



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

Ref: 10 CFR 54

September 30, 2009
3F0909-06

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

Subject: Crystal River Unit 3 – Response to Requests for Additional Information for the Review of the Crystal River Unit 3 Nuclear Generating Plant, License Renewal Application (TAC NO. ME0274) and Amendment #4

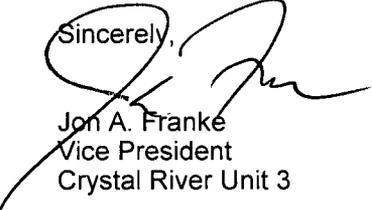
- References:
- (1) CR-3 to NRC letter 3F1208-01, dated December 16, 2008, "Crystal River Unit 3 – Application for Renewal of Operating License"
 - (2) NRC to CR-3 letter dated August 31, 2009, "Request for Additional Information for the Review of the Crystal River Unit 3 Nuclear Generating Plant, License Renewal Application (TAC NO. ME0274)," Section 4.2
 - (3) NRC to CR-3 letter dated August 31, 2009, "Request for Additional Information for the Review of the Crystal River Unit 3 Nuclear Generating Plant, License Renewal Application (TAC NO. ME0274)," Section 4.7
 - (4) NRC to CR-3 letter dated August 31, 2009, "Request for Additional Information for the Review of the Crystal River Unit 3 Nuclear Generating Plant, License Renewal Application (TAC NO. ME0274)," Fire Protection

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 three letters dated August 31, 2009, provided requests for additional information (RAI) concerning the CR-3 License Renewal Application (References 2, 3, and 4). Enclosures 1, 2 and 3 to this letter provide the response to References 2, 3 and 4, respectively. Enclosure 4 provides an amendment to the License Renewal Application. No regulatory commitments are contained in this submittal.

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 (Reference 2)
 2. Response to Request for Additional Information (Reference 3)
 3. Response to Request for Additional Information (Reference 4)
 4. Amendment #4 Changes to the License Renewal Application

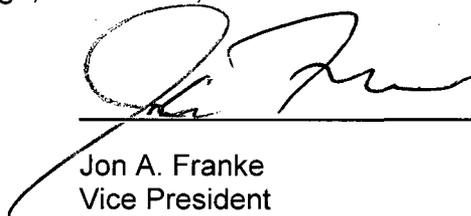
xc: NRC CR-3 Project Manager
NRC License Renewal Project Manager
NRC Regional Administrator, Region II
Senior Resident Inspector

Progress Energy Florida, Inc.
Crystal River Nuclear Plant
15760 W. Power Line Street
Crystal River, FL 34428

A035
NRK

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.

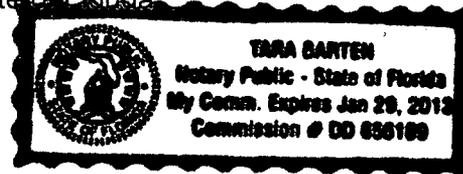


Jon A. Franke
Vice President
Crystal River Nuclear Plant

The foregoing document was acknowledged before me this 30 day of September, 2009, by Jon A. Franke.



Signature of Notary Public
State of Florida



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

Personally Produced
Known -OR- 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
(REFERENCE 2)**

**RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION
(REFERENCE 2)**

RAI 4.2.-1

Previous reactor vessel neutron fluence calculations used to account for measurement uncertainty recapture uprates relied upon neutron fluxes increased by as much as seven percent, whereas the current flux estimate is increased by two percent for the measurement uncertainty recapture. In light of Progress Energy's past use of a seven-percent parameter, please justify the conservatism and acceptability of the two-percent multiplier.

Response

In a preliminary evaluation of the measurement uncertainty recapture (MUR) for Crystal River Unit 3 (CR-3), it was assumed that the reactor pressure vessel (RPV) fluence would change due to: (a) the power uprate and (b) an increase in the downcomer water temperature. The MUR power uprate could be no greater than 2%. Thus, the increase in the fluence was assumed to be 2%. Additionally, it was assumed that the increase in the downcomer temperature could result in an increase in RPV fluence, but by no more than 5%. The combined effects from the MUR could result in a total fluence increase of no more than 7%. When the actual MUR fluence evaluation was performed, the control system for the water temperatures was not changed. Consequently, not only did the downcomer temperature not increase, but it should have slightly decreased as the result of the MUR. Therefore, there is no downcomer water temperature effect, and the impact of the MUR on RPV fluence is just 2%.

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CRYSTAL RIVER UNIT 3

DOCKET NUMBER 50 - 302 / LICENSE NUMBER DPR - 72

ENCLOSURE 2

**RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION
(REFERENCE 3)**

**RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION
(REFERENCE 3)**

The Final Safety Analysis Report (Revision 31.1), Section 2.5.3.4, "Bedrock Solution Studies" for Crystal River Unit 3 Nuclear Generating Plant (CR-3), references a verbal communication with R.D. Cherry of US Geological Survey (USGS) and states that "recent studies indicate that within an area of infiltration of 720 square miles, including the area of the plant site, a total of 243 tons per day of solids is being dissolved by the solutioning effect of groundwater." Based on this verbal information, you have determined that the expected quantity of dissolved solids removed from beneath the plant area, daily, would be about 6.3 pounds. Using this verbal data, you have concluded in your license renewal application (LRA), time-limited aging analysis (TLAA) Subsection 4.7.1, that "the natural solution process will not affect the structural integrity of the foundation of the power plant for the period of extended operation." In order for the NRC staff to complete its review of your LRA, provide the following additional information:

RAI 4.7-1

While preparing the TLAA Sub-section 4.7.1, "Analysis of Bedrock Dissolution from Groundwater," for license renewal, did you investigate if there are any recent studies made (by USGS or any other entities) on the regional geology that may shed some light on the subject of bedrock dissolution from groundwater at the CR-3 site? If yes, report the results of such investigation.

Response

The CR-3 License Renewal review did not expand the TLAA to investigate if there were any recent studies on regional geology on the subject of bedrock dissolution from groundwater at CR-3. Only current licensing basis (CLB) information was used to project the dissolved solids removed from beneath the plant area. As noted in the LRA, the USGS information was only one of two analyses considered to determine that bedrock dissolution would not adversely impact foundation structural integrity for the period of extended operation. In addition, the LRA evaluation included information that the grouting process employed would reduce the permeability of the foundation carbonate rocks by more than a factor of 30. Therefore, use of the CLB information for the evaluation of this TLAA was sufficient.

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CRYSTAL RIVER UNIT 3

DOCKET NUMBER 50 - 302 / LICENSE NUMBER DPR - 72

ENCLOSURE 3

**RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION
(REFERENCE 4)**

**RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION
(REFERENCE 4)**

For Crystal River Unit 3 Nuclear Generating Plant (CR-3), the U.S. Nuclear Regulatory Commission (NRC or the staff) staff reviewed the license renewal application (LRA); drawings; updated final safety analysis report (UFSAR), Section 9.8.7, "Fire Protection Program," and the following fire protection current licensing basis (CLB) documents listed in the CR-3 Operating License Condition 2.C(9): Safety Evaluation Reports dated July 27, 1979, January 22, 1981, January 6, 1983, July 18, 1985, March 16, 1988, and October 29, 1997.

The NRC staff has identified that fire protection systems and components discussed in the following sections have been excluded from the scope of license renewal and an aging management review (AMR). These systems and components were not included in the license renewal boundaries and appear to have fire protection intended functions required for compliance with Title 10 of the *Code of Federal Regulations* (CFR) 50.48, "Fire protection," as stated in 10 CFR 54.4. Therefore, in order to complete our review, the staff requires responses to the following requests for additional information (RAIs):

RAI 2.3.3.36-1

The LRA drawing 302-231-LR, Sheet 1, shows automatic water spray systems for oil-filled yard transformers at locations A7, A8, and A9 as out of scope (i.e., not colored in green). Verify whether the automatic water spray systems are in the scope of license renewal in accordance with 10 CFR 54.4(a) and subject to an AMR in accordance with 10 CFR 54.21(a)(1). If these suppression systems are excluded from the scope of license renewal and not subject to an AMR, provide justification for the exclusion.

Response

Water spray systems for the oil-filled yard transformers identified on scoping drawing 302-231-LR, Sheet 1, coordinates A-7, A-8, and A-9, are in the scope of License Renewal, highlighted on the subject drawing, and subject to aging management review. The highlighted piping and valves are included in LRA Table 2.3.3-36 and LRA Table 3.3.2-36 component/commodity groups: 1) Piping, piping components, standpipes, hydrants, and tanks, and 2) Sprinkler Heads and Spray Nozzles.

The non-highlighted dashed lines on drawing 302-231-LR, Sheet 1, at coordinates A-7, A-8, and A-9, represent electrical transformers and fire walls. Electrical components and fire walls are not highlighted on mechanical scoping drawings.

RAI 2.3.3.36-2

LRA Section 2.3.3.36, states that, "... a fixed, automatic Halon 1301 fire suppression system is installed to protect the Cable Spreading Room in the Control Complex..." Further, Safety Evaluation Report, dated July 27, 1979, Section 5.11, "Cable Spreading Room," states that, "...a back[up] Halon 1301 agent supply that would allow a second manual discharge if automatic release of the primary supply is ineffective..." The automatic and manual Halon 1301 fire suppression systems do not appear in LRA drawings as being in the scope of the license

renewal and subject to an AMR. Verify whether the above Halon 1301 fire suppression systems are in the scope of license renewal in accordance with 10 CFR 54.4(a) and subject to an AMR in accordance with 10 CFR 54.21(a)(1). If they are excluded from the scope of license renewal and not subject to an AMR, provide justification for the exclusion.

Response

The Halon 1301 fire suppression system described in LRA Section 2.3.3.36 is in the scope of license renewal in accordance with 10 CFR 54.4(a) and subject to an AMR in accordance with 10 CFR 54.21(a)(1). The Halon 1301 fire suppression system is not represented either on License Renewal scoping drawings or on CR-3 flow diagrams. Each distinct Halon tank in the Cable Spreading Room is connected by short pieces of pipe to a discharge nozzle. The Halon system bottles and discharge piping are included in the LRA Table 2.3.3-36 and LRA Table 3.3.2-36 component/commodity group, "Piping, piping components, standpipes, hydrants, and tanks".

RAI 2.3.3.36-3

LRA Table 2.3.3.36 excludes several types of fire barrier components that appear in LRA Section 2.3.3.36. LRA Section 2.3.3.36, states that, "... Fire barriers assemblies may consist of material such as Thermo-lag or TSI Barriers, Mecatiss Fire Barriers, pyrocrete, ceramic fiber, Marinite, concrete/grout, or sprayed on coatings..." LRA Table 2.3.3.36 excludes these fire barrier assemblies/material. Verify whether the above fire barrier assemblies are in the scope of license renewal in accordance with 10 CFR 54.4(a) and subject to an AMR in accordance with 10 CFR 54.21(a)(1). If they are excluded from the scope of license renewal and not subject to an AMR, provide justification for the exclusion.

Response

Fire barrier assemblies for in-scope structures are in the scope of license renewal, subject to an AMR, and evaluated as a civil component/commodity. As stated in LRA Subsection 2.3.3.36 page 2.3-94, "... Fire Barrier Assemblies ... are civil components/commodities and are addressed with their associated structures in Section 2.4." Specifically, Fire Barrier Assemblies are identified in the following structures in LRA Sections 2.4 (Scoping/Screening) and 3.5 (AMR):

LRA Tables		Structure
2.4.1-1	3.5.2-1	Reactor Building
2.4.2-1	3.5.2-2	Auxiliary Building
2.4.2-5	3.5.2-6	Control Complex
2.4.2-13	3.5.2-14	Intermediate Building

Structure	Fire Barrier Assemblies Include:
Reactor Building	Thermo-Lag fire barriers on conduits, junction boxes, transmitters, and penetrations encapsulated by stainless steel
Auxiliary Building	Thermo-Lag fire barriers on cable trays, conduits, junction boxes, instrument tubing, supports, and mechanical equipment, and Mecatiss fire barriers on
Intermediate Building	Thermo-Lag material on cable trays, conduits, junction boxes, instrument tubing, and supports.

Structure	Fire Barrier Assemblies Include:
Control Complex	Mecatiss fire barriers on Thermo-Lag material on cable trays, conduits, junction boxes, instrument tubing, and supports.

The only Fire Barrier Assemblies that are used at CR-3 are the Thermo-Lag fire barriers and the Mecatiss fire barrier system.

During the review of this RAI response, it was determined there are no Fire Barrier Assemblies located in the Emergency Feedwater (EFW) Pump Building. The LRA will be revised to delete the Fire Barrier Assemblies from Table 2.4.2-10 and Table 3.5.2-11. Refer to Enclosure 4 for LRA amendment details.

RAI 2.3.3.36-4

Safety Evaluation Report, dated July 27, 1979, listed various types of fire water suppression systems provided in the plant areas for fire suppression activities. The fire suppression systems in various areas are:

- Automatic wet pipe sprinkler system in fire pump house
- Automatic pre-action sprinkler system in diesel generator control rooms
- Automatic water spray system for turbine lube oil system, piping, reservoir and oil purifier, hydrogen seal oil unit, feedwater pump consoles, and charcoal filter plenums in the control complex
- Automatic sprinkler beneath cable trays in the auxiliary building at Elevations 95 and 119 feet
- Automatic sprinkler system in Zone 5 of the intermediate building at Elevation 119 feet
- Standpipe systems inside the reactor containment building
- Manual fixed water spray systems in charcoal filter plenums in the auxiliary building

Verify whether the above fire suppression systems installed in the above areas of the plant are in the scope of license renewal in accordance with 10 CFR 54.4(a) and subject to an AMR in accordance with 10 CFR 54.21(a)(1). If they are excluded from the scope of license renewal and not subject to an AMR, the staff requests that the applicant provide justification for the exclusion.

Response

The fire water suppression systems located in the referenced areas of the Fire Service Pump House, Diesel Generator Building, Turbine Building, Control Complex, Auxiliary Building, Intermediate Building, and Reactor Building are in the scope of license renewal and subject to an AMR. These fire suppression systems are identified on scoping drawings 302-231-LR, Sheet 1, 302-231-LR, Sheet 2, and 302-232-LR, Sheet 1, and also are described in FSAR Section 9.8. It is noted that the CR-3 Fire Hazards Analysis identifies fire zones 201A and 201B (instead of Zone 5) at elevation 119' in the Intermediate Building utilizing a wet pipe sprinkler system providing for full area suppression.

The referenced fire water suppression systems are included in the component/commodity groups, "Piping, piping components, standpipes, hydrants, and tanks," and, "Sprinkler Heads and Spray Nozzles," included in LRA Table 2.3.3-36 and LRA Table 3.3.2-36.

RAI 2.3.3.36-5

LRA Table 2.3.3.36 excludes several types of fire protection components that appear in the Safety Evaluation Report, dated July 27, 1979, and LRA drawings. These components are listed below:

- Valves
- Couplings
- Fire hose connections
- Halon 1301 storage bottles
- Dikes for oil spill confinement
- Floor drains and curbs for fire-fighting water
- Filter housings
- Cable tray fire stops
- Flame retardant coating for cables
- Fire retardant coating for structural steel supporting wall, floor, and ceiling
- Passive components in the diesel fuel fire pump

For each, determine whether the component should be included in Tables 2.3.3-36 and 3.3.2-36, and, if not, justify the exclusion.

Response

The commodity groups identified are evaluated in License Renewal as Mechanical discipline commodities and Civil discipline commodities.

Fire Service System valves, pipe couplings, fire hose connections, Halon 1301 storage bottles, filter housings, and diesel-driven fire pump housings are evaluated in the Mechanical discipline and are included in the component/commodity group, "Piping, piping components, standpipes, hydrants, and tanks," identified in LRA Table 2.3.3-36 and LRA Table 3.3.2-36.

In a similar manner, Civil discipline commodity groups are identified in the LRA with each structure, and are not included in LRA Table 2.3.3-36 and LRA Table 3.3.2-36. A review of each of the Civil fire protection components listed in the RAI above is discussed below:

There are no dikes for an oil spill specifically identified in the scope of License Renewal for oil spill confinement in the Fire Protection Program.

Floor drains for fire-fighting water are included as "Floor Drains" in the scoping/screening tables for the applicable structures in LRA Section 2.4. The License Renewal intended function for these floor drains is C-8, Provide flood protection barrier (internal and external flooding event). Intended function definitions are provided in LRA Table 2.1-1. The floor drains in the following structures were included in the scope of License Renewal: Reactor Building, Auxiliary Building, Control Complex, Diesel Generator Building, EFW Pump Building, Dedicated EFW Tank Enclosure Building, Intermediate Building, and the Turbine Building. Floor drains are identified in the AMR tables for the applicable structures in LRA Section 3.5.

Curbs are included as "Concrete: Above Grade" in the scoping/screening tables for the applicable structures in LRA Section 2.4. Specifically, Concrete: Above Grade has been

assigned the C-13, Provide spray shield or curbs for directing flow, License Renewal intended function for the Reactor Building and the Diesel Generator Building. Concrete: Above Grade, including curbs, is identified in the AMR tables for the applicable structures in LRA Section 3.5.

Cable tray fire stops are included as, "Fire Barrier Penetration Seals," in the scoping/screening tables for the applicable structures in LRA Section 2.4. Fire Barrier Penetration Seals serving as cable tray fire stops are included in the scope of License Renewal in the following structures: Auxiliary Building, Control Complex, Diesel Generator Building, Intermediate Building, and the Turbine Building. Fire Barrier Penetration Seals used for cable tray fire stops are identified in the AMR tables for the applicable structures in LRA Section 3.5.

There are no flame retardant coatings for cables specifically identified in the scope of License Renewal for the Fire Protection Program. As discussed in the response to RAI 2.3.3.36-3, Fire Barrier Assemblies are used at CR-3 on the cable trays and conduit consisting of Thermo-Lag and the Mecatiss Fire barrier systems.

There are no flame retardant coatings for structural steel specifically identified in the scope of License Renewal for the Fire Protection Program. As discussed in the response to RAI 2.3.3.36-3, Fire Barrier Assemblies are used at CR-3 on the cable trays, conduit, junction boxes, instrument tubing including the support steel consisting of Thermo-Lag and the Mecatiss Fire barrier systems.

RAI 2.4-1

LRA Section 2.4 excludes several types of fire barrier components that appear in the Safety Evaluation Report, dated July 27, 1979. These fire components are listed below:

- Table 2.4.1-1, fire doors, fire barrier penetration seals, and interior fire hose stations
- Table 2.4.2-9, fire barrier assemblies, and interior fire hose stations
- Table 2.4.2-10, fire barrier penetration seals, and interior fire hose stations
- Table 2.4.2-12, fire barrier assemblies, fire doors, fire barrier penetration seals, and interior fire hose stations
- Table 2.4.2-14, fire barrier assemblies, fire barrier penetration seals, and interior fire hose stations
- Table 2.4.2-18, fire barrier assemblies

Verify whether the above fire barrier assemblies and components are in the scope of license renewal in accordance with 10 CFR 54.4(a) and subject to an AMR in accordance with 10 CFR 54.21(a)(1). If they are excluded from the scope of license renewal and not subject to an AMR, the staff requests that the applicant provide justification for the exclusion.

Response

- As identified in Table 2.4.1-1, there are no fire doors, fire door penetration seals or interior fire hose stations in the Reactor Building. There are fire barrier assemblies which include Thermo-Lag fire barriers on conduits, junction boxes, transmitters, and penetrations encapsulated by stainless steel as discussed in response to RAI 2.3.3.36-3.

- As identified in Table 2.4.2-9, there are no fire barrier assemblies or interior fire hose stations in the Diesel Generator Building.
- As identified in Table 2.4.2-10, there are no fire barrier penetration seals or interior fire hose stations in the EFW Pump Building.
- As identified in Table 2.4.2-12, the Fire Service Pumphouse contains no fire barrier assemblies, fire doors, fire barrier penetration seals, or interior fire hose stations.
- As identified in Table 2.4.2-14, the Machine Shop contains no fire barrier assemblies or fire barrier penetration seals. A fire hose station component was added to the Machine Shop based on the response to RAI 2.2-06. See CR-3 to NRC letter, 3F0909-03, dated September 11, 2009, for the response to RAI 2.2-06.
- As identified in Table 2.4.2-18, there are no fire barrier assemblies in the Turbine Building.

PROGRESS ENERGY FLORIDA, INC.

CRYSTAL RIVER UNIT 3

DOCKET NUMBER 50 - 302 / LICENSE NUMBER DPR - 72

ENCLOSURE 4

**AMENDMENT #4 CHANGES TO THE LICENSE RENEWAL
APPLICATION**

Amendment #4 Changes to the License Renewal Application

Source of Change	License Renewal Application Amendment #4 Changes
RAI 2.3.3.36-3	With regard to the EFW Pump Building, delete the row associated with the commodity "Fire Barrier Assemblies" from LRA Table 2.4.2.10 on page 2.4-30 and from LRA Table 3.5.2-11 on page 3.5-112.