



Crystal River Nuclear Plant
Docket No. 50-302
Operating License No. DPR-72

Ref: 10 CFR 54

November 12, 2010
3F1110-02

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

Subject: Crystal River Unit 3 – Response to Request for Additional Information for the Review of the Crystal River Unit 3, Nuclear Generating Plant, License Renewal Application (TAC NO. ME0274) and Amendment #13

- References:
- (1) CR-3 to NRC letter, 3F1208-01, dated December 16, 2008, "Crystal River Unit 3 – Application for Renewal of Operating License"
 - (2) NRC to CR-3 letter, dated October 14, 2010, "Request for Additional Information for the Review of the Crystal River Unit 3 Nuclear Generating Plant, License Renewal Application (TAC NO. ME0274)"

Dear Sir:

On December 16, 2008, Florida Power Corporation (FPC), doing business as Progress Energy Florida, Inc. (PEF), requested renewal of the operating license for Crystal River Unit 3 (CR-3) to extend the term of its operating license an additional 20 years beyond the current expiration date (Reference 1). Subsequently, the Nuclear Regulatory Commission (NRC), by letter dated October 14, 2010, provided a request for additional information (RAI) concerning the CR-3 License Renewal Application (Reference 2). Enclosure 1 to this letter provides the response to Reference 2. Enclosure 2 to this letter contains Amendment #13 to the License Renewal Application and includes a PEF-identified change involving battery racks for the Fire Service Diesel-Driven Pumps.

No new regulatory commitments are contained in this submittal. However, the RAI responses contained in this submittal resulted in a change to License Renewal Commitment #16, which is described in Enclosure 2.

If you have any questions regarding this submittal, please contact Mr. Mike Heath, Supervisor, License Renewal, at (910) 457-3487, e-mail at mike.heath@pgnmail.com.

Sincerely,

Jon A. Franke
Vice President
Crystal River Unit 3

JAF/dwh

- Enclosures:
1. Response to Request for Additional Information
 2. Amendment 13 Changes to the License Renewal Application

xc: NRC CR-3 Project Manager
NRC License Renewal Project Manager
NRC Regional Administrator, Region II
Senior Resident Inspector

A140
NRR

STATE OF FLORIDA

COUNTY OF CITRUS

Jon A. Franke states that he is the Vice President, Crystal River Nuclear Plant for Florida Power Corporation, doing business as Progress Energy Florida, Inc.; that he is authorized on the part of said company to sign and file with the Nuclear Regulatory Commission the information attached hereto; and that all such statements made and matters set forth therein are true and correct to the best of his knowledge, information, and belief.



Jon A. Franke
Vice President
Crystal River Nuclear Plant

The foregoing document was acknowledged before me this 12 day of November, 2010, by Jon A. Franke.



Signature of Notary Public
State of Florida



(Print, type, or stamp Commissioned
Name of Notary Public)

Personally Known -OR- Produced Identification

PROGRESS ENERGY FLORIDA, INC.

CRYSTAL RIVER UNIT 3

DOCKET NUMBER 50 - 302 / LICENSE NUMBER DPR - 72

ENCLOSURE 1

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

REQUEST FOR ADDITIONAL INFORMATION

RAI 3.31.53-2

Background:

GALL Report Table 3, line items 53 and 54 recommend that steel or stainless steel piping, piping components, and piping elements exposed to condensation should be managed by GALL Report aging management program (AMP) XI.M24, "Compressed Air Monitoring." The applicant stated in the LRA that the GALL Report Table 3, line items 53 and 54 are not applicable to Crystal River Unit 3 thus they did not develop an aging management program to manage aging effects of steel or stainless steel compressed air system piping, piping components, or piping elements exposed to condensation.

By letter dated June 2, 2010, the staff issued request for additional information (RAI) 3.31.53-1 requesting that the applicant identify the Table 2 line items that are credited to manage loss of material for steel compressed air system piping exposed to internal condensation and describe how performance monitoring and air quality aspects of the GALL Report AMP XI.M24 are being considered.

Issue:

In its response, dated June 21, 2010, the applicant stated that components downstream of the compressed air system dryers were considered to be in a dry air environment and therefore not expected to exhibit aging effects. Historically, as discussed in the references included in GALL Report AMP XI.M24, aging effects such as a loss of material have been a contributor to compressed air system failures. Furthermore, the lack of air quality sampling and performance monitoring as described in GALL Report AMP XI.M24 leaves the quality of the dried air downstream of the system dryers in question. The staff believes that an appropriate AMP should be utilized to detect and manage the loss of material aging effect associated with compressed air system components within the scope of license renewal, whether upstream or downstream of compressed air system dryers.

Request:

For compressed air system related piping, piping components, and piping elements identified as being exposed to a "dried air (inside)" environment, describe the AMP to be applied to detect and manage the loss of material due to general pitting and crevice corrosion aging effects.

Response:

Crystal River Unit 3 (CR-3) assumes that the environment for the compressed air system components downstream of the system dryers has the potential for moisture and/or condensation, and therefore, the potential for age-related corrosion requiring aging management. CR-3 will utilize the Compressed Air Monitoring Program to manage aging of piping, piping components, and piping elements identified in the CR-3 License Renewal Application (LRA) as exposed to a "dried air (inside)" environment, which would be subject to the potential of corrosion presuming the presence of moisture. The CR-3 Compressed Air Monitoring Program relies on monitoring and testing of compressed air quality to preclude the

incidence of moisture, and preventive maintenance and opportunistic inspections to verify that loss of material is not occurring. The CR-3 Compressed Air Monitoring Program is consistent with the program description in NUREG-1801, "Generic Aging Lessons Learned (GALL)," Revision 2 (draft), Volume 2, Section XI.M24 (Reference NRC Accession # ML102660219).

This RAI response requires a change to the LRA; refer to the specific changes discussed in Enclosure 2.

RAI 3.1.2.1-6.1

Background:

In its response dated December 30, 2009, to RAI 3.1.2.1-6 about the aging effect of reduction of heat transfer effectiveness due to fouling from the inside (primary) surfaces for nickel-alloy steam generator tubes and sleeves, the applicant explained that although there is no plant-specific operating experience (OE) related to reduction of heat transfer effectiveness due to fouling of heat transfer surfaces on either the primary or secondary sides of the steam generator tubes, its aging management review methodology assumes the aging effect is applicable in the absence of water chemistry control. The applicant stated that its aging management strategy will be updated to delete the reliance on the Steam Generator Tube Integrity Program and that the reduction of heat transfer effectiveness due to fouling of heat transfer surfaces of the primary and secondary sides of the tubes will be managed by the Water Chemistry Program only.

The applicant further stated that the GALL Report recommends the use of the Water Chemistry Program for managing corrosion on the primary side similarly for stainless steel and nickel base alloys and for managing reduction of heat transfer due to fouling of stainless steel heat exchanger tubes. Therefore, the applicant considers that the use of the Water Chemistry Program to manage nickel based alloy heat exchanger tubes for this aging effect is acceptable.

The staff noted that the GALL Report states that for stainless steel heat exchanger tubes exposed to treated water, control of water chemistry may have been inadequate, and recommends that the effectiveness of the chemistry control program should be verified to ensure that reduction of heat transfer due to fouling is not occurring.

Even though it has not been observed in applicant's SGs, the staff also noted that, there is well-known OE for the aging effect of reduction of heat transfer due to fouling of the SG tubes secondary surface, as identified in NRC Information Notice 2007-37.

Issue:

It is not clear to the staff why the applicant modified its application by selecting only the Water Chemistry Program, without any effectiveness verification program for managing this aging effect, and does not use the Steam Generator Tube Integrity Program. The Steam Generator Tube Integrity Program includes secondary activities related to fouling, consistent with industry guidelines, such as EPRI PWR Water Chemistry Guidelines and NEI97-06, "Steam Generator Program Guidelines," as recommended in GALL AMPs XI.M2 and XI.M19. The staff considers that the Steam Generator Tube Integrity Program serves as a water chemistry effectiveness verification program, consistent with the recommendations of the GALL Report and SRP-LR.

Request:

Justify the elimination of the Steam Generator Tube Integrity Program for verifying the effectiveness of the Water Chemistry Program in managing the aging effect of reduction of heat transfer due to fouling on the SG tube external surfaces, or revise your application to include this program, to verify the effectiveness of the Water Chemistry Program, consistent with the recommendations of the GALL Report.

Response:

CR-3 will include the Steam Generator Tube Integrity Program for verifying the effectiveness of the Water Chemistry Program in managing the aging effect of reduction of heat transfer due to fouling on the steam generator tube external surfaces.

This RAI response requires a change to the LRA; refer to the specific changes discussed in Enclosure 2.

RAI B.2.21-5

Background:

By letter dated July 8, 2010, the staff issued RAI B.2.21-4 requesting detailed information regarding the examination technique on Class 1 socket welds. In its response on August 9, 2010, the applicant stated that it will perform volumetric examinations of Class 1 socket welds using "fully qualified" volumetric technique, and that if such a fully qualified technique is not available prior to the end of 5th in-service inspection (ISI) interval, it will develop a plant-specific non-destructive examination (NDE) procedure for the inspection. The applicant committed in Commitment No. 16 to performing such inspection on ten percent of the Class 1 socket welds. It further stated that, "a destructive examination may be performed in lieu of the specified nondestructive examination."

Issue:

- 1) The staff is unclear of the basis for waiting until the end of the 5th ISI interval for "a fully qualified" technique. The staff noted that the first inspection should be completed prior to the period of extended operation in order to obtain additional information on the baseline conditions in Class 1 socket welds and to provide reasonable assurance that cracking is not occurring prior to entering the period of extended operation.
- 2) Regarding the statement that "a destructive examination may be performed in lieu of the specified nondestructive examination," it was not clear to the staff the number of welds that are included in Commitment No. 16 should the applicant choose to perform destructive examination.

Request:

- 1) Provide justification on how the proposed inspection schedule for socket welds, (i.e., commencing inspection of socket welds during, and potentially as late as the end of, the

5th ISI interval) will adequately manage the effects of aging in these components such that they will be able to perform their intended function during the period of extended operation.

- 2) Provide justification on how the potential option of a destructive examination of a socket weld will adequately manage the effects of aging in these components such that they will be able to perform their intended function during the period of extended operation. Include in the justification the number of welds that would be destructively examined if that option were used and how that number compares to the number of examination that would be completed if the NDE option were used.

Response:

- 1) *CR-3 will implement its previously proposed inspection schedule of 10% of the total population per interval. See response to RAI B.2.21-3, CR-3 letter 3F0310-01, dated March 3, 2010 (NRC Accession # ML100640667) in the 3rd period of the 4th interval. Prior to the period of extended operation, CR-3 will perform a baseline inspection equivalent to 1/3 of those inspections required for an interval. CR-3 will develop a volumetric examination technique capable of detecting cracking in Class 1 socket welds to support the revised implementation schedule.*
- 2) *Volumetric examination techniques capable of detecting cracking in Class 1 socket welds may be either destructive or non-destructive. Substitution of a destructive examination for a non-destructive examination will be on a one-to-one basis.*

Commitment #16 will be revised to state:

Program administrative controls will be revised to incorporate periodic volumetric examinations of ASME Code Class 1 small-bore socket welds. A volumetric examination technique will be developed capable of detecting cracking in Class 1 socket welds. The total number of socket welds selected for examination will be at least 10% of the total population per interval. Prior to the period of extended operation, CR-3 will perform a baseline inspection equivalent to 1/3 of those inspections required for an interval. The regular inspection schedule is to commence in the 3rd period of the 4th ISI interval.

This RAI response requires a change to the LRA; refer to the specific changes discussed in Enclosure 2.

RAI B.2.33-1

Background:

NUREG-1801, Rev. 1, "Generic Aging Lessons Learned," (the GALL Report) addresses inaccessible medium voltage cables in Aging Management Program (AMP) XI.E3, "Inaccessible Medium Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements." The purpose of this program is to provide reasonable assurance that the intended functions of inaccessible medium voltage cables (2 kV to 35 kV), that are not subject to environmental qualification requirements of 10 CFR 50.49 and are exposed to adverse localized

environments caused by moisture while energized, will be maintained consistent with the current licensing basis. The scope of the program applies to inaccessible (in conduits, cable trenches, cable troughs, duct banks, underground vaults or direct buried installations) medium voltage cables within the scope of license renewal that are subject to significant moisture simultaneously with significant voltage.

The application of GALL AMP XI.E3 to medium voltage cables was based on the operating experience available at the time Revision 1 of the GALL Report was developed. However, recently identified industry operating experience indicates that the presence of water or moisture can be a contributing factor in inaccessible power cables failures at lower service voltages (480 V to 2 kV). Applicable operating experience (OE) was identified in licensee responses to Generic Letter (GL) 2007-01, "Inaccessible or Underground Power Cable Failures that Disable Accident Mitigation Systems or Cause Plant Transients," which included failures of power cable operating at service voltages of less than 2 kV where water was considered a contributing factor.

Recently identified industry operating, provided by NRC licensees in response to GL 2007-01 has shown that there is an increasing trend of cable failures with length in service beginning in the sixth through tenth years of operation and also that moisture intrusion is the predominant factor contributing to cable failure. The staff has determined, based on the review of the cable failure distribution, that annual inspection of manholes and cable testing frequency of at least every 6 years is a conservative approach to ensuring the operability of power cables and, therefore, should be considered.

In addition, recently identified industry operating experience has shown that some NRC licensees may experience events, such as flooding or heavy rain that subject cables within the scope of program for GALL Report AMP XI.E3 to significant moisture. The staff has determined that event driven inspections, in addition to a 1 year periodic inspection frequency, is a conservative approach and, therefore, should be considered.

Issue:

The staff has concluded, based on recently identified industry operating experience concerning the failure of inaccessible low voltage power cables (480 V to 2 kV) in the presence of significant moisture, that these cables can potentially experience age related degradation. The staff noted that the applicant's Inaccessible Medium Voltage Cables Program does not address inaccessible low voltage power cables (400 V (Nominally 480 V) to 2 kV inclusive). In addition, increased cable test and inspection frequencies (6 and 1 years respectively) should be evaluated to ensure that the Inaccessible Medium Voltage Program test and inspection frequencies reflect industry and plant-specific operating experience and that test and inspection frequencies may be increased based on future industry and plant-specific operating experience.

Request:

- 1) Provide a summary of your evaluation of recently identified industry operating experience and any plant-specific operating experience concerning inaccessible low voltage power cable failures within the scope of license renewal (not subject to 10 CFR 50.49 environmental qualification requirements), and how this operating experience applies to the need for additional aging management activities at your plant for such cables.
- 2) Provide a discussion of how CR-3 will manage the effects of aging on inaccessible low voltage power cables within the scope of license renewal and subject to aging management review; with consideration of recently identified industry operating experience and any plant-specific operating experience. The discussion should include assessment of your aging management program description, program elements (i.e., Scope of Program, Parameters Monitored/Inspected, Detection of Aging Effects, and Corrective Actions), and FSAR summary description to demonstrate reasonable assurance that the intended functions of inaccessible low voltage power cables subject to adverse localized environments will be maintained consistent with the current licensing basis through the period of extended operation.
- 3) Provide an evaluation showing that the Inaccessible Medium Voltage Program test and inspection frequencies, including event driven inspections, incorporate recent industry and plant-specific operating experience for both inaccessible low and medium voltage cable. Discuss how the Inaccessible Medium Voltage Program will ensure that future industry and plant-specific operating experience will be incorporated into the program such that inspection and test frequencies may be increased based on test and inspection results.

Response:

- 1) *CR-3 submitted a response to Generic Letter 2007-01, "Inaccessible or Underground Power Cable Failures that Disable Accident Mitigation Systems or Cause Plant Transients", by CR-3 letter 3F0507-06, dated May 3, 2007 (NRC Accession # ML071280221). That response detailed a failure of a medium-voltage cable believed to be caused by damaged cable insulation resulting from a lightning strike. No low-voltage (480 volts – 2 kv) cable failures were identified. There have been no cable failures identified at CR-3 since that submittal. NUREG-1801 Revision 2 (draft) discusses operating experience supporting the position that moisture can lead to degradation of low voltage power cables.*
- 2) *The following revisions will be made to CR-3 LRA Appendix A, Section A.1.1.33, Inaccessible Medium Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program and Appendix B, Section B.2.33, Inaccessible Medium Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program:*

A. FSAR Summary

The CR-3 LRA Appendix A, Section A.1.1.33, will be revised to include the low-voltage power cable in-scope, to remove the significant voltage criterion, and to

identify a six year inspection interval for cable insulation and a one year inspection interval for inspection of manholes that contain the in-scope cables.

B. The program elements supporting LRA Subsection B.2.33 will be revised as follows:

a. Scope of Program (changed to reflect the inclusion of low-voltage power cable)

This program applies to inaccessible (e.g., in conduit or direct buried) low-voltage (480 volt – 2 kv) and medium-voltage cables within the scope of License Renewal that are exposed to significant moisture. Significant moisture is defined as periodic exposures to moisture that last more than a few days (e.g., cable in standing water). Periodic exposures to moisture, that last less than a few days (i.e., normal rain and drain), are not significant. The moisture exposures described as significant in these definitions, which are based on operating experience and engineering judgment, are not significant for medium-voltage cables that are designed for these conditions (e.g., continuous wetting and continuous energization is not significant for submarine cables). The "significant voltage" criterion for determining susceptibility of insulation degradation is eliminated as a scoping determinant.

b. Parameters Monitored/Inspected (changed to reflect the inclusion of low-voltage power cable)

In-scope, low-voltage power and medium-voltage cables exposed to significant moisture are tested to provide an indication of the condition of the conductor insulation. The specific type of test performed will be determined prior to the initial test, and is to be a proven test for detecting deterioration of the insulation system due to wetting, such as power factor, partial discharge, or polarization index, as described in EPRI report TR-103834-P1-2, or other testing that is state-of-the-art at the time the test is performed.

c. Detection of Aging Effects (changed to reflect the inspection interval of six years for cable and one year for cable vaults)

Low-voltage power and medium-voltage cables exposed to significant moisture that are within the scope of this program are tested at least once every six years. This is an adequate period to preclude failures of the conductor insulation since experience has shown that aging degradation is a slow process. A six year testing interval will provide three data points during a 20 year period, which can be used to characterize the degradation rate. The first tests for License Renewal are to be completed before the period of extended operation.

The inspection for water collection should be performed based on actual plant experience with water accumulation in the manhole. However, the inspection frequency shall be at least once each year. The first

inspection for License Renewal is to be completed before the period of extended operation.

- d. Corrective Actions (changed to reflect the inclusion of low-voltage power cable)*

An engineering evaluation is performed when the test acceptance criteria are not met in order to ensure that the intended functions of the electrical cables can be maintained consistent with the current licensing basis. Such an evaluation is to consider the significance of the test results, the operability of the component, the reportability of the event, the extent of the concern, the potential root causes for not meeting the test acceptance criteria, the corrective actions required, and the likelihood of recurrence. When an unacceptable condition or situation is identified, a determination is made as to whether the same condition or situation is applicable to other inaccessible, in-scope, low-voltage power and medium-voltage cables. As discussed in the appendix to NUREG-1801, the NRC staff finds the requirements of 10 CFR Part 50, Appendix B, acceptable to address the corrective actions.

The above changes to program elements are exceptions to the Inaccessible Medium Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program as described in NUREG-1801, Section XI.E3. LRA Subsections A.1.1.33 and B.2.33 will be revised to reflect these changes.

Refer to Enclosure 2 of this letter for a discussion of the specific changes to be made to the LRA.

- 3) Plant-specific and industry-wide OE was considered in the development of the Inaccessible Medium Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program, including the changes addressed in this response. Plant-specific OE for low-voltage power and medium-voltage cables has been captured by a review of one or more of the following: (1) the Corrective Action Program, (2) System Engineering Notebooks and System Health Reports, and (3) discussions with site engineering personnel. This effort also included a review of applicable site correspondence (Licensee Event Reports, etc.). Plant-specific OE for the low-voltage power and medium-voltage cables is addressed in CR-3's response to Generic Letter 2007-01, by CR-3 letter 3F0507-06, dated May 3, 2007 (NRC Accession # ML071280221).*

Going forward, OE will be captured through the CR-3 Corrective Action and Operating Experience Programs implemented in accordance with Progress Energy corporate procedures. This ongoing review of OE will continue throughout the period of extended operation, and the results will be maintained on site. The administrative controls that implement the Corrective Action and Operating Experience Programs are implemented in accordance with the CR-3 Quality Assurance Program, which is in conformance with 10 CFR 50, Appendix B. This process will verify that all electrical programs credited for License Renewal will continue to be effective in the management of aging effects.

PROGRESS ENERGY FLORIDA, INC.

CRYSTAL RIVER UNIT 3

DOCKET NUMBER 50 - 302 / LICENSE NUMBER DPR - 72

ENCLOSURE 2

**AMENDMENT 13 CHANGES TO THE LICENSE RENEWAL
APPLICATION**

Amendment 13 Changes to the License Renewal Application

Source of Change	License Renewal Application Amendment 13 Changes						
RAI 3.3.1.53-2	<p>Revise the Discussion column of LRA Table 3.3.1, line item 3.3.1-98 on page 3.3-96, to state:</p> <p style="padding-left: 40px;">This item is not applicable to CR-3.</p> <p>Except for the material "glass", for which no aging effects are predicted in a dried air environment, revise the line items for dried air to read as follows for affected aging management review tables in LRA Sections 3.2, 3.3, and 3.4:</p> <table border="1" data-bbox="358 632 1419 695"> <tr> <td data-bbox="358 632 533 695">Dried Air (Inside)</td> <td data-bbox="533 632 740 695">Loss of Material</td> <td data-bbox="740 632 959 695">Compressed Air Monitoring</td> <td data-bbox="959 632 1163 695"></td> <td data-bbox="1163 632 1323 695"></td> <td data-bbox="1323 632 1419 695">J</td> </tr> </table> <p>Revise the title of Subsection A.1.1.21 on LRA page A-2 to delete "Not used." and add Compressed Air Monitoring Program; also incorporate the following title and description in LRA Subsection A.1.1.21 on page A-14:</p> <p style="padding-left: 40px;">A.1.1.21 Compressed Air Monitoring Program</p> <p style="padding-left: 40px;">The Compressed Air Monitoring Program is an existing program that ensures that instrument air supplied to components is maintained free of water and significant contaminants, thereby preserving an environment that is not conducive to loss of material. Dew point and particulate contamination are periodically checked to verify the instrument air quality is maintained. Periodic and opportunistic inspections of accessible internal surfaces are performed for signs of corrosion and abnormal corrosion products that might indicate a loss of material within the system.</p> <p>Revise LRA Table B-1 to include the following related to NUREG-1801 program XI.M24 on page B-8: (1) replace the words not credited for aging management in the column entitled "CR-3 Program" with the words "Compressed Air Monitoring Program See Subsection B.2.21," and (2) replace the words "Not applicable" in the column entitled NUREG-1801 Comparison with the words "Existing program consistent with NUREG-1801 (Revision 2, draft)."</p> <p>Revise the title of Subsection B.2.21 on page B-2 to delete "Not used" and add Compressed Air Monitoring Program. Also, add the following program information in place of "Not used" in LRA Subsection B.2.21 on page B-69:</p> <p style="padding-left: 40px;">B.2.21 Compressed Air Monitoring Program</p> <p style="padding-left: 40px;">Program Description</p> <p style="padding-left: 40px;">The Compressed Air Monitoring Program ensures that instrument air supplied to components is maintained free of water and significant contaminants, thereby preserving an environment that is not conducive to loss of material. Dew point and particulate contamination are periodically checked to verify the instrument air quality is maintained. Periodic and opportunistic inspections of accessible internal surfaces are performed for signs of corrosion and abnormal corrosion products that might indicate a loss of material within the system.</p> <p style="text-align: right;">continued</p>	Dried Air (Inside)	Loss of Material	Compressed Air Monitoring			J
Dried Air (Inside)	Loss of Material	Compressed Air Monitoring			J		

Source of Change	License Renewal Application Amendment 13 Changes						
RAI 3.3.1.53-2 (continued)	<p>NUREG-1801 Consistency</p> <p>The Compressed Air Monitoring Program is an existing program that is consistent with the program description in NUREG-1801 (Revision 2, draft), Section XI.M24.</p> <p>Exceptions to NUREG-1801</p> <p>None</p> <p>Enhancements</p> <p>None</p> <p>Operating Experience</p> <p>Significant design changes have been made to the Instrument Air System design approximately twenty five years into plant operation to improve the reliability and quality of supply air. Plant actions responsive to SOER 88-1 have resulted in regular monitoring and testing of the instrument air system at a frequency sufficient to ensure a reliable source of high quality air meeting industry accepted standards. Operating experience reflects isolated and limited incursions of moisture in the system, but that corrective actions have been implemented as appropriate, and that maintenance and operating procedures and practices have been effective.</p> <p>Conclusion</p> <p>Implementation of the Compressed Air Monitoring Program will provide reasonable assurance that the effects of aging will be managed such that applicable components will continue to perform their intended function consistent with the current licensing basis for the period of extended operation.</p>						
RAI 3.1.2.1 - 6.1	<p>On LRA Page 3.1-134, revise the AMR lines for the Steam Generator; Tubes as follows:</p> <table border="1" data-bbox="360 1297 1433 1392"> <tr> <td data-bbox="360 1297 464 1392">Nickel Base Alloys</td> <td data-bbox="464 1297 645 1392">Treated Water (Outside)</td> <td data-bbox="645 1297 996 1392">Reduction of Heat Transfer Effectiveness due to Fouling of Heat Transfer Surfaces</td> <td data-bbox="996 1297 1229 1392">Steam Generator Tube Integrity and Water Chemistry</td> <td data-bbox="1229 1297 1351 1392"></td> <td data-bbox="1351 1297 1433 1392">J, 104, 109</td> </tr> </table>	Nickel Base Alloys	Treated Water (Outside)	Reduction of Heat Transfer Effectiveness due to Fouling of Heat Transfer Surfaces	Steam Generator Tube Integrity and Water Chemistry		J, 104, 109
Nickel Base Alloys	Treated Water (Outside)	Reduction of Heat Transfer Effectiveness due to Fouling of Heat Transfer Surfaces	Steam Generator Tube Integrity and Water Chemistry		J, 104, 109		
RAI B.2.21 - 5	<p>Revise LRA Subsection A.1.1.1 on page A-5 to remove the changes previously made by LRA Amendments #10 and #12 (Reference: PEF letters 3F0310-01, ML100640667, and 3F0810-01, ML102230030) and incorporate the following immediately after the first sentence of LRA Subsection A.1.1.1 on LRA Page A-5:</p> <p>Program administrative controls will be revised to incorporate periodic volumetric examinations of ASME Code Class 1 small-bore socket welds. A volumetric examination technique will be developed capable of detecting cracking in Class 1 socket welds. The total number of socket welds selected for examination will be at least 10% of the total population per interval. Prior to the period of extended operation, CR-3 will perform a baseline inspection equivalent to 1/3 of those inspections required for an interval. The regular inspection schedule is to commence in the 3rd period of the 4th ISI interval.</p> <p style="text-align: right;">continued</p>						

Source of Change	License Renewal Application Amendment 13 Changes
<p>RAI B.2.21 - 5 (continued)</p>	<p>Revise the Program Description in LRA Subsection B.2.1, on page B-12, to remove the changes previously made by LRA Amendments #10 and #12 (Reference: PEF letters 3F0310-01, ML100640667, and 3F0810-01, ML102230030) and add the following:</p> <p>The Program includes periodic volumetric examinations of ASME Code Class 1 small-bore socket welds. A volumetric examination technique will be developed capable of detecting cracking in Class 1 socket welds. The total number of socket welds selected for examination will be at least 10% of the total population per interval. Prior to the period of extended operation, CR-3 will perform a baseline inspection equivalent to 1/3 of those inspections required for an interval. The regular inspection schedule is to commence in the 3rd period of the 4th ISI interval.</p> <p>In addition, revise CR-3 License Renewal Commitment #16 to read:</p> <p>Program administrative controls will be revised to incorporate periodic volumetric examinations of ASME Code Class 1 small-bore socket welds. A volumetric examination technique will be developed capable of detecting cracking in Class 1 socket welds. The total number of socket welds selected for examination will be at least 10% of the total population per interval. Prior to the period of extended operation, CR-3 will perform a baseline inspection equivalent to 1/3 of those inspections required for an interval. The regular inspection schedule is to commence in the 3rd period of the 4th ISI interval.</p>
<p>RAI B.2.33-1</p>	<p>Revise the NUREG-1801 Comparison column of LRA Table B-1, on page B-10, for Program XI.E3, to state:</p> <p>New program consistent with NUREG-1801 with exceptions</p> <p>Replace Subsection A.1.1.33, on page A-18, with the following:</p> <p>The Inaccessible Medium Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program is a new program credited for the aging management of cables not included in the CR-3 EQ Program. In-scope, low-voltage power and medium-voltage cables exposed to significant moisture are tested at least once every six years to provide an indication of the condition of the conductor insulation. The specific type of test performed will be determined prior to the initial test, and is to be a proven test for detecting deterioration of the insulation system due to wetting, such as power factor, partial discharge, or polarization index, or other testing that is state-of-the-art at the time the test is performed. Significant moisture is defined as periodic exposures that last more than a few days (e.g., cable in standing water). Periodic exposures that last less than a few days (e.g., normal rain and drain) are not significant. Manholes associated with inaccessible non-EQ low-voltage power and medium-voltage cables will be inspected for water accumulation and drained, as needed. The manhole inspection frequency will be based on actual field data and shall not exceed one year.</p> <p>Revise LRA Subsection B.2.33 on page B-98 as follows:</p> <p style="text-align: right;">continued</p>

Source of Change	License Renewal Application Amendment 13 Changes
RAI B.2.33-1 (continued)	<p>Delete the fifth sentence, and revise the sixth and seventh sentences to read:</p> <p>Manholes associated with inaccessible non-EQ low-voltage power and medium-voltage cables will be inspected for water accumulation and drained, as needed. The manhole inspection frequency will be based on actual field data and shall not exceed one year.</p> <p>Change the NUREG-1801 Consistency to read:</p> <p>The Inaccessible Medium Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program is a new program consistent with NUREG-1801, Section XI.E3, with exceptions.</p> <p>Incorporate the following exceptions:</p> <p><u>Program Elements Affected</u></p> <ul style="list-style-type: none"> <p>• Scope of Program The Program applies to inaccessible (e.g., in conduit or direct buried) low-voltage (480 volt – 2 kv) and medium-voltage cables within the scope of License Renewal that are exposed to significant moisture. This is an exception to the program described in NUREG-1801, Rev. 1, which does not address non-EQ, low-voltage power cable insulation within the scope of License Renewal. Also, the NUREG-1801 program addresses cables subjected to significant voltage stress; whereas, the CR-3 Program does not rely on this aging mechanism. These exceptions are acceptable because they are based on recent operating experience that is not included in NUREG-1801, Revision 1, and, therefore, is acceptable.</p> <p>• Parameters Monitored/Inspected The Program includes testing of in-scope, low-voltage power and medium-voltage cables exposed to significant moisture to provide an indication of the condition of the conductor insulation. This is an exception to the program described in NUREG-1801, Rev. 1, which does not address non-EQ, low-voltage power cable insulation within the scope of License Renewal. As stated under Scope of Program above, this exception is acceptable based on recent operating experience.</p> <p>• Detection of Aging Effects The Program involves testing of low-voltage power and medium-voltage cables exposed to significant moisture that are within the scope of this program at least once every 6 years. This is an adequate period to preclude failures of the conductor insulation since experience has shown that aging degradation is a slow process. A 6-year testing interval will provide three data points during a 20-year period, which can be used to characterize the degradation rate. The first tests for License Renewal are to be completed before the period of extended operation.</p> <p>• The inspection for water collection is performed based on actual plant experience with water accumulation in the manhole. However, the inspection frequency will be at least once each year. The first inspection for License Renewal is to be completed before the period of extended operation.</p> <p style="text-align: right;">continued</p>

Source of Change	License Renewal Application Amendment 13 Changes									
RAI B.2.33-1 (continued)	<ul style="list-style-type: none"> • Corrective Action Implementation of corrective actions under the Program extends to non-EQ, low-voltage power cables within the scope of License Renewal. This is an exception to the program described in NUREG-1801, Rev. 1, but is acceptable because it is based on recent operating experience with degradation of low-voltage power cables. <p>In addition, revise the final sentence in the first paragraph on LRA Page B-99 to read:</p> <p>Plant- Plant-specific OE for the low-voltage power and medium voltage cables is addressed in the CR-3 response to Generic Letter 2007-01, Serial: 3F0507-06 dated May 3, 2007.</p>									
PEF- Identified Change	<p>To include the Battery Racks for the Diesel-Driven Fire Protection Service Water Pumps in scope for License Renewal, revise the LRA as follows:</p> <p>Revise LRA Table 2.4.2-12, on page 2.4-34, to add commodity "Battery Racks" with Intended Function "C-7 Structural Support for Criterion (a)(2) and (a)(3) components."</p> <p>Add a new line item to Table 3.5.2-13, on page 3.5-119, for the Component/Commodity "Battery Racks" as follows:</p> <table border="1" data-bbox="360 966 1455 1034"> <tr> <td>Battery Racks</td> <td>C-7</td> <td>Carbon Steel</td> <td>Air-Indoor</td> <td>Loss of Material</td> <td>Structures Monitoring</td> <td>III.B3-7 (T-30)</td> <td>3.5.1-39</td> <td>A</td> </tr> </table>	Battery Racks	C-7	Carbon Steel	Air-Indoor	Loss of Material	Structures Monitoring	III.B3-7 (T-30)	3.5.1-39	A
Battery Racks	C-7	Carbon Steel	Air-Indoor	Loss of Material	Structures Monitoring	III.B3-7 (T-30)	3.5.1-39	A		