

Florida Power

CORPORATION
Crystal River Unit 3
Docket No. 50-302
Operating License No. DPR-72

October 30, 1998
3F1098-04

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

Subject: License Amendment Request #236
Revised Pressure/Temperature Limits Report (PTLR) and
Low Temperature Overpressure Protection (LTOP) Limits

Dear Sir:

Florida Power Corporation (FPC) hereby submits License Amendment Request (LAR) #236, for an amendment to the Crystal River Unit 3 (CR-3) Improved Technical Specifications (ITS) in accordance with 10 CFR 50.90. This LAR requests a revision to ITS Section 5.6.2.19, ITS Section 3.4.11, Bases 3.4.11 and Bases 3.4.3.

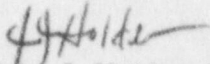
- ITS 5.6.2.19 is being revised to reflect the fluence methodology described in Topical Report BAW-2241P, "Fluence and Uncertainty Methodologies." ITS 5.6.2.19 is also being revised to reflect the use of ASME Code Case N-514, "Low Temperature Overpressure Protection," for developing Low Temperature Overpressure Protection (LTOP) limits, and to add references to Topical Report BAW-1543A, "Integrated Reactor Vessel Surveillance Program," and to ITS Sections 3.4.3 (Reactor Coolant System Pressure/Temperature (P/T) limits) and 3.4.11 (Low Temperature Overpressure Protection System).
- The Pressure/Temperature Limits Report (PTLR) is being revised to reflect the new P/T limits for heatup, cooldown limits, hydrostatic and leak test limits, and to incorporate the CR-3 LTOP curve.
- ITS 3.4.11, Bases 3.4.11, and Bases 3.4.3 have been revised to reflect the new LTOP limits based on revised fluence projections through 32 Effective Full Power Years (EFPY).

Attachment A provides the background, a summary of ITS changes, the technical justification for the request, no significant hazards consideration evaluation, and environmental impact evaluation. Attachments B and C contain the affected ITS pages. Attachment D contains the revised PTLR.

FPC is requesting NRC approval of this LAR by July 19, 1999. This will allow FPC sufficient time to implement the License Amendment during Refuel Outage 11R currently scheduled to start October 1, 1999.

If you have any questions regarding this letter, please contact Ms. Sherry Bernhoft, Manager, Nuclear Licensing at (352) 563-4566.

Sincerely,



John J. Holden, Director
Site Nuclear Operations
JJH/lvc

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

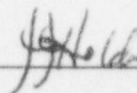
Attachments:

- A. License Amendment Request, No Significant Hazards Consideration Evaluation, and Environmental Impact Evaluation
- B. Proposed Technical Specification Change Page, Strikeout/Double Underlined
- C. Proposed Technical Specification Change Page, Revision Bars
- D. PTLR

STATE OF FLORIDA

COUNTY OF CITRUS

John J. Holden states that he is the Director, Site Nuclear Operations for Florida Power Corporation; 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.

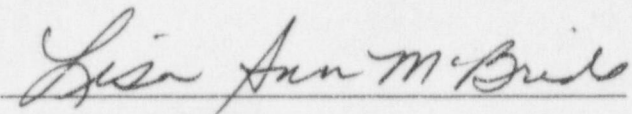


John J. Holden
Director
Site Nuclear Operations

Sworn to and subscribed before me this 30th day of October, 1998, by
John J. Holden.



LISA ANN MCBRIDE
Notary Public, State of Florida
My Comm. Exp. Oct. 25, 1999
Comm. No. CC 505458



Signature of Notary Public
State of Florida

LISA ANN MCBRIDE

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

Personally Produced
Known X -OR- Identification _____

**FLORIDA POWER CORPORATION
CRYSTAL RIVER UNIT 3
DOCKET NO. 50-302/LICENSE NO. DPR-72**

ATTACHMENT A

LICENSE AMENDMENT REQUEST #236

**License Amendment Request,
No Significant Hazards Consideration Evaluation,
and Environmental Impact Evaluation**

**FLORIDA POWER CORPORATION
CRYSTAL RIVER UNIT 3
DOCKET NO. 50-302/LICENSE NO. DPR-72
LICENSE AMENDMENT REQUEST #236
REVISED PTLR AND LTOP LIMITS**

LICENSE DOCUMENT INVOLVED: Improved Technical Specifications (ITS)

PORTIONS: ITS 5.6.2.19, Reactor Coolant System (RCS) Pressure and Temperature Limits Report (PTLR)
ITS 3.4.11 and Bases 3.4.11, Low Temperature Overpressure Protection (LTOP) System
Bases 3.4.3, RCS Pressure and Temperature (P/T) Limits

BACKGROUND:

Crystal River Unit 3 (CR-3) is currently operating in Cycle 11 and has accumulated an operating history of nearly 13 Effective Full Power Years (EFPY) through October 1998. The current pressure and temperature limitations at CR-3 are based on fluence projections for up to 15 EFPY. The Pressure/Temperature (P/T) curves were approved by the NRC in 1991 as part of Reference 1. The P/T curves were relocated from the Technical Specifications and placed in the Pressure Temperature Limits Report (PTLR) in 1993 (Reference 2). Fifteen (15) EFPY Low Temperature Overpressure Protection (LTOP) limits were incorporated into Improved Technical Specifications (ITS) 3.4.11 in 1997 and were approved in Reference 3. The LTOP controls consist primarily of deactivating high pressure injection (HPI), isolating Core Flood Tanks (CFTs), maintaining a gas volume within the reactor coolant system sufficient to allow ten minutes for operator response to an LTOP challenge, and providing pressure relief capability via the power operated relief valve (PORV). New fluence estimates have been projected and have been used to develop updated P/T limits sufficient for up to 32 EFPY of plant operation. These updated limits have been incorporated in the revised PTLR and LTOP ITS proposed by this submittal.

ITS Section 5.6.2.19 delineates the requirements for the CR-3 PTLR. Because the revised PTLR is based on a new fluence methodology that has not yet been approved for use at CR-3, the revised PTLR is also being submitted for NRC review. In addition, the PTLR has been expanded to include the LTOP Pressure/Temperature Limit Curve based on ASME Code Case N-514 which was previously approved for use at CR-3 in Reference 4. ITS 5.6.2.19 is being revised to reflect the methods for development of the limits published in the PTLR.

In March 1992, the NRC issued Generic Letter (GL) 92-01 on reactor vessel integrity (Reference 6). FPC's responses to the GL are included in B&W Owners Group (BWOG) topical reports BAW-2166, BAW-2222, BAW-2257, and BAW-2325 (References 7, 8, 9, 10 and 11).

These reports document the applicable reactor vessel material properties based on the most current regulatory guidance. The proposed revision to the CR-3 PTLR (Attachment D) for 32 EFPY is consistent with the GL 92-01 responses with the exception of the new fluence projections which are based on the latest dosimetry results and the new methodologies referenced by this submittal.

SUMMARY OF CHANGES:

The CR-3 PTLR is being revised to reflect new P/T Limits based on revised fluence projections through 32 EFPY operation. The limiting reactor vessel material has changed from WF-70 at the upper shell (US) to lower shell (LS) circumferential weld to SA-1769 at the lower nozzle belt (LNB) to US circumferential weld for the inside surface and 1/4T locations, and WF-159-1 for the 3/4T location. This change is primarily due to revised initial RTndt values for WF-70 as documented in the previously discussed BWOOG responses to GL 92-01. The PTLR has also been changed to reflect revised heatup and cooldown rates, Reactor Coolant Pump constraints, and to include the CR-3 LTOP curve.

ITS Section 5.6.2.15 is being revised to reflect the fluence methodology described in BAW-2241P (Reference 5), the use of ASME Code Case N-514 for developing LTOP limits, and to add references to Topical Report BAW-1543A, "Integrated Reactor Vessel Surveillance Program," and to ITS Sections 3.4.3 (Reactor Coolant System Pressure/Temperature (P/T) limits) and 3.4.11 (Low Temperature Overpressure Protection System).

ITS Section 3.4.11 is being revised to reflect the new LTOP limits based on revised fluence projections through 32 EFPY. The current ITS LCO values as well as the proposed values for RCS temperatures for LTOP applicability, pressurizer level, and PORV setpoint are provided in the following table. The limiting reactor coolant system temperature in REQUIRED ACTION D.1 is also provided.

LIMIT	CURRENT ITS VALUE	PROPOSED ITS VALUE
RCS Temperatures for LTOP Applicability	≤ 259°F	≤ 264°F
Pressurizer Level	≤ 135 inches	≤ 155 inches
PORV Setpoint	≤ 457 psig	≤ 454 psig
RCS Temperature to protect Core Flood Tank discharge	> 197°F	> 208°F

The Bases Section for ITS 3.4.11 has been revised to reflect the new fluence analysis and LTOP limits and to change the reference from the 15 EFPY P/T Limits Calculation to the 32 EFPY P/T Limits Calculation.

The Bases Section for ITS 3.4.3 has been revised to add references to ASME Code Case N-514 and to the LTOP curve.

REASON FOR REQUEST:

CR-3 has currently operated for approximately 13 EFPY. Based on current projections, the plant will reach 15 EFPY during operating Cycle 12. Revised operating limits based on higher fluences will be required for continued operation of CR-3. The curves proposed herein are based on 32 EFPY. The analytical methods used to determine vessel fluence have been revised and are being reviewed by the NRC as described in Topical Report BAW-2241P, "Fluence and Uncertainty Methodologies" (Reference 5). In addition, more accurate instrument uncertainty calculations have been performed for the RCS temperature and the pressure level instruments, which have been applied to the proposed ITS limits.

JUSTIFICATION FOR REQUEST:

Pressure/Temperature Limits

The revised P/T limits are based on analyses performed in accordance with methodologies which have been previously approved by the NRC for use at CR-3 as documented in ITS Section 5.6.2.19 or are currently being reviewed by the NRC staff (Reference 5). The revised fluence methodology is required to account for the use of cavity dosimetry to measure fluence and to incorporate a method for determining the fluence uncertainty. The updated fluence analysis includes an uncertainty evaluation. This evaluation shows the current analysis to be accurate within 20% as proposed in Draft Regulatory Guide-1053 on fluence, being developed by the NRC.

Material Properties

The material properties are based on analyses performed by the BWOG as part of the Integrated Reactor Surveillance Program, and have been evaluated against the most recent NRC expectations as documented in the BWOG responses to NRC GL 92-01. Based on this information, the limiting reactor vessel materials for CR-3 have changed from WF-70 to SA-1769 at the LNB to the US circumferential weld for the inside surface and 1/4T locations, and WF-169-1 for 3/4T location.

Heatup and Cooldown Rates

The revised heatup and cooldown rates were selected to provide additional operating flexibility while maintaining the P/T operating window to safely accommodate anticipated plant transients during normal operation. The revised rates allow for increased heatup above 280°F (increased from 50°F/hr to 70°F/hr) and increased cooldown below 150°F (from 10°F/hr to 25°F/hr). The revised rates were analyzed in accordance with the approved methods specified by current ITS 5.6.2.19.

LTOP Curve

The LTOP curve included in the PTLR was developed based on ASME Code Case N-514 and is referenced by the Bases for ITS 3.4.11. The 10-minute transient curve represents the P/T limits which provides at least 10 minutes for operator action to mitigate the limiting LTOP transient. This curve has been added to the PTLR since it has the potential to be more limiting than the normal heatup and cooldown limits when LTOP is enabled. The Bases for Technical Specification 3.4.3 has also been revised to reference this curve and the 32 EFPY analysis. The requirements and the methods used to develop these curves have been previously approved for use at CR-3 (Reference 4). The PTLR (Attachment D) now includes the LTOP curve.

LTOP Limits

The limiting transient for LTOP remains a failed-open makeup valve. Existing LTOP controls remain unchanged from the current ITS 3.4.11, except for the setpoints which are being updated to reflect the new 32 EFPY fluence analysis and P/T limits, current material properties, and updated instrument uncertainties performed in accordance with the guidelines of FPC's Setpoint Calculation Program. The revised PORV setpoint of 454 psig is selected to prevent the RCS from pressurizing above the limits defined by the lowest pressure on the LTOP curve. The revised LTOP enable temperature setpoint of 264°F is based on an analysis performed in accordance with ASME Code Case N-514. The maximum pressurizer level setpoint of 155 inches is based on providing sufficient RCS gas volume to allow at least 10 minutes for operator action to mitigate the limiting LTOP transient. Each of these limits includes adjustment for instrument uncertainty determined in accordance with ISA-S67.04, Part I, "Setpoints for Nuclear Safety-Related Instrumentation." The final change relates to the temperature at which an inadvertent discharge of the core flood tanks would not cause RCS pressure to exceed the LTOP P/T limits curve. This limit has changed from 197°F to 208°F and is referenced in ITS 3.4.11, REQUIRED ACTION D.1. The increase in temperature is due to the revised fluence and P/T analyses, and reflects the LTOP temperature limit at the maximum expected pressure. The level of protection provided by this setpoint has not changed.

REFERENCES:

1. NRC to FPC letter, 3N0291-02, dated February 7, 1991, "Crystal River Unit 3 - Issuance of Amendment RE: Pressure/Temperature Curves (TAC NOS. 75304 and 71483)"
2. NRC to FPC letter, 3N1293-30, dated December 20, 1993, "Crystal River Unit 3 - Issuance of Amendment RE: Improved Technical Specifications (TAC NO. M74563)"
3. NRC to FPC letter, 3N1297-16, dated December 22, 1997, "Crystal River Unit 3 - Staff Evaluation and Issuance of Amendment RE: Low-Temperature Overpressure Protection (TAC NO. M99277)"

4. NRC to FPC letter, 3N0797-05, dated July 3, 1997, "Crystal River 3 - Exemption from requirements of 10 CFR 50.60, Acceptance Criteria for Fracture Prevention for Lightwater Nuclear Power Reactors for Normal Operation (TAC NO. M98380)"
5. B&W Owners Group to NRC letter, dated May 14, 1997, BAW-2241P, "Fluence and Uncertainty Methodologies"
6. NRC to FPC letter, 3N0392-11, dated March 6, 1992, "Reactor Vessel Structural Integrity, 10 CFR 50.54(f) (Generic Letter 92-01, Revision 1)"
7. FPC to NRC letter, 3F0692-21, dated June 25, 1992, "BAW-2166, dated June 17, 1992. (OG-1036)"
8. FPC to NRC letter, 3F0694-08, dated June 9, 1994, "Reactor Vessel Materials Information Request," (BAW-2222)
9. FPC to NRC letter, 3F0895-19, dated August 16, 1995, "Generic letter 92-01, Revision 1, Supplement 1 Response," (BAW-2257)
10. FPC to NRC letter, 3F1195-01, dated November 15, 1995, "Generic letter 92-01, Revision 1, Supplement 1: Reactor Vessel Integrity," (BAW -2257, Revision 1)
11. FPC to NRC letter, 3F0698-32, dated June 30, 1998, Topical Report BAW-2325, "Response to Request for Additional Information Regarding Reactor Pressure Vessel Integrity at Crystal River Unit 3 (TAC NO. MA0538)"

NO SIGNIFICANT HAZARDS CONSIDERATION EVALUATION

An evaluation of this proposed LAR has been performed in accordance with 10 CFR 50.91(a)(1) regarding significant hazard considerations, using the standards in 10 CFR 50.92(c). A discussion of these standards as they relate to this LAR follows:

- (1) *Involve a significant increase in the probability or consequences of an accident previously evaluated.*

LAR #236 proposes several changes to the ITS operational limits. These changes are being proposed to maintain the necessary margins of safety through 32 EFPY using analyses based on methodologies that have been previously approved for use at CR-3, ASME Code Case N-514 and LTOP SER, and are currently being reviewed by the NRC staff:

- NRC to FPC letter, 3N1293-30, dated December 20, 1993, "Crystal River Unit 3 - Issuance of Amendment RE: Improved Technical Specifications (TAC No. M74563)"

- NRC to FPC letter, 3N1297-16, dated December 22, 1997, "Crystal River Unit 3 – Staff Evaluation and Issuance of Amendment RE: Low-Temperature Overpressure Protection (TAC No. M99277)"
- NRC to FPC letter, 3N079705, dated July 3, 1997, "Crystal River 3 – Exemption from Requirements of 10 CFR 50.60, Acceptance Criteria for Fracture Prevention for Lightwater Nuclear Power Reactors for Normal Operation (TAC No. M98380)"
- BAW-2241P, "Fluence and Uncertainty Methodologies"

The limiting transient for LTOP remains a failed-open makeup valve. Existing LTOP controls (maximum of one makeup pump capable of injecting into the RCS, high pressure injection (HPI) deactivated, the CFTs isolated, pressure relief capability and maintaining a gas volume in the RCS) remain unchanged from the current JTS 3.4.11 as approved by Reference 3, except the setpoints proposed herein. The setpoints are being updated to reflect the new 32 EFPY fluence analysis and P/T limits. Therefore, this change does not involve a significant increase in the probability or consequences of any accident previously evaluated.

- (2) *Create the possibility of a new or different kind of accident from any accident previously evaluated.*

The proposed changes will not create the possibility of a new or different kind of accident from any previously evaluated since they do not introduce new systems, failure modes or plant perturbations. Therefore, this change does not create the possibility of a new or different kind of accident from any previously evaluated.

- (3) *Involve a significant reduction in a margin of safety.*

The proposed changes will not involve a significant reduction in the margin of safety since the proposed P/T limitations have been developed consistent with the requirements of 10 CFR 50.60. The operational limits have been developed to maintain the necessary margins of safety as defined by ASME through 32 EFPY using methodologies previously reviewed and approved by the NRC. The objective of these limits is to prevent non-ductile failure during any normal operating condition, including anticipated operational occurrences and system hydrostatic tests.

The LTOP safety factors are based on reanalyzed conditions for 32 EFPY of operation utilizing methodology contained in ASME Code Case N-514 which has been approved for use at CR-3. The Code Case provides an acceptable margin of safety against flaw initiation and reactor vessel failure. The application of Code Case N-514 for CR-3 ensures an acceptable level of safety. Therefore, this change does not involve a significant reduction in the margin of safety.

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.

FPC has reviewed this proposed LAR 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.