February 2, 2010

Mr. Jon Franke, Vice President
Crystal River Nuclear Plant (NA1B)
ATTN: Supervisor, Licensing & Regulatory Programs
15760 W. Power Line Street
Crystal River, Florida 34428-6708

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION FOR THE REVIEW OF THE CRYSTAL RIVER UNIT 3 NUCLEAR GENERATING PLANT LICENSE RENEWAL APPLICATION (TAC NO. ME0274)

Dear Mr. Franke:

By letter dated December 16, 2008, Florida Power Corporation submitted an application pursuant to Title 10 of the *Code of Federal Regulations* Part 54, to renew the operating license for Crystal River Unit 3 Nuclear Generating Plant, for review by the U.S. Nuclear Regulatory Commission (NRC or the staff). The staff is reviewing the information contained in the license renewal application and has identified, in the enclosure, areas where additional information is needed to complete the review. Further requests for additional information may be issued in the future.

Items in the enclosure were discussed with Mr. Michael Heath, and a mutually agreeable date for the response is within 30 days from the date of this letter. If you have any questions, please contact me at 301-415-3733 or by e-mail at Robert.Kuntz@nrc.gov.

Sincerely,

/RA/

Robert F. Kuntz, Senior Project Manager
Projects Branch 2
Division of License Renewal
Office of Nuclear Reactor Regulation

Docket No. 50-302

Enclosure:
As stated

cc w/encl: See next page

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Letter to Jon Franke from Robert F. Kuntz dated February 2, 2010

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION FOR THE REVIEW OF THE CRYSTAL RIVER UNIT 3 NUCLEAR GENERATING PLANT LICENSE RENEWAL APPLICATION (TAC NO. ME0274)

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REQUEST FOR ADDITIONAL INFORMATION
CRYSTAL RIVER UNIT 3 NUCLEAR GENERATING PLANT
LICENSE RENEWAL APPLICATION
DOCKET NO. 50-302

Request for Additional Information (RAI) B.2.9-2.1

Background

During the audit of Program Elements 1-6 (Scope, Preventive Actions, Parameters Monitored or Inspected, Detection of Aging Effects Monitoring and Trending, and Acceptance Criteria) of the Steam Generator Tube Integrity Program, the staff found that sufficient information was not available to determine whether these elements of the license renewal application (LRA) aging management program (AMP) were consistent with the corresponding elements of the Generic Aging Lessons Learned (GALL) Report AMP.

The staff identified numerous potential discrepancies within the same procedure, between different procedures, between the Crystal River Unit 3 Nuclear Generating Plant (CR-3) procedures and various industry guidelines (referenced in Nuclear Energy Institute [NEI] 97-06), and between the procedures and the technical specifications. The staff issued RAI B.2.9-2 to address this concern requesting a discussion of the applicant's plans to perform a comprehensive review of its Steam Generator Tube Integrity Program to ensure the procedures are internally consistent, will ensure compliance with the technical specifications, and are consistent with NEI 97-06. In order to illustrate its question the staff also provided in RAI B.2.9-2 30 examples of the discrepancies it found.

Issue

In its response to RAI B.2.9-2, dated October 13, 2009, the applicant stated that the Steam Generator Tube Integrity Program is defined as an "Engineering Program" per corporate procedure and is reviewed on a frequency not to exceed two years. It also explained that the most recent assessment (March 2008) concluded that the program met the requirements of the Technical Specifications. The applicant further stated that this review process would ensure that the procedures are internally consistent and compliant with the technical specifications, and are consistent with NEI 97-06.

On one hand, the staff noted that the applicant's response to RAI B.2.9-2 stated that CR-3 Steam Generator Tube Integrity Program met the requirements of the technical specifications. On the other hand, during its audit, the staff identified many points that challenge this statement. It is not clear either to the staff, how the review process the applicant will use to review its procedures in 2010, at the latest, will be more effective for its next assessment than for the assessment in 2008.

Moreover, the staff cannot verify that the modifications to be made to the program and its implementing procedures will be consistent with the GALL Report.

ENCLOSURE

Request

Based on the staff's review of the program documents that were (apparently) found acceptable by the 2008 assessment of the Steam Generator Tube Integrity program:

1. Describe why your "Engineering Program" assessment of March 2008 did not identify the inconsistencies that the U.S. Nuclear Regulatory Commission (NRC) staff identified during its audit of your Steam Generator Tube Integrity program, as described in RAI B.2.9-2.

2. Clarify how your "Engineering Program" review process, as applied to the Steam Generator Tube Integrity program, will be effective during future implementation in providing assurance that the revised procedures will be internally consistent, compliant with the technical specifications, and consistent with NEI 97-06 during the renewed license period.

This same request applies to the response to RAI B.2.9-3 since Florida Power Corporation has supported the response to that RAI on its response to RAI B.2.9-2 about the program review process.

RAI B.2.13-2.1

Background

In its response to NRC's RAI B2.13-2, dated October 13, 2009, the applicant stated that it visually inspected fire barrier walls, ceilings and floors on a frequency commensurate with the safety significance of the structure and its condition but not to exceed ten years. The GALL Report recommends performing visual inspections of fire barrier walls, ceilings and floors at least once every refueling outage. The applicant stated that the basis for the increased interval for structural inspections is the applicant's reinforced concrete that has been acceptable during previous inspections with only minor degradation recorded in 33 years. The applicant further stated that it planned to reassess the structural inspection frequency based on the condition of the structure.

Issues

The applicant's proposed fire barrier visual inspection frequency exceeds the recommended frequency of given in the GALL Report.

Request

For those fire barrier walls, ceilings, and floors that exceed a five-year inspection frequency:

1. Describe the process for maintaining the integrity of fire barrier walls, ceiling, and floors during normal plant operations and also during plant modifications. Explain the controls that are in place to prevent inadvertent breaches to fire barrier walls, ceilings, and floors.

2. Describe the current surveillance requirements for fire barrier walls, ceilings, and floors per the Technical Requirements Manual.

3. Are all parts of fire barrier walls, ceilings, and floors inspected during each surveillance or is only a percentage done each time which would complete the surveillance over a specific time period (i.e. 10% per year for 10 years)?

4. Are fire barrier walls, ceilings, and floors inspected under any other program and if so what is the frequency of the inspections and inspection criteria?

RAI B.2.21-3

Background

LRA Section B.2.21, "One-Time Inspection of ASME Code Class 1 Small-Bore Piping," states that the program is consistent with the program elements in the GALL Report AMP XI.M35, "One-Time Inspection of ASME Code Class 1 Small Bore Piping." The LRA also states that CR-3has experienced cracking in ASME Code Class 1 small bore piping. The LRA states that in 1982 CR-3 experienced a failure of a weld associated with the normal duty makeup line. The subsequent report on the failure stated that initiation of the inner diameter crack was due to thermal fatigue and propagation probably occurred by combined mechanical and thermal loading. The report also stated that the outer diameter crack initiation and propagation probably occurred by mechanical loading of the system. The LRA also identified a crack in the High-Pressure Injection thermal sleeve in 2003.

Issue

The GALL Report, Section XI.M35, recommends the use of the One-Time Inspection of ASME Code Class 1 Small-Bore Piping only for those plants that have not experienced cracking of ASME Code Class 1 small-bore piping resulting from stress corrosion or thermal and mechanical loading. For those plants that have previous operating experience that shows evidence of significant aging the GALL Report recommends periodic inspection of the subject piping to be managed by a plant-specific aging management program.

Request

Given CR-3's operating experience as discussed in the LRA, provide justification why periodic inspections, are not necessary for all ASME Code Class 1 small-bore piping within the scope of license renewal.

RAI B.3.6-3.1

Background

In a letter dated September 30, 2009, the staff issued RAI 3.6-3 requesting the applicant to explain why insulation material of non-environmentally qualified (EQ) electrical/instrumentation and control penetration is not subject to aging degradation. In response to the staff's request, in a letter dated December 3, 2009, the applicant stated that the penetrations' primary insulation

materials are essentially cable conductor insulation materials. The primary insulation materials for the non-EQ penetration assemblies, subject to aging management review (AMR), are identical to the penetration assemblies in the EQ program in both composition and function. All penetration assemblies subject to AMR are located in the Intermediate and Reactor Buildings. The applicant also stated that all penetration assemblies in the EQ program are qualified by test for the worst-case design basis accident (DBA) condition in the Intermediate and Reactor Buildings. The non-EQ penetration assemblies subject to AMR are not required to remain functional during or following a design basis accident. The applicant further stated that penetration assemblies in the EQ program are qualified for post-accident operation and the EQ test profile envelope the (non-accident) temperature and radiation environment in both the Intermediate and Reactor Buildings. Therefore, the applicant stated that since the non-EQ penetration assemblies are not required to remain functional during or following a design basis accident, and their insulation materials have been tested to the worst case DBA conditions in the Intermediate and Reactor Buildings, the insulation materials for the non-EQ penetration assemblies are acceptable for 60-year service. The applicant further stated that penetration assembly pigtails available for visual inspection are covered under the NUREG-1801, AMP XI.E1 Program, "Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements."

The staff reviewed the applicant response and questioned the applicant's technical justification for not managing the cable conductor insulation inside the electrical penetration assemblies. First, the applicant stated that electrical penetration assemblies are qualified for post-accident and the EQ test profile envelope the non-accident temperature and radiation environment of the non-EQ electrical containment penetration. The aging of EQ electrical containment penetration is different than the aging of the non-EQ installed in an adverse localized environment due to high heat, radiation, or moisture. For EQ, the electrical containment penetration is pre-aged at a higher temperature or higher radiation for a short period of time to simulate aging in the normal operation environment for a qualified life (typically 40 years). The containment penetration insulation material is then subject to higher temperature and/or higher dose of radiation in a test chamber to stimulate the design basis accident (a loss of coolant accident or a main steam line break). This is different than aging of insulation material installed in high heat and high radiation for a long period of time. In these environments, conductor insulation material may be degraded more rapidly than expected. The argument, using EQ to envelop the non-EQ installed in high heat and/or high radiation environments, may not be adequate to justify why the non-EQ penetration are acceptable for 60-year service life without any aging management. Second, the applicant stated that non-EQ containment penetration assemblies are not required to remain functional during or following a design basis accident. The non-EQ performs an intended function by providing a pressure boundary function during accident conditions. Degradation of non-EQ containment penetration could challenge the pressure boundary function and could release radioactive products to the atmosphere.

Issue

For cable conductor insulation materials inside non-EQ containment penetration assemblies, the applicant has not explained why the insulation materials inside non-EQ containment penetration are good for 60 year service and not subject to aging requiring management.

Request

Identify current activities that monitor the conditions of conductor insulator materials inside the electrical containment penetration or provide additional technical justification of why these materials are not subject to aging degradation.

Crystal River Unit 3 Nuclear Generating Plant

cc:

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