Progress Energy

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

Ref: 10 CFR 50.90

October 14, 2004
3F1004-02

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

Subject: Crystal River Unit 3 – License Amendment Request #288, Revision 0
Change to Surveillance Testing Requirements for Reactor Building Spray Nozzles

Dear Sir:

Florida Power Corporation, doing business as Progress Energy Florida, Inc. (PEF), hereby submits License Amendment Request (LAR) #288, Revision 0, which requests a change to the Crystal River Unit 3 (CR-3) Facility Operating License in accordance with 10 CFR 50.90. LAR #288 revises the frequency for Improved Technical Specifications (ITS) Surveillance Requirement (SR) 3.6.6.8. The LAR proposes to change the fixed frequency to an event based frequency. The current SR frequency is every 10 years. The revised frequency is, "Following maintenance that could result in nozzle blockage." The ITS Bases is revised to define maintenance that could result in nozzle blockage and to provide the alternative of a visual inspection in lieu of an air or smoke test when a visual inspection is more effective.

The current SR will exceed the frequency due date, including the interval allowance of SR 3.0.2, on September 13, 2005. Therefore, PEF requests that this amendment be approved by August 1, 2005.

The CR-3 Plant Nuclear Safety Committee has reviewed this request and recommended it for approval.

If you have any questions regarding this submittal, please contact Mr. Sid Powell, Supervisor, Licensing and Regulatory Programs at (352) 563-4883

A001

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

Sincerely,

Dale E Young

Dale E. Young
Vice President
Crystal River Nuclear Plant

DEY/pei

Attachments:

A. Licensee Evaluation
B. Proposed Revised Improved Technical Specifications and Bases Pages – Strikeout/Shadowed Format
C. Proposed Revised Improved Technical Specifications and Bases Pages – Revision Bar Format

xc: NRR Project Manager
Regional Administrator, Region II
Senior Resident Inspector

STATE OF FLORIDA

COUNTY OF CITRUS

Dale E. Young states that he is the Vice President, Crystal River Nuclear Plant for Florida Power Corporation, currently doing business as Progress Energy Florida, Inc. (PEF); 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.

Dale E Young

Dale E. Young
Vice President
Crystal River Nuclear Plant

The foregoing document was acknowledged before me this 14th day of October, 2004, by Dale E. Young.

Janet Schroeder

Signature of Notary Public
State of Florida

JANET SCHROEDER
MY COMMISSION # DD 128063
EXPIRES: June 20, 2006
Bonded Thru Notary Public Underwriters

(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

ATTACHMENT A

LICENSE AMENDMENT REQUEST #288, REVISION 0

Licensee Evaluation

Licensee Evaluation

Description of the Proposed License Amendment Request

Progress Energy Florida, Inc. (PEF) proposes a change to the frequency for Crystal River Unit 3 (CR-3) Improved Technical Specification (ITS) Surveillance Requirement (SR) 3.6.6.8 for the Reactor Building (RB) spray nozzles. The SR requires CR-3 to "Verify each spray nozzle is unobstructed," at a frequency of 10 years. CR-3 requests that this frequency be changed to "Following maintenance which could result in nozzle blockage."

The Bases for ITS SR 3.6.6.8 is being revised to correspond to the proposed SR frequency wording. In addition, the Bases change provides clarification of what constitutes maintenance that could result in nozzle blockage. The Bases also includes provisions to perform a visual inspection in lieu of a smoke or air test if that method is determined to be more effective. The revised wording is as follows:

SR 3.6.6.8

> "With the containment spray header isolated and drained of any solution, low pressure air or smoke can be blown through test connections. **As an alternative, a visual inspection (e.g. boroscope) of the nozzles or piping could be utilized in lieu of an air or smoke test if a visual inspection is determined to provide a more effective post-maintenance test. A visual inspection may be more effective if the potential for material intrusion is localized and the affected area is accessible.** Performance of this Surveillance demonstrates that each spray nozzle is unobstructed and provides assurance that spray coverage of the containment during an accident is not degraded. Due to the passive nature of the design of the nozzles, **and the corrosion resistant design of the system**, a test **performed following maintenance which could result in nozzle blockage** is considered adequate to detect obstruction of the spray nozzles. **Maintenance that could result in nozzle blockage would be those maintenance activities where the Foreign Material Exclusion program controls were deemed ineffective. For activities, such as a valve repair/replacement, a visual inspection would be the preferred post-maintenance test since small debris in a localized area is the most likely concern. A smoke or air test would be appropriate following an event where a large amount of debris entered the system or water was actually discharged through the spray nozzles. For an inadvertent actuation of the Reactor Building Spray system, an air or smoke test should be performed at the next outage of sufficient duration."**

Background

The RB spray system is designed to reduce containment pressure following an accident in order to meet the requirements of 10 CFR 50.46, Acceptance criteria for emergency core cooling systems for light-water nuclear power reactors, and 10 CFR 50.49, Environmental qualification of electric equipment important to safety for nuclear power plants. The CR-3 ITS require that each RB spray nozzle be verified unobstructed every 10 years. The ITS Bases further clarify that the test is performed using a low pressure air or smoke flow test to verify that the spray nozzles are not obstructed and that flow will be provided when required. However, nozzle blockage is considered unlikely, except as a consequence of maintenance or repair, since the system was

demonstrated to be OPERABLE prior to initial startup, successful air or smoke tests have been performed and the design of the system minimizes the likelihood of corrosion or degradation. The risks and costs associated with performance of this test are not commensurate with the safety benefit of performing the test unless there has been an activity which may have resulted in the introduction of material into the piping that may lead to nozzle blockage. The subject spray nozzles are located high in the RB. Access to the nozzles, to verify the required air or smoke flow, is difficult and presents substantial personnel safety hazards. The costs of performing the air/smoke flow test are high, as performance of the test may delay critical-path refueling outage activities. These risks and costs are unwarranted given the very low risk of nozzle obstruction. Perry Nuclear Power Plant, North Anna Power Station, Calvert Cliffs Nuclear Power Plant as well as other licensees, have obtained license amendments that revised the Frequency of the test from every 10 years to following maintenance which could result in nozzle blockage.

NUREG-1366, "Improvements to Technical Specifications Surveillance Requirements," (December 1992) reported on a NRC staff review of industry experience which indicated that RB spray systems of similar design are highly reliable and not subject to plugging after testing following construction. The NRC reviewed industry experience and found that, in general, once tested after construction, RB spray systems have not been subject to blockage.

Technical and Regulatory Analysis

The RB spray system reduces RB atmospheric pressure after a Loss of Coolant Accident (LOCA) by removing heat from the RB atmosphere and structures. The RB spray system consists of two redundant subsystems. Each subsystem contains one RB spray header, a pump, associated piping and valving, and instrumentation. There are a total of 192 spray nozzles. The RB spray system is maintained closed during normal operation to provide containment isolation. A detailed description of the RB spray system is located in the CR-3 Final Safety Analysis Report (FSAR) Section 6.2.

Prior to initial operation, CR-3 demonstrated that the RB spray system was clean and OPERABLE. This was accomplished by flushing the system. CR-3 performed the RB nozzle SR in June 1979, July 1985, June 1990 and March 1993. One nozzle was found to be obstructed in the July 1985 test. The one obstructed nozzle was cleared by probing it with a wire tool. All other nozzle SRs were completed satisfactorily with no observed nozzle obstruction. CR-3 had an inadvertent actuation of RB spray system on October 15, 1992. The RB spray nozzle SR was performed in March 1993 to verify no material was carried into the spray nozzles. No nozzles were found obstructed in March 1993.

Nozzle blockage is considered unlikely during normal operations for the following reasons:

The nozzles of the spray systems are made of corrosion resistant materials (stainless steel). Piping downstream of the RB spray containment isolation valves (BSV-3 and BSV-4) and the nozzles are kept dry. Therefore, degradation of the spray nozzles is not expected.

The nozzles are located at the top of the containment; over 96 feet above any floor level, therefore, introduction of foreign material from the exterior to the system is unlikely.

CR-3 Foreign Material Exclusion (FME) program, developed using INPO 97-008 (MA-320), "Foreign Material Exclusion Program," is in place to prevent the introduction of foreign material into the RB spray system. When maintenance or repairs are performed on the RB Spray System, or other connected systems that could result in obstruction of the spray nozzles, the CR-3 FME program ensures that system cleanliness is maintained.

Personnel awareness and training, combined with individual accountability, are the key factors to CR-3's foreign material control. The importance of internal component cleanliness and control of foreign object debris is paramount to equipment reliability. Station goals and expectations are consistently advertised to heighten the focus on FME control. Operators, Mechanics, Laborers, and contractors are all aware of their contribution to CR-3's FME program and ultimately the safety of the plant.

Awareness of FME program is assured through training. Understanding the fundamentals of the station's FME Program (MNT-NGGC-0007) enables individual accountability. All new employees and contractors are required to complete an extensive computer based FME training course before they are permitted to work in the field. FME awareness is also included in the annual unescorted access requalification training for all workers.

Continual and effective communication of the station goals and expectations are shared through various mediums. Specific FME concerns are discussed during pre-job briefs. Implementation is verified by way of peer checks, and enhancements are identified during post-job critiques. Personnel awareness is maintained and the FME Program is continually checked and balanced.

Procedure MNT-NGGC-0007 includes criteria for establishing FME areas, steps to take if FME control is lost and guidance for FME retrieval. FME areas are clearly marked and material accountability is assured through logs and securing of loose items and tools. FME barriers and covers are used except when performing necessary operations. If any material is unaccounted for in an FME area, a condition report is initiated in the corrective action program.

There have been a number of maintenance and modification activities on the RB spray system since the last smoke or air test. FME control has not been lost for any of these activities. Should maintenance activities or unanticipated circumstances result in concerns that the RB spray headers may become obstructed, performance of the spray nozzle flow test or a visual inspection would be required by the revised SR to verify system Operability.

No Significant Hazards Consideration Determination

License Amendment Request (LAR) #288, Revision 0, proposes to revise the frequency of the Surveillance Requirement (SR) for the Reactor Building (RB) spray nozzles. In support of this conclusion, the following analysis is provided:

1. Does not involve a significant increase in the probability or consequences of an accident previously evaluated.

The proposed change modifies the SR to verify that the RB spray nozzles are unobstructed after maintenance that could introduce material that could result in nozzle blockage. The spray nozzles are not assumed to be initiators of any previously analyzed accident. Therefore, the

change does not increase the probability of any accident previously evaluated. The spray nozzles are assumed in the accident analyses to mitigate design basis accidents. The revised SR to verify system OPERABILITY following maintenance is considered adequate to ensure OPERABILITY of the RB spray system. Since the system will still be able to perform its accident mitigation function, the consequences of accidents previously evaluated are not increased. Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does not create the possibility of a new or different type of accident from any accident previously evaluated.

The proposed change revises the SR to verify that the RB spray nozzles are unobstructed after maintenance that could result in nozzle blockage. The change does not introduce a new mode of plant operation and does not involve physical modification to the plant. The change will not introduce new accident initiators or impact the assumptions made in the safety analysis. Therefore, the proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

3. Does not involve a significant reduction in the margin of safety.

The proposed change revises the frequency for performance of the SR to verify that the RB spray nozzles are unobstructed. The frequency is changed from every 10 years to following maintenance that could result in nozzle blockage. This requirement, along with foreign material exclusion programs and the remote physical location of the spray nozzles, provides assurance that the spray nozzles will remain unobstructed. As the spray nozzles are expected to remain unobstructed and able to perform their post-accident mitigation function, plant safety is not significantly affected. Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, Progress Energy Florida, Inc. (PEF) concludes that the proposed LAR presents no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and accordingly, a finding of "no significant hazards consideration" is justified.

Applicable Regulatory Requirements/Criteria

CR-3 was built in accordance with the Principle Architectural and Design Criteria (PADC) listed in Chapter 1.4 of the FSAR. These PADCs were based on draft general design criteria and are similar, but not identical, to the 10 CFR 50 Appendix A, General Design Criteria (GDC) for Nuclear Plants. The following PADCs are applicable to the design and testing of the RB spray system. In parentheses following the PADC is the similar GDC: PADC 49, "Containment Design Basis" (GDC 50), PADC 52, "Containment Heat Removal Systems" (GDC 38), PADC 58, "Inspection of Containment Pressure Reducing Systems" (GDC 39), PADC 60, "Testing of Containment Spray Systems" (GDC 40), and PADC 61, "Testing of Operational Sequence of Containment Pressure-Reducing Systems" (GDC 40). The proposed revision of the SR does not impact conformance to the applicable PADCs. The design of the RB Spray System is to reduce RB pressure following an accident in order to meet the requirements of 10 CFR 50.46 and 10 CFR 50.49. The system OPERABILITY requirements, the corrosive resistant design combined with the requirement to perform post-maintenance testing to verify system OPERABILITY,

minimize the potential for nozzle obstruction and provide confidence that the systems can perform their assumed functions. Therefore, the proposed change to revise the frequency of the SR is consistent with all applicable regulatory requirements or criteria.

Environmental Impact Evaluation

10 CFR 51.22(c)(9) provides criteria for identification of licensing and regulatory actions eligible for categorical exclusion from performing an environmental assessment. A proposed amendment to an operating license for a facility requires no environmental assessment if operation of the facility in accordance with the proposed amendment would not:

(i) involve a significant hazards consideration,

(ii) result in a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, and

(iii) result in a significant increase in individual or cumulative occupational radiation exposure.

PEF has reviewed proposed License Amendment Request #288, Revision 0, and concludes it meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(c), no environmental impact statement or environmental assessment needs to be prepared in connection with this request.

Precedents

The following amendments were issued by the NRC to Licensees and serve as precedents for this proposed change:

1. Letter from Stephen Monarque (NRC) to David A. Christian (Virginia Electric and Power Company), North Anna Power Station, Units 1 and 2 - Issuance of Amendments Re: Quench Spray and Recirculation Spray Nozzles Surveillance Frequency (TAC Nos. MB4270 and MB4271), dated October 1, 2002, (Amendments 233 and 215).

2. Letter from Guy S. Vissing (NRC) to George Vanderheyden (Calvert Cliffs Nuclear Plant) Calvert Cliffs Nuclear Plant, Units Nos. 1 and 2 – Amendment Re: Changes to the Testing Requirements for Containment Spray Nozzles (TAC Nos. MC0030 and MC0031), (Amendments 264 and 241).

3. Letter from Douglas V. Pickett (NRC) to Mr. John Wood (Perry Nuclear Power Plant), Perry Nuclear Power Plant Unit 1 – Issuance of Amendment (TAC No. MA7136). (Amendment 113).

PROGRESS ENERGY FLORIDA, INC.

CRYSTAL RIVER UNIT 3

DOCKET NUMBER 50-302/LICENSE NUMBER DPR-72

ATTACHMENT B

LICENSE AMENDMENT REQUEST #288, REVISION 0

Proposed Revised Improved Technical Specifications and Bases Pages

Strikeout/Shadowed Format

~~**Strikeout Text**~~ **Indicates Deleted Text**
Shadowed Text Indicates Added Text

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.6.7	----------NOTE---------- Not applicable in MODE 4. ---------- Verify each required containment cooling train starts automatically on an actual or simulated actuation signal.	24 months
SR 3.6.6.8	Verify each spray nozzle is unobstructed.	~~10 years~~ Following maintenance that could result in nozzle blockage

SURVEILLANCE REQUIREMENTS

SR 3.6.6.7 (continued)

approximately in half (motor at low speed). Thus, this SR ensures that one of the running motors automatically switches to low speed upon receipt of the containment cooling engineered safeguards actuation signal and the other running motor trips. To prevent exceeding SW design temperatures, by having two RB fans in service, this SR also ensures that only one RB fan will start on an ES actuation signal. The 24 month Frequency is based on engineering judgment and has been shown to be acceptable through operating experience. See SR 3.6.6.5 and SR 3.6.6.6, above, for further discussion of the basis for the 24 month Frequency.

The SR is modified by a note indicating the SR is not applicable in the identified MODE. This is necessary in order to make the requirements for automatic system response consistent with those for the actuation instrumentation.

SR 3.6.6.8

With the containment spray header isolated and drained of any solution, low pressure air or smoke can be blown through test connections. As an alternative, a visual inspection (e.g. boroscope) of the nozzles or piping could be utilized in lieu of an air or smoke test if a visual inspection is determined to provide a more effective post-maintenance test. A visual inspection may be more effective if the potential for material intrusion is localized and the affected area is accessible. Performance of this Surveillance demonstrates that each spray nozzle is unobstructed and provides assurance that spray coverage of the containment during an accident is not degraded. Due to the passive nature of the design of the nozzles, and the corrosion resistant design of the system, a test ~~at 10 year intervals~~ performed following maintenance which could result in nozzle blockage is considered adequate to detect obstruction of the spray nozzles. Maintenance that could result in nozzle blockage would be those maintenance activities where the Foreign Material Exclusion program controls were deemed ineffective. For activities, such as a valve repair/replacement, a

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BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.6.8 (continued)

visual inspection would be the preferred post-maintenance test since small debris in a localized area is the most likely concern. A smoke or air test would be appropriate following an event where a large amount of debris entered the system or water was actually discharged through the spray nozzles. For an inadvertent actuation of the Reactor Building Spray system, an air or smoke test should be performed at the next outage of sufficient duration.

REFERENCES

1. FSAR, Section 1.4.

2. FSAR, Section 14.2.2.5.9.

3. FSAR, Section 6.3.

4. RO-2787 Requirement Outline, Reactor Building Fan Assemblies, Addendum B, February 19, 1971.

5. ASME, Boiler and Pressure Vessel Code, Section XI.

PROGRESS ENERGY FLORIDA, INC.

CRYSTAL RIVER UNIT 3

DOCKET NUMBER 50-302/LICENSE NUMBER DPR-72

ATTACHMENT C

LICENSE AMENDMENT REQUEST #288, REVISION 0

Proposed Revised Improved Technical Specifications and Bases Pages

Revision Bar Format

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.6.7	----------NOTE---------- Not applicable in MODE 4. ---------- Verify each required containment cooling train starts automatically on an actual or simulated actuation signal.	24 months
SR 3.6.6.8	Verify each spray nozzle is unobstructed.	Following maintenance that could result in nozzle blockage

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.6.7 (continued)

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SR 3.6.6.8

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(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.6.8 (continued)

amount of debris entered the system or water was actually discharged through the spray nozzles. For an inadvertent actuation of the Reactor Building Spray system, an air or smoke test should be performed at the next outage of sufficient duration.

REFERENCES

1. FSAR, Section 1.4.

2. FSAR, Section 14.2.2.5.9.

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