Progress Energy

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

Ref: 10 CFR 54

October 22, 2009
3F1009-08

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 #6

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 September 22, 2009, "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 September 22, 2009, 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 provides Amendment #6 to the License Renewal Application.

No new 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

Enclosure: 1. Response to Request for Additional Information
2. Amendment #6 - 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

A035

NRR

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

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 22 day of October, 2009, by Jon A. Franke.

Signature of Notary Public
State of Florida

TARA BARTEN
Notary Public - State of Florida
My Comm. Expires Jan 29, 2013
Commission # DD 856189

(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

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

Request for Additional Information (RAI) 2.4.2.1-1

The watertight sleeves around the raw water sump vents that protect the Auxiliary Building (AB) at an elevation of 95 ft against flood levels up to an elevation of 129 ft are listed as additional components required for local protection in the Crystal River Unit 3 Nuclear Generating Plant (CR-3) AB final safety analysis report (FSAR) Section 2.4.2.4. This commodity/component is not listed in Table 2.4.2-1 of the CR-3 license renewal application (LRA) for the AB. Please justify its exclusion from the scope of license renewal.

Response

The watertight sleeves around the raw water sump vents that protect the AB are included in the scope of License Renewal. The watertight sleeves are included with the "Other Miscellaneous Structures" in the component/commodity group "Platforms, Pipe Whip Restraints, Jet Impingement Shields, Masonry Wall Supports, and Other Miscellaneous Structures" in the CR-3 License Renewal basis document. The watertight sleeves are discussed in LRA Subsection 2.4.2.1. The watertight sealant is included with the component/commodity group "Seals and Gaskets." The grout is included with the component/commodity group "Concrete: Above Grade."

However, LRA Table 3.5.2-2 should have included an aging management review (AMR) line item for stainless steel material in the Air – Outdoor environment for component/commodity group "Platforms, Pipe Whip Restraints, Jet Impingement Shields, Masonry Wall Supports, and Other Miscellaneous Structures." This LRA change is shown in Enclosure 2 to this submittal.

RAI 2.4.2.3-1

As mentioned in the CR-3 LRA, the borated water storage tank (BWST) and shield wall structure include an attached reinforced concrete structure that has been abandoned but contains several components that are included in scope of license renewal, as stated in the CR-3 LRA on page 2.4-15. Clarify if this abandoned structure has been included in scope or justify its exclusion as having no impact, especially on the flood barrier capabilities on the adjacent structures that are included in scope of license renewal and therefore subject to an aging management review (AMR).

Response

The attached reinforced concrete structure is part of the BWST Foundation and Shield Wall structure and is included in the scope of License Renewal. Some of the equipment inside the attached reinforced concrete structure was abandoned, but not the structure. (The LRA states that the structure contains abandoned tanks, but the LRA does not state that the structure itself is abandoned.) The specific structural component/commodities for the attached structure include the reinforced concrete structure, the anchorage/embedments for support steel and pipe supports, a platform, supports for the ventilation fan and duct work, pipe supports, and a door. These are identified in the License Renewal basis document.

During the preparation of this RAI response, it was determined the door to the structure is not a flood door. The flood door to the BWST access area is located in the concrete flood barrier wall described in LRA Subsection 2.4.2.15. This response requires changes to the LRA that are described in Enclosure 2 to this submittal.

RAI 2.4.2.3-2

STYROFOAM™ covers a full range of extruded polystyrene building products used primarily for insulation of floors, walls and roof systems. Please clarify if the one inch thick STYROFOAM™ filler, located in the gap between the concrete missile barrier and side of the borated water storage tank, is included in scope of license renewal or justify its exclusion from the scope of license renewal.

Response

The Styrofoam material attached to the BWST is not in the scope of License Renewal, because it performs no License Renewal intended functions. The Styrofoam was used as a filler between the tank liner plate and the wall during placement of the concrete wall around the BWST. The Styrofoam does not provide a support or protection function for the BWST or the concrete structure.

During operation, the maximum temperature of the BWST is 100°F per the applicable design basis document. This temperature is below the temperature that could cause degradation to the concrete structure due to elevated temperatures. The non-safety related Styrofoam was not credited for freeze protection in the License Renewal basis calculation because CR-3 utilizes proceduralized cold weather monitoring which ensures equipment availability and function are not impacted. Design requirements are met without reliance on the Styrofoam insulation to maintain safety related functions.

RAI 2.4.2.3-3

The BWST is listed as a Class 1 structure per CR-3 FSAR, Section 5.1.1.1. Its foundation is made of reinforced concrete and its primary use is to support and provide missile protection to the BWST which is a mechanical component. Please clarify if this Class 1 reinforced concrete foundation is completely above grade or else justify why the below grade concrete is not listed in Table 2.4.2-3 of the CR-3 LRA, as in scope of license renewal and subject to an AMR.

Response

The reinforced concrete BWST Foundation and Shield Wall structure described in LRA Subsection 2.4.2.3 was placed directly on the AB reinforced concrete slab at 119 ft. elevation. A reinforced concrete foundation is not used. The reinforced concrete shield wall attaches directly to the AB reinforced concrete slab at 119 ft. elevation. Plant grade is at elevation 118.5 ft., therefore the structure is completely above grade.

RAI 2.4.2.4-1

Both bridges forming the cable bridge span the discharge canal and provide support for electrical circuits required to mitigate a postulated station blackout (SBO) event. The SBO conduits are considered to be within the cable bridge structure from where they exit the ground on one side to cross the bridge to where they re-enter the ground on the other side of the bridge. Due to the proximity to a body of water and the entrance/exit of electrical cables required to mitigate an SBO event, from the ground and their supports, please indicate if there are any seals, gaskets or any other applicable flood barriers or insulation that should be included in Table 2.4.2-4 of the CR-3 LRA, and therefore subject to an AMR.

Response

There are no seals, gaskets, flood barriers, or insulation associated with either non-safety related cable bridge.

The east cable bridge has SBO conduits which enter and exit the structure in open manholes which are part of the cable bridge abutment. The in scope cables exit the conduit to cable trays which are supported on the cable bridge.

The west cable bridge structure has SBO conduits which exit the ground on the north and south sides of the bridge and are supported by the bridge. These conduits are continuous and do not have any seals. The west cable bridge is also an enclosed concrete tunnel which internally supports DC power cables entering from a common Unit 1 and 2 concrete tunnel. These cables terminate in an electrical panel in the 230 KV Terminal House before entering a cable trench located in the 230 KV Switchyard.

In addition, FSAR Section 2.4.2.4 does not identify any flood protection features associated with the cable bridges at CR-3.

RAI 2.4.2.4-2

In Table 2.4.2-4 for the cable bridge section of the CR-3 LRA, the cable tray, conduit, heating, ventilation, and air conditioning (HVAC) ducts and tube tracks are listed as being in scope of license renewal and therefore subject to an AMR. Please clarify if the HVAC ducts system component supports are needed and included in scope of license renewal or justify its exclusion from Table 2.4.2-4 of the CR-3 LRA.

Response

The cable bridge structure described in LRA Subsection 2.4.2.4 does not include heating, ventilation, and air conditioning (HVAC) ducts and tube track. The methodology employed by CR-3 used a generic component/commodity group for "Cable Tray, Conduit, HVAC Ducts, Tube Track" throughout LRA Sections 2.4 and 3.5. Refer to the discussion of "Component/ Commodity" in LRA Section 3.0, page 3.0-3. In the cable bridge structure, only Cable Tray and Conduit are applicable.

RAI 2.4.2.8-1

Protection of the intake structure during a postulated probable maximum hurricane peak tide is provided by a cut-off wall extending downward into the competent caprock at the entrance to the structure (See CR-3 FSAR 2.4.2.4). Please confirm that this wall is considered part of the intake structure and thus included in scope of license renewal or else justify its exclusion from the scope of license renewal.

Response

This cut-off wall is considered part of the Circulating Water Intake Structure and is included in the scope of License Renewal. Intake Structure design drawings show the face of the bottom mat of the Circulating Water Intake Structure extends down from elevation 67 ft. 0 in. for seven feet at the entrance to the Circulating Water Intake Structure from the Intake Canal. The Intake Canal bottom is shown on plant documents as elevation 67 ft. 0 in. at the Circulating Water Intake Structure.

RAI 4.5-1

The fourth column of the first row in CR-3 LRA, Table 4.5-1, "Summary of Tendon Data," lists the tendon force value extrapolated to the end of the period of extended operation for dome tendons as 1255 kips. However, in CR-3 LRA, Figure 4.5-1, "Projected Force in Dome Tendons," the trend line based on individual lift-off forces from surveillance data indicates that the projected lift-off force in the dome tendons at the end of the period of extended operation (i.e., 63 years after initial tensioning) would be approximately 1330 kips. Please explain the discrepancy between the projected tendon force values at the end of the period of extended operation in the dome tendons indicated in CR-3 LRA, Table 4.5-1, and in CR-3 LRA, Figure 4.5-1 and identify the correct value.

Response

In response to the RAI, it was determined that the correct extrapolated value for the Dome tendons is shown on LRA Table 4.5-2 as 1321 kips. The value reported in the LRA summary Table 4.5-1 is incorrect and will be updated to agree with the correct value shown in LRA Table 4.5-2. In addition to the RAI response, additional information regarding containment tendon surveillance data has been prepared by the tendon Surveillance Contractor used at CR-3 and is provided below. The revised information affects the data presented in the LRA as discussed in the following paragraphs.

The Final Report for the 30th Year Tendon Surveillance has been revised by the Surveillance Contractor to include data from the 1st and 2nd interval tests in the tendon prestress regression analysis. The revised values have been incorporated into the basis document and they affect LRA Tables 4.5-1, 4.5-2, 4.5-3, and 4.5-4. However, the changes in the tables resulted in negligible changes to Figures 4.5-1 through 4.5-6; therefore, the figures were not revised. Refer to the specific LRA changes identified in Enclosure 2 to this submittal.

Table 4.5-1 shows that the computed values demonstrated that prestress in all three groups of tendons should remain above the applicable minimum required values for the period of

extended operation ending on December 3, 2036, and that the tendons should maintain their design basis function.

The column of "computed values" shown on the original LRA tables has been removed. These values were computed using the regression coefficients for the tendon group applied to each tendon at the time of the surveillance test of the tendon. They would have changed slightly as did the values projected for each group at 63 years because the adjustments to the data resulted in slightly different regression coefficients. The computed values using the regression coefficients for each tendon at the time of each surveillance test are not the same as the value used to judge acceptability of the measured force for the tendon. The values used to judge acceptability are calculated using Regulatory Guide 1.35.1 which incorporates several factors specific to the tendon itself, such as, the order in which it was initially prestressed. Including these computed values based on the regression coefficients on the tables was confusing so they were eliminated.

In consideration of the recent discovery of a gap in the concrete of the outer radius of the CR-3 containment structure (subject of Event Notification 45416, dated October 7, 2009, and NRC Special Inspection Team Press Release No. II-09-055, dated October 9, 2009), CR-3 will evaluate the need to revise the technical response to this RAI at a later date. This evaluation will be complete following the root cause determination that is currently in progress and subsequent assessment of any impact on the technical and aging management programs discussed in this response.

PROGRESS ENERGY FLORIDA, INC.

CRYSTAL RIVER UNIT 3

DOCKET NUMBER 50 - 302 / LICENSE NUMBER DPR - 72

ENCLOSURE 2

AMENDMENT #6
CHANGES TO THE LICENSE RENEWAL APPLICATION

Amendment #6 - Changes to the License Renewal Application

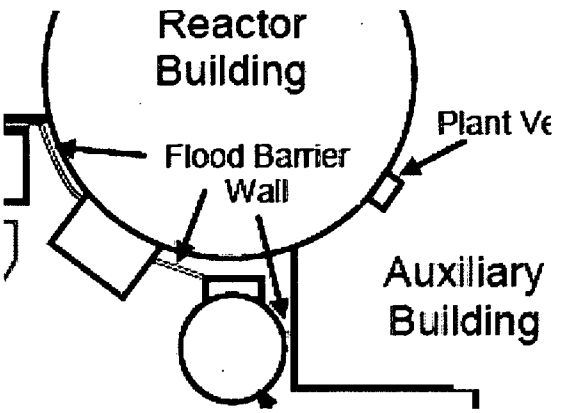
<table>
<tr><th>Source of Change</th><th>License Renewal Application Amendment #6 Changes</th></tr>
<tr><td>RAI 2.4.2.1-1</td><td>For Auxiliary Building stainless steel "Platforms, Pipe Whip Restraints, Jet Impingement Shields, Masonry Wall Supports, and Other Miscellaneous Structures" in Table 3.5.2-2, on LRA page 3.5-76, add the following line item to address Air - Outdoor:

<table>
<tr><td>Air - Outdoor</td><td>Loss of Material</td><td>Structures Monitoring</td><td>III.B4-7 (TP-6)</td><td>3.5.1-50</td><td>C, 532</td></tr>
</table>
</td></tr>
<tr><td>RAI 2.4.2.3-1</td><td>To update the status of the Door (Non-Fire) in the BWST Foundation and Shield Wall structure, delete the last sentence of the first paragraph of Subsection 2.4.2.3 on page 2.4-15. Also, on page 2.4-15, revise the second sentence under FSAR and Drawing References to read:

FSAR Section 5.1.1.1 identifies the structure itself as Class I.

Delete Intended Function C-8 from the Component/Commodity "Doors (Non-Fire)" on both Table 2.4.2-3 on page LRA 2.4-16 and Table 3.5.2-4 on page 3.5-83.

On LRA Figure 2.2-1, revise the Flood Barrier Wall between the BWST and the Reactor Building to agree with the following sketch:



</td></tr>
<tr><td>RAI 4.5-1</td><td>Replace Tables 4.5-1, 4.5-2, 4.5-3, and 4.5-4 on LRA pages 4.5-3 through 4.5-10 with the corresponding following tables.</td></tr>
</table>

TABLE 4.5-1 SUMMARY OF TENDON DATA

Tendon Type	Total Number of Tendons	Minimum Required Average Values (Kips/Tendon)	Value Extrapolated to End of Period of Extended Operation (Kips/Tendon)	Conclusion
Dome	123	1215	1321	Note 1
Vertical	144	1149	1484	Note 1
Hoop	282	1252	1328	Note 1

Note:

1. The value at the end of the period of extended operation is greater than the minimum required value.

TABLE 4.5-2 DOME TENDON DATA

Surveillance No.	Tendon	Years Since Initial Tensioning	Measured Force/Tendon
1	D139	3.22	1590
	D215	3.25	1644
	D221	3.14	1511
	D228	3.11	1524
	D234	3.1	1513
	D340	3.11	1562
2	D122	5.42	1647
	D140	5.41	1587
	D208	5.4	1593.5
	D323	5.47	1525.5
	D331	5.5	1460.5
3	D123	6.99	1304
	D212*	6.9	1338
	D322	6.91	1494
	D329	6.92	1506
4	D105	12.92	1453
	D212*	12.9	1276
	D328	12.89	1619
5	D224	18.96	1425
	D231	19.06	1335
6	D113	22.99	1427
	D115	22.7	1380
	D212*	23.04	1335
	D304	23	1598
	D311	23.03	1408

TABLE 4.5-2 (continued) DOME TENDON DATA

Surveillance No.	Tendon	Years Since Initial Tensioning	Measured Force/Tendon
7	D126	26.81	1376.9
	D212*	26.82	1292
	D339	26.47	1507
8	D129	32.96	1289.64
	D212*	32.92	1277
	D238	32.89	1511.53
Extrapolated		63 (Note 1)	1321

* Indicates Control Tendon

Notes:

1. The extended period of operation will end in the 63rd year from the date of initial tensioning.

TABLE 4.5-3 VERTICAL TENDON DATA

Surveillance No.	Tendon	Years Since Initial Tensioning	Measured Force/Tendon
1	12V19	3.26	1590
	12V20	2.87	1785
	12V21	3.26	1633
	23V15	3.22	1590
	34V06	3.16	1590
	45V03	3.19	1678
	56V01	3.28	1719
2	12V12	5.47	1718
	12V20	5.2	1740
	23V05	5.57	1580
	34V01	5.54	1569
	45V06	5.53	1685
	56V01	5.59	1707
	56V20	5.48	1630
3	34V19	7.02	1640
	45V16	7.01	1575
	56V11	7.04	1565
	61V05	7.07	1519
4	12V01*	13.07	1535
	34V04	13.07	1623
	56V02	13.04	1648
5	61V14	19.08	1587
	56V15	19.18	1541
6	12V01*	23.15	1471
	23V02	23.15	1609
	61V21	23.25	1525

TABLE 4.5-3 (continued) VERTICAL TENDON DATA

Surveillance No.	Tendon	Years Since Initial Tensioning	Measured Force/Tendon
7	12V01*	27.028	1446
	12V02	27.12	1546
	23V24	27.14	1522
	45V14	26.94	1552
	61V08*	26.91	1476
8	45V20	33.03	1456.8
	61V08*	33.05	1505.98
	61V17	33.11	1580.18
Extrapolated		63 (Note 1)	1484

*Indicates control tendon -The original control tendon, 12V01, required retensioning in the 3rd and 7th interval surveillance. Tendon 61V08 was selected as the new control tendon for surveillances after the 7th interval.

Notes:

1. The extended period of operation will end in the 63rd year from the date of initial tensioning.

TABLE 4.5-4 HOOP TENDON DATA

Surveillance No.	Tendon	Years Since Initial Tensioning	Measured Force/Tendon
1	13H10	2.733	1524
	13H19	2.992	1485
	13H37	3.081	1605.5
	13H47	3.100	1606
	62H9	3.006	1573.5
	46H21*	2.925	1502
	46H29	2.911	1463
	46H31	2.886	1457
	46H46	2.861	1464
	51H11	2.903	1474
2	13H22	5.094	1572
	13H32	5.097	1611
	13H43	5.300	1583
	35H24	5.086	1533
	35H28	5.086	1430
	35H44	5.111	1622
	46H42	5.161	1548
	51H10	5.111	1572
	51H23	5.275	1528
	51H37	5.300	1567
3	13H46	6.592	1546
	35H35	6.786	1328
	35H40	6.608	1458
	42H20	6.614	1544
	42H40	6.636	1466
	46H10	6.678	1478
	51H26*	6.569	1424
	51H45	6.792	1492
	62H34	6.617	1546
4	13H20	12.575	1456
	13H40	12.606	1471
	51H26*	12.608	1411
	51H41	12.817	1362
	64H19	12.728	1470

TABLE 4.5-4 (continued) HOOP TENDON DATA

Surveillance No.	Tendon	Years since Initial Tensioning	Measured Force/Tendon
5	35H01	18.942	1572
	42H01	18.928	1560
	46H21*	18.833	1425
	46H28	18.728	1375
	46H30	18.781	1382
	46H47	18.817	1468
	62H08	18.814	1435
6	42H18	22.692	1476
	42H29	22.786	1448
	42H30	22.733	1389
	42H31	22.775	1338
	42H32	22.703	1355.5
	42H33	22.772	1361
	42H34	22.733	1377.5
	42H35	22.781	1296.5
	42H36	22.744	1408
	42H37	22.775	1401.5
	42H44	22.711	1471.5
	51H25	22.822	1363
	51H26*	22.628	1320
	51H27	22.836	1265.5
	51H28	22.647	1450.5
	53H02	22.797	1611
	53H46	22.667	1459.5
	62H41	22.797	1426
	62H46	22.736	1485
7	46H21*	26.656	1388
	46H30	26.694	1355.6
	46H31	26.667	1343.3
	46H32	26.628	1366.8
	46H33	26.664	1357.8
	46H34	26.619	1424.7
	46H35	26.653	1376.8
	46H36	26.608	1343.5
	46H37	26.644	1293.5

TABLE 4.5-4 (continued) HOOP TENDON DATA

Surveillance No.	Tendon	Years since Initial Tensioning	Measured Force/Tendon
7 (continued)	46H38	26.625	1353.4
	46H39	26.647	1356.2
	53H16	26.628	1475.4
	63H02	26.672	1551.6
	63H09	26.814	1431.8
8	13H33	32.817	1306.46
	13H34	32.636	1368.61
	13H35	32.814	1244.25
	13H36	32.622	1385.23
	13H37	32.825	1289.87
	13H38	32.639	1395.05
	42H46	32.692	1558.63
	46H19	32.711	1358.61
	46H20	32.619	1298.13
	46H21*	32.694	1330
	46H22	32.622	1311.48
	46H23	32.708	1329.97
	46H24	32.636	1425.85
	51H34	32.644	1464.70
	62H29	32.736	1369.63
	62H30	32.681	1290.84
	62H33	32.733	1313.39
	62H34	32.686	1378.71
Extrapolated		63 (Note 1)	1328

*Control Tendon - Tendon 51H26 was used as the control tendon when testing was performed during outages for surveillances 3, 4 and 6. Tendon 46H21 was used during online testing for surveillances 5, 7 and 8.

Notes:

1. The extended period of operation will end in the 63rd year from the date of initial tensioning.