of material as an aging effect which is managed by the system walkdown program.	Accepted
346	3.3.2-6-W-1 In Table 3.3.2-6 on page 3.3-94 of the LRA for component flame arrestor, material aluminum in an air - outdoor (ext) environment; the aging effect is none. NUREG-1833 on page 93 for item TP-6 provides a new MEAP for aluminum, in an Air-outdoor environment with an aging effect of loss of material/pitting and crevice corrosion. In the precedent/technical basis column for this new MEAP it is stated that an approved precedent exists for adding this material, environment, aging effect, and program combination to the GALL Report. As shown in RNP SER Section 3.5.2.4.3.2, galvanized steel and stainless steel in an outdoor air environment could result in loss of material due to constant wetting and drying conditions. Aluminum would also be susceptible to a similar kind of aging effect in the outdoor environment. Discuss the location of the flame arrestor component at VYNPS and how it is protected from constant wetting and drying conditions.	In accordance with EPRI report 10010639 "Non Class 1 Mechanical Implementation Guideline and Mechanical Tools" aluminum is a material that is highly resistant to corrosion in atmospheric environments. The outdoor air environment at VYNPS is non aggressive due to its remote location from industrial facilities and salt water. As a result the amount of contaminants in the air do not provide an environment where wet/dry cycling from rain would concentrate contaminants to a sufficient degree that would lead to loss of material in aluminum.	Closed
347	3.3.2-6-W-2 In Table 3.3.2-6 on page 3.3-96 of the LRA for component Piping, material fiberglass in a Fuel oil (int) environment; the aging effect is none. Provide the technical basis justifying that fiberglass material does not have any aging effects in a Fuel oil environment.	The aging effects for fiberglass in fuel oil are based on the Non-Class 1 Mechanical Implementation Guideline and Mechanical Tools, Revision 3, EPRI, Palo Alto, CA: 2001, 1003056 (The Mechanical Tools). Appendix C, section 2.1.6 of the guideline states "Therefore, based on industry operating experience review and the assumption of proper design and application of the material, aging of glass (including fiberglass) and thermoplastics in lubrication and fuel oil environments is not an applicable aging effect."	Closed

Item	Request	Response	Status
348	3.3.2-6-W-3 In Table 3.3.2-6 on page 3.3-97 of the LRA for component Tank, material fiberglass in an Interstitial fluid (brine) (int) environment; the aging effect is none. Provide the technical basis justifying that fiberglass material does not have any aging effects in a Interstitial fluid (brine) environment.	The interstitial fluid (brine) environment is colored treated water with antifreeze located between the inner and outer walls of a double-walled fiberglass fuel oil tank and can be considered a treated water environment due to its benign effects on materials. The fluid is used for leak detection and is provided by the manufacturer of the tank. The aging effects for fiberglass in interstitial fluid are based on Section 2.1.8 of the Non-Class 1 Mechanical Implementation Guideline and Mechanical Tools, Revision 3, EPRI, Palo Alto, CA: 2001, 1003056 (The Mechanical Tools) which states: "Therefore, based on industry operating experience review and the assumption of proper design and application of the material, aging of glass and thermoplastics in treated water environments is not an applicable aging effect."	Closed
349	3.3.2-6-W-4 In Table 3.3.2-6 on page 3.3-97 of the LRA for component Tank, material fiberglass in an Interstitial fluid (brine) (int) environment; the aging effect is none. Provide the technical basis justifying that fiberglass material does not have any aging effects in a Interstitial fluid (brine) environment.	Duplicate of #348.	Closed

Item	Request	Response	Status
350	B.1.27.3-E-01 Please clarify the FERC provisions under which the Vernon Dam is inspected. The dam is now exempt from Provisions of Title 18, Part 12, Subpart D, (Inspection by Independent Consultant).	LRA Amendment The Vernon Dam is inspected in accordance with the Provisions of Title 18 Parts 8 and 12. The LRA Appendix A Item A.2.1.31 states that, subpart D (Inspection by Independent Consultant) is applicable, however an exemption from this requirement for an independent consultant review has been received and this secondary review is no longer performed. This will require the following: 1) LRPD-02 Section 4.21.3.B. "Program Description" will be revised to read; The Vernon dam is subject to the Federal Energy Regulatory Commission (FERC) inspection program. This program consists of visual inspections in accordance with FERC guidelines and is in compliance with Title 18 of the Code of Federal Regulations, Conservation of Power and Water Resources, Part 12 (Safety of Water Power Projects and Project Works) and Division of Dam Safety and Inspections Operating Manual. The operation inspection frequency for licensed and exempt low hazard potential dams is biennially. NRC has found that mandated FERC inspection programs are acceptable for aging management. LRPD-02 Section 4.21.3.C- "Summary" will be revised to read: The Vernon Dam FERC Inspection (performed biennially) has been effective at managing aging effects…" 2) LRA Section A.2.1.31 Structures Monitoring-Vernon Dam FERC Program will be revised to read: The Vernon dam is subject to the Federal Energy Regulatory Commission (FERC) inspection program. This program consists of visual inspections in accordance with FERC guidelines and is in compliance with Title 18 of the Code of Federal Regulations, Conservation of Power and Water Resources, Part 12 (Safety of Water Power Projects and Project Works) and Division of Dam Safety and Inspections Operating Manual. The operation inspection frequency for licensed and exempt low hazard potential dams is biennially. As indicated in NUREG-1801 for water control structures, NRC has found that FERC / US Army Corp of Engineers dam inspections and maintenance programs are acceptable for aging management.	Accepted
351	B.1.27.3-E-02 Please provide copies of Vernon Dam biennial FERC Inspection Reports issued since 6/24/2002.	RAI 3.6.2.2.N-08 The requested inspection reports are not readily available for security reasons. After September 11, 2001, access to Vernon Dam inspection reports has been restricted. Entergy VY has worked with the Vermont's Department of Public Service legal staff and has located these reports (e.g. Vermont required access to these reports for the sale of Vernon Dam to TransCanada). Sarah Hofmann, Esquire and Director for Public Advocacy, Department of Public Service in Montpelier, VT (Phone # = 802-828-3088), can be contacted to view this information.	Closed

Item	Request	Response	Status
352	Are the VY fatigue analyses of record based on design rates of change of temperature, or on actual plant limits? How will future analyses be done? Follow on Question 6/26: Have there been transients in which the actual rates of change in temperature exceed the rates of change used in the design analysis?	RAI 4.3-H-03 The existing VY fatigue analyses are done based on design rates of change of temperature. Future fatigue analyses will be based on design rates of change or on actual plant operating limits, if required. Follow on Question Response: A review of early plant vessel thermal cycle experience is contained in calculation VYC-378 Rev.1 (at Attachment 1 page 56 of 131). Table 4 documents heatup-cooldown cycles from plant startup in 1972 thru 4/80. The table documents 7 cooldown events and 2 heatups occurring from 1972 through 1974 where the rate of temperature change exceeds 100F per hour. However, each of these events applies to a limited time (typically 0.1 hours) and only over a limited temperature range within the heatup or cooldown event. The maximum temperature change of 120F vs. the full temperature range of 446F (100F to 546F). Theses events occurred in the early years of operation, with operating experience, Table 4 shows only one heatup in which the rate of temperature change exceed 100F. This was a scram on 2/3/78 where the rate of change is documented as 120F/hr. This was noted as non-typical due to loss of Vital AC.	Closed
353	Provide a copy of SIR-01-301 showing the system design transients for VY.	A copy of SIR-01-301 has been provided.	Closed

Item	Request	Response	Status
354	Do the analyses for internals (Section 4.7.2) include all system transients? Do the CUF values calculated in the BWRVIPs really apply to VY? If not, should these analyses be considered TLAA?	LRA Amendment The TLAA discussed in Section 4.7.2.3 (Shroud Support) and Section 4.7.2.4 (Lower Plenum) are VYNPS specific calculations that are included in Table 4.3-1 of the LRA. These analyses are based on the VYNPS design system transients. The analyses in Section 4.7.2.5 (Vessel ID attachment welds) and Section 4.7.2.6 (Instrument penetrations) are generic analyses performed in the BWRVIP documents. These are not VYNPS specific calculations. As such, these are not TLAA for VY. This requires an amendment to the LRA to delete Section 4.7.2.5 delete Section 4.7.2.6. delete vessel ID attachment welds and instrument penetrations from LRA Table 4.1-1□ delete the cracking-fatigue with TLAA-metal fatigue from the internals attachments entry in LRA table 3.1.2-1 (page 3.1-54) Note cracking managed by the BWR Vessel ID Attachment Welds Program remains in the table. delete the cracking-fatigue with TLAA-metal fatigue from the nozzles, instrumentation, N11 and N12 in LRA table 3.1.2-1 (page 3.1-44). Note that cracking managed by the BWR Penetrations Program remains in the table. delete Section A.2.2.7 delete Section A.2.2.8 No changes to 'App. B' or 'App. C'	Accepted
355	GE report 26A6019 states that some components have fatigue analyses done to later code versions than 1965. What are those components and code versions?	Provided copy of PUSAR Chapter 3.2 which lists the RR nozzle safe ends and instrumentation nozzle safe ends and the code year used for each. They were done to the 1982 version of ASME Section III.	Closed
356	GE report 26A6019 references ASME Section XI, 1986. Where did VY invoke this code?	Provided copy of PUSAR Chapter 3.2 which shows that the core spray safe ends repair was performed using ASME Section XI, 1986.	Closed
357	The PUSAR (Table 3-3 of NEDC-33090P) shows no changes to the stresses of components other than the FW nozzles. Why is this correct when temperature and changed 0.6%.	As discussed in Section 3.2.2.2 of NEDC-33090P, the original stress evaluations were performed at conditions that bound the slight change in operating conditions for the CPPU. Only the feedwater nozzle had enough of a change in parameters to need a re-calculation of CUF.	Closed

Item	Request	Response	Status
358	Please provide a description or a reference to the "augmented" class 2/3 fatigue methodology that was developed to account for cycle mechanical loads.	For the Torus attached piping plant-specific fatigue analyses are performed for each penetration. The calculation for the SRV vent pipe penetrations is Teledyne Engineering Services (TES) Calculation No. 5319-28, Rev.0 "SRV Vent Pipe Penetration Stress Evaluation Vermont Yankee SRV Lines A – D". The penetration analysis is performed using a finite element model of the penetration and vent pipe. Loads are taken from the attached piping model. Stress intensities and secondary stress ranges are calculated and compared with ASME allowables. The fatigue evaluation is shown on page 65. Stress concentrations from WRC Bulletin 107 are used. The maximum usage factor calculated is 0.49 for 10,000 cycles. For torus attached piping, the calculations include an ASME stress evaluation of the torus nozzle. A local WRC Bulletin 107 type nozzle analysis is performed and the results are combined with free shell stresses from a finite element model of the torus shell. Loads are taken from the attached piping model. Stress intensities and secondary stress ranges are calculated and compared with allowables. Stress concentrations from WRC Bulletin 107 are used. A typical torus nozzle calculation is (TES) Calculation No. 5319-X227, Rev.0 "Torus Attached Piping –X227". The fatigue evaluation is shown on page 42. The maximum usage factor calculated is 0.33 for 10,000 cycles.	Closed

Item	Request	Response	Status
359	3.4.2-M-04 Currently, in VYNPS LRA Section 3.4.2.1, the applicant identified the following programs that manage the aging effects related to the main condenser and MSIV leakage pathway components and component groups; 1) Flow-Accelerated Corrosion, 2) System Walk-Down, 3) Water Chemistry Control-BWR, and 4) Water Chemistry Control-Closed Cooling Water. Will the One-Time Inspection program be added to this listing?	LRA Amendment As stated in LRA Section B.1.30.2, the Water Chemistry Control – BWR Program is consistent with the program described in NUREG-1801, Section XI.M2, "Water Chemistry." The One-Time Inspection Program, described in LRA Section B.1.21 includes inspections to verify the effectiveness of the water chemistry control aging management programs (Water Chemistry Control – Auxiliary Systems, Water Chemistry Control – BWR, and Water Chemistry Control – Closed Cooling Water) by confirming that unacceptable cracking, loss of material, and fouling is not occurring. As stated in LRA Section B.1.21, the One-Time Inspection Program is a new program which will be consistent with the program described in NUREG-1801, Section XI.M32, "One-Time Inspection." LRA Tables 3.1.1, 3.2.1, 3.3.1, and 3.4.1 indicate that the One-Time Inspection Program is credited along with the water chemistry control programs for line items for which GALL recommends a one-time inspection to confirm water chemistry control. For simplicity, the subsequent tables (Table 2's) do not list the One-Time Inspection Program each time a water chemistry control program is listed. However, since the One-Time Inspection Program is applicable to each water chemistry control program, it is also applicable to each line item that credits a water chemistry control program. To provide further clarification, the effectiveness of the Water Chemistry Control – Auxiliary Systems, BWR, and Closed Cooling Water programs is confirmed by the One-Time Inspection program. This requires an amendment to the license renewal application to change the Appendix A, SAR supplement descriptions for the Water Chemistry Control –Auxiliary Systems, BWR and Closed Cooling Water programs to explicitly state One-Time Inspection Program activities will confirm the effectiveness of these programs.	Accepted
360	3.4.2-M-05 In Section 3.4.2.2.2 of the LRA, the applicant stated that, "...there are no tanks or steel heat exchanger components included in the steam and power conversion systems." They also stated that, "...the condenser is included as part of the main condenser and MSIV leakage pathway but has no aging effects requiring aging management since their intended function is for holdup & plate-out of radioactive materials. Have any changes occurred since initial scoping that would change the above statement.	No, there have been no changes in the scope of equipment subject to aging management review since the scoping and screening results presented in the application were approved. No plant changes have been implemented that would affect the intended functions for license renewal. The statements in Section 3.4.2.2.2 of the application remain valid. There are no steel or stainless steel tanks exposed to treated water with intended functions in the steam and power conversion systems. The intended function of main condenser and MSIV leakage pathway components, for post-accident holdup and plate-out of MSIV leakage is continuously assured by normal plant operation and cannot be affected by aging effects.	Closed
361	3.4.2-M-06 In Section 3.4.2.2.2.2, of the LRA, the applicant stated that (in reference to the steam and power conversion systems at VYNPS) "...they have no carbon steel components requiring aging management which are exposed to lubricating oil." Therefore, they further state that "...this specific item is not applicable to VYNPS. Have any changes occurred since initial scoping that would change the above statement.	No, there have been no changes in the scope of equipment subject to aging management review since the scoping and screening results presented in the application was approved. No plant changes have been implemented that would affect the intended functions for license renewal. The statement in Section 3.4.2.2.2.2 of the application remains valid. There are no steel components exposed to lubricating oil with intended functions in the steam and power conversion systems.	Closed

Item	Request	Response	Status
362	3.4.2-M-07 The applicant stated, in Section 3.4.2.2.3 of the LRA, that "...for loss of material due to general, pitting, crevice, MIC, and fouling - which could occur in steel piping, piping components, and piping elements exposed to raw water - in the steam and power conversion systems at VYNPS; they have no carbon steel components requiring aging management which are exposed to raw water." Therefore, they further state that "...this item is not applicable to VYNPS. Have any changes occurred since initial scoping that would change the above statement.	No, there have been no changes in the scope of equipment subject to aging management review since the scoping and screening results presented in the application were approved. No plant changes have been implemented that would affect the intended functions for license renewal. The statement in Section 3.4.2.2.3 of the application remains valid. There are no steel components exposed to raw water with intended functions in the steam and power conversion systems.	Closed
363	3.4.2-M-08 The applicant stated, in Section 3.4.2.2.5.1 of the LRA, that "...for the loss of material due to general, pitting, crevice, and MIC – which could occur in carbon steel (with or without coating or wrapping) piping, piping components, piping elements and tanks exposed to soil – in the steam and power conversion systems at VYNPS; they have no carbon steel components requiring aging management that are exposed to soil." Therefore, they further state that "...this item is not applicable to VYNPS. Have any changes occurred since initial scoping that would change the above statement.	No, there have been no changes in the scope of equipment subject to aging management review since the scoping and screening results presented in the application were approved. No plant changes have been implemented that would affect the intended functions for license renewal. The statement in Section 3.4.2.2.5.1 of the application remains valid. There are no steel components with intended functions exposed to soil in the steam and power conversion systems.	Closed
364	3.4.2-M-09 The applicant stated, in Section 3.4.2.2.7.2 of the LRA, that "...for the loss of material due to pitting and crevice corrosion – which could occur in stainless steel piping, piping components, and piping elements exposed to soil – in the steam & power conversion systems at VYNPS; they have no stainless steel components requiring aging management that are exposed to soil." Therefore, they further state that "...this item is not applicable to VYNPS. Have any changes occurred since initial scoping that would change the above statement. Have any changes occurred since initial scoping that would change the above statement.	No, there have been no changes in the scope of equipment subject to aging management review since the scoping and screening results presented in the application were approved. No plant changes have been implemented that would affect the intended functions for license renewal. The statement in Section 3.4.2.2.7.2 of the application remains valid. There are no stainless steel components exposed to soil with intended functions in the steam and power conversion systems.	Closed
365	3.2.2-H1-12 In Section 3.2 of the LRA, there are numerous line items in Table 3.2's with TLAA-metal fatigue as the Aging Management Program. Can you provide the staff with the TLAA analysis for each line item?	See response to Question 309. Close item to item #309.	Closed
366	3.4.1-M-04 Currently, in VYNPS LRA Table 3.4.1, Item 3.4.1-23 discussion column, the applicant states, "...the cracking of stainless steel piping, piping components, and piping elements exposed to closed cycle cooling water >60 C (>140 F) due to SCC is not applicable at VYNPS." In light of statements presented in GALL VIII.E-25 (for the Condensate System), further explain how this "MEA" combination is not applicable to VYNPS.	The discussion column entry for item 3.4.1-23 states, "Not applicable. There are no stainless steel components exposed to closed cycle cooling water in the steam and power conversion systems." This statement is meant to imply that within the steam and power conversion systems, there are no components with an intended function for license renewal that are made of this material and exposed to this environment. This may be confirmed by an inspection of Table 3.4.2-1. While there may be such components in systems that are included in the scope of license renewal, these components have been screened out because they are not needed to complete the license renewal intended functions.	Closed

Item	Request	Response	Status
367	3.4.1-M-05 Currently, in VYNPS LRA Table 3.4.1, Item 3.4.1-35 discussion column, the applicant states, "...the loss of material of copper alloy >15% Zn piping, piping components, and piping elements exposed to closed cycle cooling water, raw water, or treated water due to selective leaching is not applicable at VYNPS." In light of statements presented in GALL VIII.E-20 (for the Condensate System – Main Condenser Outside Tube Side), further explain how this "MEA" combination is not applicable to VYNPS.	The discussion column entry for item 3.4.1-35 states, "Not applicable. There are no copper alloy components subject to selective leaching in the steam and power conversion systems." The only components within the steam and power conversion systems with an intended function for license renewal that are composed of copper with >15% zinc, are the condenser tubes. As identified in plant specific note 401, the intended function of condenser components is for post-accident holdup and plate-out of MSIV leakage. This function is continuously assured by normal plant operation and cannot be affected by selective leaching of the tubes. Thus, this aging effect does not require management and is not included in Table 3.5.2-1.	Closed
368	3.4.1-M-06 Currently, In VYNPS LRA Table 3.4.1, Item 3.4.1-36 discussion column, the applicant states, "...the loss of material of gray cast iron piping, piping components, and piping elements exposed to soil, treated water, or raw water due to selective leaching is not applicable at VYNPS." In light of statements presented in GALL VIII.E-22 (for the Condensate System – Main Condenser Piping), further explain how this "MEA" combination is not applicable to VYNPS.	The discussion column entry for item 3.4.1-23 states, "Not applicable. There are no gray cast iron components exposed to raw water with intended functions in the steam and power conversion systems." This statement is meant to imply that within the steam and power conversion systems, there are no components with an intended function for license renewal that are made of this material and exposed to this environment. This may be confirmed by an inspection of Table 3.4.2-1. While there may be such components in systems that are included in the scope of license renewal, these components have been screened out because they are not needed to complete the license renewal intended functions.	Closed

Item	Request	Response	Status
369	3.2.2-H1-13 On page 3.2-49 why is cracking being managed by Oil Analysis Program, when the program does not have a performance testing program to verify the effectiveness of the program.	LRA Amendment As stated in LRA Table 3.2.2-4 stainless steel components in the HPCI system at VYNPS that are exposed to lubricating oil are managed by the Oil Analysis Program, which includes periodic sampling and analysis of lubricating oil to maintain the presence of water within acceptable limits, thereby preserving an environment that is not conducive to cracking. As stated in LRA Section B.1.20, the Oil Analysis Program is consistent with the program described in NUREG-1801, Section XI.M39, Lubricating Oil Analysis, with a minor exception. The Oil Analysis Program is not consistent with GALL XI.M32, "One-Time Inspection," nor are one-time inspections necessary to verify the effectiveness of the program. Cracking in lube oil systems can only occur with the presence of water. Therefore, an effective oil analysis program, which maintains the amount of water at levels that are not conducive to cracking, precludes the need for one-time inspections. Operating experience at VYNPS has confirmed the effectiveness of the Oil Analysis Program in maintaining moisture and impurities within limits such that cracking has not and will not occur and affect the intended functions of these components. In numerous past precedents (including NUREG-1828, Arkansas Nuclear One Unit 2 SER, Section 3.0.3.3.6, and NUREG-1831, Donald C. Cook SER, Section 3.0.3.3.8), the staff concluded that an effective oil analysis program, which maintains impurities and moisture below specified limits, is sufficient to demonstrate that the effects of aging will be adequately managed so that the intended functions will be maintained consistent with the current licensing basis for the period of extended operation. The One-Time Inspection program will be revised to include activities to confirm the effectiveness of the Oil Analysis and Diesel Fuel Monitoring programs.	Accepted
370	3.2.2-H1-14 On Table 3.2.2-5 page 3.2-66, can you provide justification why cracking-fatigue aging effect does not have a TLAA-metal fatigue, Aging Management Program?	The component in question is a steam heater in the RCIC system. The entry says cracking-fatigue is an aging effect requiring management and it is managed by the Heat Exchanger Monitoring program. As suggested in questions 309 and 365, a metal fatigue TLAA is not automatically associated with every component exceeding the temperature threshold for cracking-fatigue. TLAA-metal fatigue is the appropriate entry only if there is in fact a TLAA (fatigue analysis) for the component in question. In this case there is no fatigue analysis and an AMP was specified that manages cracking-fatigue.	Closed

Item	Request	Response	Status
371	In the Table 4.3-2 of VT LRA, the design basis cycles for Design Transient 6 (Reactor startup/shutdown cycles) has to be determined based on the design analysis. Please provide LRA supplement to address this issue	LRA Amendment RAI 4.3-H-01 The LRA will be amended to include the following discussion of the VYNPS transient monitoring program. The VYNPS Fatigue Monitoring Program includes counting of the cycles incurred by the plant. Five transients are monitored by plant operations and recorded as they occur. It is projected that less than 60% of the design cycles for these five transients will be used through the first 60 years of operation, including the PEO. The remaining transients are monitored by plant engineering based on review of operating data at the end of each fuel cycle. These remaining transients are summarized in the Fatigue Monitoring Program as the sixth transient (Reactor Startups and Shutdowns). Engineering evaluates these transients and advises operations if the number of design cycles is being approached	Accepted
372	3.3.1-22-K-01 Please confirm that no auxiliary components have elastomer linings or SS cladding—or if there are such components, provide additional justification for the determination that pitting and crevice corrosion do not require aging management.	RAI 3.3.1-22-K-01 As stated in LRA section 3.3.2.2.10, stainless steel cladding or elastomer linings are conservatively not credited to prevent loss of material of underlying carbon steel material in auxiliary systems and as such are not identified or known. Pitting and crevice corrosion are aging effects requiring management for the carbon steel auxiliary components exposed to treated water and are managed by the water chemistry control program.	Closed
373	3.3.1-34-K-01 Please identify the plant-specific program that will be used to manage loss of material due to wear. It is not clear to the project team that operating experience provides a sufficient basis for determining that this aging mechanism is not applicable at VYNPS.	LRA Amendment As shown in LRA Section 3.3 tables, the elastomer components exposed to indoor air and subject to aging management review are duct flexible connections in the heating, ventilation, and air conditioning system (LRA Table 3.3.2-10). These connections are an elastomer coated fiberglass duct fabric installed between ventilation fans and ductwork to reduce vibration and noise resulting from operation of the fans. Loss of material due to wear occurs due to the relative motion between two surfaces. Since the connections are fixed at both ends and are not in contact with other components, they have no relative motion with other components that would produce an aging effect of loss of material due to wear. LRA Section 3.3.2.2.13 Loss of Material due to Wear will be revised to state, Wear is the removal of surface layers due to relative motion between two surfaces. At VYNPS, in the auxiliary systems, this specific aging effect is not applicable because the heating, ventilation, and air conditioning elastomer coated fiberglass duct flexible connections are fixed at both ends, precluding wear. This item is not applicable to VYNPS auxiliary systems.	Accepted

Item	Request	Response	Status
374	3.3.1-50-K-02 Table 1 states that "[f]or stainless steel components of the demineralized water system, the Water Chemistry Control – Auxiliary Systems program manages loss of material." No items in 3.3.2-13-12 were found that credited this AMP. Please clarify.	This error was previously noted and clarification supplied in the response to Audit item 165 (see below). To clarify, Items 3.3.1-50 and 3.3.1-51 in LRA Table 3.3.1, the Water Chemistry Control – BWR Program (not the auxiliary systems) is credited for managing the effects of aging on the demineralized water system as indicated in LRA Table 3.3.2-13-12, Demineralized Water (DW) System Nonsafety-Related Components Affecting Safety-Related Systems Summary of Aging Management Evaluation.	Closed
375	3.3.1-51-K-02 Table 1 states that "[f]or copper alloy components of the...demineralized water system... the Water Chemistry Control–Auxiliary Systems program manages loss of material." No items in 3.3.2-13-12 were found that credited this AMP. Please clarify.	This error was previously noted and clarification supplied in the response to Audit item 165 (see below). To clarify Items 3.3.1-50 and 3.3.1-51 in LRA Table 3.3.1, the Water Chemistry Control – BWR Program (not the auxiliary systems) is credited for managing the effects of aging on the demineralized water system as indicated in LRA Table 3.3.2-13-12, Demineralized Water (DW) System Nonsafety-Related Components Affecting Safety-Related Systems Summary of Aging Management Evaluation.	Closed
376	3.3.1-69-K-02 In the discussion section of VYNPS LRA Table 3.3.1 item 3.3.1-69, the applicant stated that the loss of material in stainless steel components exposed to raw water is managed by the Fire Water System, Fire Protection, and One-Time Inspection Programs. During the audit and review, the project team noted that the applicant did not apply the One-Time Inspection Program to any AMR line items to which Table 3.3.1 item 3.3.1-69 was applied. Please clarify.	LRA Amendment Reference to One-Time Inspection will be removed from the discussion column in table 3.3.1 item 69.	Accepted
377	3.3.1-73-K-01 Please confirm that aging management of steel crane structural girders in load handling will conform to the standards cited in GALL XI.M23.	License Renewal Commitments #17 and #20 Reactor building steel crane structural girders used in load handling are inspected under the Periodic Surveillance and Preventive Maintenance Program (PSPM) identified in Appendix B of the application. Process facility crane rails and girders are inspected under the Structures Monitoring Program as identified in Appendix B. The Structures Monitoring Program will be enhanced, as identified in App B, to address crane rails and girders. Aging management activities for crane rails and girders under these two programs are consistent with the attributes described for the program in GALL XI.M23. Reference commitments 17 & 20.	Accepted
378	3.3.1-74-K-01 Please confirm that aging management of steel crane rails will conform to the standards cited in GALL XI.M23.	Please see Response to # 377. Reference commitments 17 & 20.	Closed

Item	Request	Response	Status
379	3.5.1-16-W-2 In the accepted response to question 3.5.1-16-W-1 the applicant stated: Table 3.5.1 line Item 3.5.1-16 will be updated to read: "the aging effects cited in the NUREG-1801 item are loss of sealing and leakage. Loss of sealing is a consequence of the aging effects cracking and change in material properties. For VYNPS, the Containment Leak Rate Program manages cracking and change in material properties for the primary containment seals and gaskets. The Inservice Inspection-IWE manages cracking and change in material properties for the primary containment moisture barrier." In Table 3.5.2-6 (Bulk Commodities) on Page 3.5-80 of the LRA, for component seals and gaskets (doors, man-ways and hatches), material rubber in a protected from weather environment; the aging effects are cracking and change in material properties. The GALL line item referenced is II.B4-7 and the Table 1 reference is 3.5.1-16. However, the AMP shown for this line item is Periodic Surveillance and Preventive Maintenance. Table 3.5.1 line item 3.5.1-16 relates to primary containment seals and gaskets. The applicant has stated above in the previous paragraph that the Containment Leak Rate Program manages cracking and change in material properties for the primary containment seals and gaskets. The applicant is asked to explain if this table 2 line item is for containment seals and gaskets and also Class I structures seals and gaskets. If it is for both containment seals and gaskets and Class I structures seals and gaskets, the applicant is asked to explain why the line is not broken into two AMPs, two GALL items, two table 1 items and two notes. The AMP for the containment seals and gaskets would be Containment Leak Rate Program with the GALL item II.B4-7, the Table 1 Item 3.5.1-16 and a note A. The AMP for the Class 1 structures seals and gaskets would probably be the Periodic Surveillance and Preventive Maintenance Program.	LRA Amendment Table 3.5.2-6 line item "Seals and gaskets..." on page 3.5-80 is for Class I structure seals and gaskets not associated with primary containment boundary. Containment seals and gaskets are addressed in Table 3.5.2-1 Line item "Primary containment electrical penetration..." on page 3.5-55. For clarity, the following discussion will be added to Table 3.5.1-16. "For reactor building seals and gaskets, the Periodic Surveillance and Preventive Maintenance Program manages cracking and change in material properties for the railroad inner and outer lock doors elastomer seals." See also response to Item 243.	Accepted
380	3.5.1-53-W-1 In Table 3.5.2-1 (Primary Containment) on Page 3.5-54 of the LRA, for component vent header support, material carbon steel in an exposed to fluid environment; the aging effect is loss of material. The GALL line item shown is III.B1.1-13 and the Table 1 reference is 3.5.1-53. The AMP shown for this line item is Inservice Inspection-IWF. GALL line item III.B1.1-13 is for an indoor uncontrolled air or outdoor air environment. The applicant is asked to explain why GALL line item III.B1.1-11 (treated water environment) and Table 1 reference 3.5.1-49 are not associated with this AMR line item and the VYNPS Water Chemistry Control – BWR Program also shown with the Inservice Inspection-IWF AMP.	RAI 3.5.1-53-W-1 GALL line item III.B1.1-11 (treated water environment), material-stainless steel; steel was considered a submerged environment. Since the VYNPS component is carbon steel in an air-moist environment, (it is not actually submerged in the fluid environment), GALL line item III.B1.1-13 was considered a better fit for this component.	Closed

Item	Request	Response	Status
381	B.1.30.1-M-04 Clarify commitment to performance monitoring/testing of HX (fouling) and pumps (LoM) managed using OCCW (SWI) and CCCW (WCC–Aux & WCC–CCW) AMPs.	As stated in Section 4.20 of LRPD-02, the Service Water Integrity Program, in accordance with NRC GL 89-13, includes condition and performance monitoring activities. As these activities are already part of the existing program, a separate commitment is not necessary. As stated in the LRA and prior RAI responses, the Water Chemistry Control – Auxiliary Systems and Water Chemistry Control – Closed Cooling Water programs do not include performance or functional testing of heat exchangers or pumps. The programs are preventive programs which maintain the water chemistry within specified limits to minimize loss of material, cracking and fouling. Also, as described in LRA Section B.1.21, the One-Time Inspection program 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. Therefore, the passive intended functions of pumps, heat exchangers, and other components will be adequately managed without condition or performance monitoring. [Condition and performance testing of heat exchangers and pumps is performed under the Maintenance Rule 10CFR50.65, but is not considered part of these aging management programs.]	Closed
382	Original Question: Gall AMPs X1.E1, X1.E2, X1.E3, AND X1.E4 indicate that aging effects of cables and connections and metal enclosed bus may exist. In the LRA, you have stated that there is no operating experience. Provide industrial and plant specific operating experience for each VY AMP associated and consistent with X1.E1, X1.E2, X1.E3 and X1.E4. Confirm that the review of plant specific operating experience did not reveal any degradation not bound by industry experience.	LRA Amendment The programs will be updated to include the following: The XXX program is a new aging management program. Industry operating experience that forms the basis for the program is described in the operating experience element of the NUREG-1801 program description. VYNPS plant-specific operating experience has been reviewed against the industry operating experience identified in GALL Although VYNPS has not experienced all of the aging effects listed in GALL, the VYNPS program will manage all of the aging effects identified in the Operating Experience section of GALL. The program is based on the program description in NUREG-1801, which in turn is based on relevant industry operating experience. As such, this program will provide reasonable assurance that effects of aging will be managed such that applicable components will continue to perform their intended functions consistent with the current licensing basis for the period of extended operation. As additional operating experience is obtained, lessons learned can be used to adjust the program, as needed.	Accepted
383	Please identify the design code and the number of operating cycles for the MSIVs.	The main steam isolation valves are built to the ASME Code for Pumps and Valves for Nuclear Power, November 1968 Draft and March 1969 addendum, issued for trial use and comment. (main steam design basis document) Based on a review of plant operating records, VYNPS has estimated 587 operations of the main steam line isolation valves in 35 years of operation. Extrapolating this number to 60 years of operation (considering changes in surveillance testing of the valves) gives 785 cycles. This is only 38% of the design 2050 cycles for these valves.	Closed

Item	Request	Response	Status
384	Vermont Yankee intends to use the System Walkdown Program to inspect external surfaces of components subject to aging management review. Also, the program is credited with managing loss of material from internal surfaces, for situations is which internal and external material and environment combinations are the same such that external surface condition is representative of internal surface condition. (LRA page B-88). You have stated that Vermont Yankee System Engineers whom will perform the walkdowns have received training in the EPRI Aging Management Field Guide. Please provide proof of qualification and certification of system walkdown training. 1) How frequently do the engineers receive re-qualification and recertification? 2) How often do the engineers perform system walkdowns to verify their ability to provide accurate results?	License Renewal Commitment #35 The NRC was provided with the System Walkdown Qualification List on 06/26/06. A common Entergy activity qualification ENN-TK-ESPG-033 covers the System Walkdown process and VY has provided training to System Engineering personnel during cyclic training on use of the EPRI Aging Assessment Field Guide. The activity code for that item is VLP-ESP-AGE-FG. The EPRI Guide has been provided to System Engineers, and others as requested. Personnel receiving the guide have acknowledged receipt on a sign-off form. 1) Q: How frequently do the engineers receive re-qualification and recertification? A: Re-qualification/recertification is rooted in the SAT process that VYNPS employs to ensure that the training provided for a particular activity results in expected performance. Programs and processes are periodically monitored through the EN-LI-104; "Self Assessment and Benchmark Process" and the EN-TQ-201; "Systematic Approach to Training Process", to identify personnel performance strengths and weaknesses. When weaknesses are identified through those ongoing processes, either the Corrective Action Process or the TEAR (Training Request) process is used to identify and provide solutions for performance problems. If training is identified as a solution when performance problems exist, the appropriate training course of action is identified and implemented and then evaluated for success. Currently, periodic refresher training and re-qualification is not a scheduled event because VYNPS has no data to suggest that performance shortfalls exist. 2) Q: How often do the engineers perform system walkdowns to verify their ability to provide accurate results? A: System Engineers are required to perform a minimum of one system walkdown per month for systems that are accessible with the plant on-line. Many more detailed inspections are performed during outage periods. System Engineering Supervisors are required to observe a minimum of two system walkdowns per quarter. Commitment Number 35 has been created to "Enhance the System Walkdown Training Program as appropriate to document biennial refresher training of Engineers to demonstrate inclusion of the methodology for aging management of plant equipment as described in EPRI Aging Assessment Field Guide or comparable instructional guide."	Accepted