

March 31, 1987

DPR 616

Docket No. 50-302

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Mr. Walter S. Wilgus
Vice President, Nuclear Operations
Florida Power Corporation
ATTN: Manager, Nuclear Licensing
& Fuel Management
P. O. Box 14042; M.A.C. H-3
St. Petersburg, Florida 33733

Dear Mr. Wilgus:

The Commission has issued the enclosed Amendment No. 97 to Facility Operating License No. DPR-72 for the Crystal River Unit No. 3 Nuclear Generating Plant (CR-3). This amendment consists of changes to the operating license in response to your application dated February 17, 1986, as supplemented on November 19 and 25, 1986, and February 17, 1987.

This amendment changes the expiration date for the operating license to 40 years from the date of issuance of the original operating license, December 3, 2016, instead of the previous expiration date of September 25, 2008.

A copy of our Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's biweekly Federal Register notice.

Sincerely,

/S/

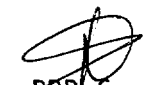
Harley Silver, Project Manager
PWR Project Directorate #6
Division of PWR Licensing-B

Enclosures:

1. Amendment No. 97 to DPR-72
2. Safety Evaluation

cc w/enclosures:
See next page


PBD-6
RIngram
3/19/86


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OGC
M. Katman
3/23/86
 (WITH CHANGE)

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March 26, 1987

DOCKET NO. 50-302

MEMORANDUM FOR: Rules and Procedures Branch
Division of Rules and Records
Office of Administration

FROM: Office of Nuclear Reactor Regulation

Division of PWR Licensing-B

SUBJECT:

CRYSTAL RIVER UNIT NO. 3, NUCLEAR GENERATING PLANT

One signed original of the *Federal Register* Notice identified below is enclosed for your transmittal to the Office of the Federal Register for publication. Additional conformed copies (5) of the Notice are enclosed for your use.

- Notice of Receipt of Application for Construction Permit(s) and Operating License(s).
- Notice of Receipt of Partial Application for Construction Permit(s) and Facility License(s): Time for Submission of Views on Antitrust Matters.
- Notice of Consideration of Issuance of Amendment to Facility Operating License.
- Notice of Receipt of Application for Facility License(s); Notice of Availability of Applicant's Environmental Report; and Notice of Consideration of Issuance of Facility License(s) and Notice of Opportunity for Hearing.
- Notice of Availability of NRC Draft/Final Environmental Statement.
- Notice of Limited Work Authorization.
- Notice of Availability of Safety Evaluation Report.
- Notice of Issuance of Construction Permit(s).
- Notice of Issuance of Facility Operating License(s) or Amendment(s).
- Order.
- Exemption.
- Notice of Granting Exemption.
- Environmental Assessment.
- Notice of Preparation of Environmental Assessment.

Other: ~~Notice of issuance of Environmental Assessment and Finding of No Significant Impact.~~ Please publish in the next Federal Register. Problems, pls call

Office of Nuclear Reactor Regulation
Division of PWR Licensing-B

Enclosure:
As stated

Contact: Ringram
Phone: 27288

OFFICE	PWR/B						
SURNAME	R. Ingram						
DATE	3/27/87						

Mr. W. S. Wilgus
Florida Power Corporation

Crystal River Unit No. 3 Nuclear
Generating Plant

cc:

Mr. R. W. Neiser
Senior Vice President
and General Counsel
Florida Power Corporation
P. O. Box 14042
St. Petersburg, Florida 33733

State Planning and Development
Clearinghouse
Office of Planning and Budget
Executive Office of the Governor
The Capitol Building
Tallahassee, Florida 32301

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Nuclear Plant Manager
Florida Power Corporation
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Board of County Commissioners
Citrus County
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State of Florida
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Tallahassee, Florida 32301

Attorney General
Department of Legal Affairs
The Capitol
Tallahassee, Florida 32304



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

FLORIDA POWER CORPORATION
CITY OF ALACHUA
CITY OF BUSHNELL
CITY OF GAINESVILLE
CITY OF KISSIMMEE
CITY OF LEESBURG
CITY OF NEW SMYRNA BEACH AND UTILITIES COMMISSION, CITY OF NEW SMYRNA BEACH
CITY OF OCALA
ORLANDO UTILITIES COMMISSION AND CITY OF ORLANDO
SERRING UTILITIES COMMISSION
SEMINOLE ELECTRIC COOPERATIVE, INC.
CITY OF TALLAHASSEE

DOCKET NO. 50-302

CRYSTAL RIVER UNIT 3 NUCLEAR GENERATING PLANT.

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 97
License No. DPR-72

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Florida Power Corporation, et al. (the licensees) dated February 17, 1986, as supplemented November 19 and 25, 1986 and February 17, 1987, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.


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2. Accordingly, paragraph 2.6 of Facility Operating License No. DPR-72 is hereby amended to read as follows:

This amended license is effective as of the date of issuance. Facility Operating License No. DPR-72, as amended, shall expire at midnight, December 3, 2016.

3. This license amendment is effective as of its date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION


Frank J. Miraglia, Director
Division of PWR Licensing-B

Date of Issuance: March 31, 1987



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 97 TO FACILITY OPERATING LICENSE NO. DPR-72

FLORIDA POWER CORPORATION, ET AL.

CRYSTAL RIVER UNIT NO. 3 NUCLEAR GENERATING PLANT

DOCKET NO. 50-302

INTRODUCTION

By application dated February 17, 1986, as supplemented by letters dated November 19 and 25, 1986, and February 17, 1987, Florida Power Corporation (FPC or the licensee) requested amendment to Facility Operating License No. DPR-72 for the Crystal River Unit No. 3 Nuclear Generating Plant (CR-3). The proposed amendment would extend the expiration date of the license from September 25, 2008, to December 3, 2016.

2.0 DISCUSSION

Section 103.c of the Atomic Energy Act of 1954 states that a license is to be issued for a specified period not to exceed 40 years. 10 CFR 50.51 specifies that each license will be issued for a fixed period of time not to exceed 40 years from the date of issuance. The currently licensed term for CR-3 is 40 years commencing with the issuance of the construction permit until September 25, 2008. Accounting for the time that was required for plant construction, this represents an effective operating license term of 32 years. Consistent with Section 103.c of the Atomic Energy Act and Section 50.51 of the Commission's regulations, the licensee, by the February 17, 1986 application, seeks extension of the operating license term for CR-3 so the fixed period of the license would be from the date of the operating license issuance or until December 3, 2016.

3.0 EVALUATION

ALARA and Dose Assessment

The following evaluation was conducted to assure that the licensee's "as low as reasonably achievable" (ALARA) measures and dose projections are applicable for the additional years of plant operation and are in accordance with 10 CFR Part 20, "Standards For Protection Against Radiation" and Regulatory Guide 8.8, "Information Relevant to Ensuring that Occupational Radiation Exposures at Nuclear Power Stations Will Be As Low As Reasonably Achievable" (Revision 3).

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The licensee stated that operating and maintenance personnel will follow specific plans and procedures to ensure that ALARA goals are achieved in the extended years of operation. FPC anticipates that ALARA techniques will continue to improve through the use of robotics, remote tooling, and improved methods of decontamination. In 1981, FPC established goals and objectives for maintaining occupational radiation exposure within ALARA guidelines. FPC added additional measures and methods to reduce radiation exposures to plant staff such as reactor head shielding, letdown line shielding, pressurizer shielding, pre-fabricated tents, reactor coolant piping valve relocation, training mockups for high exposure jobs, and free standing shielding boxes. FPC's commitment to state-of-the-art ALARA is contained in the Company Policy and Nuclear Operations Department Procedure which identifies the health physics organization. The licensee's radiation protection/ALARA program has been recognized by the NRC staff as adequate overall in the Systematic Assessment of Licensee Performance (SALP) from 1981 to 1986 (Category 2 rating). Therefore, we find that FPC has an adequate health physics organization and radiation protection program, and that personnel are adequately trained in ALARA considerations for the additional years of operation. We further conclude that the updated Final Safety Analysis Report (FSAR) for CR-3 (Radiation Protection) is in accordance with 10 CFR Part 20 and is consistent with the criteria of Regulatory Guide 8.8. Thus, we find the ALARA program and practices to be acceptable.

FPC provided tables specifying person-rem exposures at CR-3 by plant system independent of when these exposures were obtained (e.g., during normal operations, maintenance, repair, or refueling activities) and by whom (e.g., plant operations personnel, plant maintenance personnel, or contractor/vendor personnel). We audited the licensee's dose assessment for the extended years (2009-2016) against the criteria of Standard Review Plan (SRP) Section 12.3. The licensee based the estimate on nine years of operating experience, engineering judgment and on personnel exposure at CR-3 for the years 1977-1985. FPC expects the additional years of operation of CR-3 to result in an average of 224 person-rem per year. Currently, operating Pressurized Water Reactors (PWRs) average more than 569 person-rem per unit annually (1980-1985) with some plants experiencing an average lifetime annual dose as high as 1300 person-rem. These average doses are based on widely varying yearly doses at PWRs.

The licensee estimated four additional refueling outages for the years 2009-2016. Barring major plant modifications which are not now contemplated, the total dose is predicted to be 1792 person-rem. The predicted value is based on an assumed 84 person-rem for a non-outage year and 364 person-rem for a refueling outage year. Dose allowance for crud buildup will be offset by dose savings from a continually improving ALARA program. It is expected that state-of-the-art technologies will be in use including some robotics, enhanced chemistry control and modern decontamination processes.

Based on the above, we conclude that the licensee's dose assessment is acceptable, and the CR-3 radiation protection program is adequate for ensuring that occupational radiation exposures will be maintained in accordance with ALARA guidelines and in compliance with 10 CFR Part 20 requirements.

Pressure Vessel Toughness

The licensee, in response to the requirements of 10 CFR 50.61, "Fracture Toughness Requirements For Protection Against Pressurized Thermal Shock Events," previously submitted information on the projected values of the RT_{PTS} to the expiration of their current operating license and for 40 calendar years of operation (32 effective full power years (EFPYs) at an 80% load factor). RT_{PTS} is a calculated reference temperature which is used as a screening criterion. As established in 10 CFR 50.61, the pressurized thermal shock (PTS) rule, this figure must be less than 300°F for circumferential weld material, the controlling material for CR-3.

In our evaluation of the licensee's previous submittal, enclosed with our letter of September 4, 1986 to FPC, we found the estimated RT_{PTS} for 32 EFPYs (equivalent to 40 calendar years) to be 284.6°. Since this is less than 300°F, the screening criterion for the limiting material at expiration of the license, it meets the PTS rule and is acceptable.

The PTS rule requires that the projected assessment of the RT_{PTS} must be updated whenever changes in core loadings, surveillance measurements or other information (including changes in capacity factor) indicate a significant change in the projected values. This ensures that the licensees will track the fluence at the limiting beltline materials throughout the life of the plant to verify their assumptions. In this regard, we requested FPC to submit a reevaluation of the RT_{PTS} and comparison to the predicted value with future Pressure-Temperature submittals which are required by 10 CFR 50, Appendix G.

Systems and Equipment

The licensee states that:

...safety-related mechanical systems, equipment, and components considered will not be impacted by a 40 year operating lifetime. This does not imply that some mechanical system related equipment and components will not wear out or need replacement during the plant operating lifetime. However, existing surveillance and maintenance programs are sufficient to maintain or determine replacement of safety-related components. Periodic inservice inspection and testing requirements have been incorporated into procedures to provide the added assurance that any unanticipated degradation in systems or equipment will be identified and corrected in a timely manner.

Reactor vessel material and fluence analyses have shown that the expected cumulative neutron fluence on the reactor vessel will not limit the 40 year operating life. The Babcock & Wilcox Owners Group's Integrated Reactor Vessel Surveillance Program and the planned Cavity Dosimetry Program shall provide a means for continuing to monitor the cumulative effects of the neutron exposure on the materials of the reactor vessel to satisfy the requirements of 10 CFR 50, Appendices G and H. The analyses of the CR-3 plant specific surveillance capsules irradiated inside the reactor vessel of CR-3 will confirm that the predictions used in the analytical techniques for establishing operating limitations for the reactor vessels are conservative.

We conclude that safety-related structures, mechanical systems, equipment and components considered will not be impacted by a 40-year operating life-span. This conclusion is based upon continuation of the periodic inservice inspection and testing requirements which have been incorporated into Crystal River Unit 3 Technical Specifications, programs and procedures, and assumes that any unanticipated degradation in structures, systems and components will be identified and corrected in a timely manner.

With regard to electrical equipment, we have reviewed the licensee's submittal and agree with the licensee's conclusion that such equipment would not be adversely affected by a 40-year operational lifetime. Where failed or worn parts are replaced with new parts, no period after the first year or two is different from any other with respect to the expected rate of electrical component failures. The surveillance, maintenance, and replacement practices at CR-3, coupled with the equipment qualification requirements of 10 CFR 50.49, should prevent any increase in the probability of failure of two redundant safety trains in any emergency during a 40-year plant lifetime.

Aging analyses have been performed for all safety-related electrical equipment in accordance with 10 CFR 50.49, "Environmental Qualification of Electrical Equipment Important to Safety for Nuclear Power Plants," identifying qualified lifetimes for this equipment. These lifetimes will be incorporated into plant equipment maintenance and replacement practices to ensure that all safety-related electrical equipment remains qualified and available to perform its safety function regardless of the overall age of the plant.

Summary of Findings

Based upon the above, we find that extension of the operating license for CR-3 to allow a 40-year service life is consistent with the safety analyses for CR-3 and that the Commission's previous safety findings are not changed. Issues associated with plant systems and equipment, including aging and changes in fracture toughness properties of materials, have been addressed and are acceptable for 40 years of operation. The site continues to meet the guidelines of 10 CFR Part 100. Accordingly, we find the proposed change to the expiration date of the Crystal River Unit 3 Facility Operating License to be acceptable.

4.0 ENVIRONMENTAL CONSIDERATION

An Environmental Assessment was issued on March 26, 1987, and Notice of Issuance of Environmental Assessment and Finding of No Significant Impact relating to the proposed extension of the Facility Operating License termination date for Crystal River Unit 3, was published in the Federal Register on March 31, 1987 (52 FR 10274).

5.0 CONCLUSION

We have concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (2) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Dated: March 31, 1987

Principal Contributors: J. Minns, C. Morris, R. Lipinski, H. Silver