

September 2, 1994

LICENSEE: Florida Power Corporation  
FACILITY: Crystal River Unit 3 (CR-3)  
SUBJECT: SUMMARY OF MEETING ON AUGUST 31, 1994, REGARDING FORTHCOMING SUBMITTAL FOR POWER UPGRADE

Licensee representatives met with members of the staff on August 31, 1994 in Rockville, Maryland, to discuss their proposed plan for submitting a technical specification change request to increase the plant power level from 2544 Mwt to 2568 Mwt.

Enclosure 1 is a list of attendees. Enclosure 2 consists of the licensee's handouts distributed at the meeting.

The proposed submittal would not involve any hardware changes and would only involve change to license condition 2.c.(1) to reflect the authorized power level. The meeting was informational in nature and did not result in specific action items.



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Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Docket No. 50-302  
Enclosures: As stated  
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**MEETING WITH FLORIDA POWER CORPORATION**

**CRYSTAL RIVER UNIT 3**

**PROPOSAL FOR POWER UPGRADE**

**AUGUST 31, 1994**

<u>Name</u>	<u>Organization</u>
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M. Pratt	NRR/DE
B. Gutherman	FPC
K. Wilson	FPC
P. Robinson	Winston/Strawn
J.W. Tunstill	FPC
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H.C. Garg	NRC
K.R. Campbell	FPC
R. Widell	FPC
J. Minns	NRR
H. Barbeito	Bechtel
D. Shum	NRR
M. Caruso	NRR
R. Schomaker	BWNT

**AGENDA**

**AUGUST 31, 1994**

**LICENSED POWER LEVEL INCREASE**

**FOR CRYSTAL RIVER UNIT 3**

- |                                      |                                |
|--------------------------------------|--------------------------------|
| <b>I. INTRODUCTION</b>               | <b>Rolf Widell</b>             |
| <b>II. FPC TECHNICAL EVALUATIONS</b> | <b>Paul Tanguay, et al</b>     |
| <b>III. DISCUSSIONS</b>              | <b>All</b>                     |
| <b>IV. CLOSURE</b>                   | <b>L. Raghaven/Rolf Widell</b> |

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PROJECT MANAGER

## POWER LEVEL HISTORY

OPERATING LICENSE ISSUED 12/3/76

2452 MWt

TECH SPEC AMENDMENT 41 ISSUED 7/21/81

2544 MWt

## Part 51 Environmental Protection Regulations

10 CFR 51 requires an environmental assessment (EA) or environmental impact statement (EIS) for all "major Federal action significantly affecting the quality of the human environment" and grants the NRC discretion to conduct EISs on other matters as it sees fit.

Such EAs or EISs are not required for any action included in the list of "categorical exclusions" set forth in 10 CFR 51.22(c). Relevant to our discussion today is 10 CFR 51.22(c)(9), which provides that an EA is not required for the:

Issuance of an amendment to a permit or license for a reactor pursuant to Part 50 which changes a requirement with respect to installation or use of a facility component located within the restricted area, as defined in Part 20, or which changes an inspection or a surveillance requirement, provided that (i) the amendment involves no significant hazards consideration, (ii) there is no significant change in the types or significant increase in the amounts of any effluents that may be released offsite, and (iii) there is no significant increase in individual or cumulative occupational radiation exposure.

FPC believes the NRC will be able to determine that the CR-3 power upgrade amendment is eligible for the categorical exclusion. FPC's engineering evaluations for the impact of the power change on normal and post-accident effluents and the National Pollutant Discharge Elimination System (NPDES) limits are certainly relevant to satisfying Criterion 2.

We have the data available to assist the NRC in determining that the small power increase involves no significant hazards nor a significant increase in radiation exposure.

## Non-radiological Environmental Effects

Non-radiological environmental concerns for the Crystal River Energy Complex that impact CR-3 are discharge canal water temperature and flow.

FPC's National Pollutant Discharge Elimination System (NPDES) limits on the discharge canal are specified in Permit No. FL0000159 which states:

- (1) the combined condenser flow from Crystal River Units 1, 2, and 3 shall not exceed 1897.9 MGD during the period May 1st through October 31st of each year, nor 1613.2 MGD during the remainder of the year; and
- (2) the discharge temperature at the site point of discharge shall not exceed 96.5°F for a period of more than three consecutive hours, or a daily maximum value of 97.0°F.

FPC's NPDES permit is issued by the EPA to assure that the environmental consequences of Units 1, 2, and 3 remain within acceptable limits.

Operation of CR-3 in accordance with the NPDES limits assures that the provisions of the Non-Radiological Technical Specifications contained in Appendix B-Part II of the CR-3 Operating License are met.

Therefore, no changes are required in the Environmental Protection Plan because of the power level increase to 2568 MWt.

**ENGINEERING REVIEW OF**  
**THE 24 MWt POWER LEVEL UPGRADE at CR3**

1. TECHNICAL JUSTIFICATION
  - a. CR3 Power Level Upgrade: CR3 Safety Systems and the Effect on the Plant Licensing Basis
  - b. CR3 Power Level Upgrade: Effect on Balance of Plant Systems.
  - c. Turbine-Generator Design, Evaluation Study Report for Florida Power Corporation, CR3.
  - d. Cycle 10 Reload Report
2. SIGNIFICANT RCS AND SECONDARY PLANT OPERATING CONDITIONS
3. DESIGN BASIS ACCIDENT REVIEW - The following accidents were reperformed at 102% 2568 MWt
  - a. Moderator Dilution Event
  - b. HPI Pinch-break
  - c. Letdown Line Failure
  - d. Loss-of-Feedwater Event
4. SUMMARY OF EVALUATIONS
5. SUMMARY

### RCS AND SECONDARY CONDITIONS FOR CR3

Parameter	Current Value	Predicted Value	Change at 2568 MWt	Percent Change (%)
Core Power	2544 MWt	2568 MWt	+24 MWt	0.934%
T <sub>HOT</sub>	601.2°F	601.4°F	+ 0.2°F	0.03%
T <sub>COLD</sub>	558.0°F	557.8°F	- 0.2°F	0.04%
m <sub>RCS</sub>	149 x 10 <sup>6</sup> lbm/hr	149 x 10 <sup>6</sup> lbm/hr	None	0.0%
T <sub>STEAM</sub>	594.7°F	594.5°F	- 0.2°F	0.03%
T <sub>FW</sub>	456.1°F	457.0°F	+ 0.9°F	0.2%
m <sub>FW</sub>	10,711,100 lbm/hr	10,839,325 lbm/hr	+128,225 lbm/hr	1.2%
Level <sub>SGA</sub>	82.7%	83.6%	+0.9%	1.1%
Level <sub>SGB</sub>	78.9%	79.9%	+1.0%	1.3%

**POWER LEVEL UPGRADE  
EFFECT ON SIGNIFICANT DBA PARAMETERS**

<u>Event</u>	<u>Parameter</u>	<u>2544 MWt</u>	<u>2568 MWt</u>	<u>Acceptance Criteria</u>
Moderator Dilution Event	Peak Pressure	2463 psig	2610.6 psig	110% of RCS Design Pressure (2750 psig)
HPI Pinch Break	Peak Clad Temperature	*	*	Shall not exceed 2200°F

\* Peak Clad Temperature requirements are not exceeded due to core coverage.

**POWER LEVEL UPGRADE  
EFFECT ON SIGNIFICANT DBA PARAMETERS**

<u>Event</u>	<u>Parameter</u>	<u>2544 MWt</u>	<u>2568 MWt</u>	<u>Acceptance Criteria</u>
<b>LETDOWN LINE FAILURE</b>				
	Mass Release	45,760 lbm	52,347 lbm	N/A
	Offsite Dose	EAB-1.15 Rem T 0.067 Rem WB LPZ-0.101 Rem T 0.0059 Rem WB	EAB-1.33 Rem T 0.077 Rem WB LPZ-0.117 Rem T 0.0068 Rem WB	300 Rem Thyroid  25 Rem Whole Body
<b>LOSS OF FEEDWATER EVENT</b>				
	EFW Flow Rate	550 gpm	550 gpm	N/A
	Peak Pressure	2560 psig	2560 psig	2750 psig
	Pressurizer Level	38.1 ft.	38.69 ft.	Pressurizer not solid (41.9 ft.)

## CR3 POWER LEVEL UPGRADE SAFETY SYSTEMS AND EFFECT ON PLANT LICENSING BASIS

The following systems and items important to safety were evaluated:

1. NSSS
  - Reactor Coolant System (RCS)
  - Decay Heat Removal (DH)
  - Makeup and Purification (MUP)
  
2. PRINCIPAL SAFETY SYSTEMS
  - High Pressure Injection (HPI)
  - Low Pressure Injection (LPI)
  - Core Flood (CF)
  - Emergency Feedwater (EF) and Dedicated Condensate Inventory
  - Reactor Building Spray (BS)
  - Reactor Building Cooling (AH-XB)
  
3. OTHER ITEMS IMPORTANT TO SAFETY
  - Containment Integrity
  - Equipment Qualification
  - High Energy Line Break (HELB)
  - Control Room Habitability
  - Internal Plant Flooding
  - Radioactive Effluents
  - Water Chemistry

**CR3 POWER LEVEL UPGRADE SAFETY SYSTEMS**  
**AND EFFECT ON PLANT LICENSING BASIS**

4. OTHER SYSTEMS IMPORTANT TO SAFETY
  - Nuclear Services Closed Cycle Cooling System (SW)
  - Decay Heat Closed Cycle Cooling System (DC)
  - Nuclear Services and Decay Heat Sea Water System (RW)
  - Spent Fuel Cooling System (SF)
  
5. ELECTRICAL SYSTEMS
  - Diesel Generators (EG)
  - DC Power System (Station Batteries) (DP)
  
6. I&C SYSTEM REVIEW
  - Emergency Feedwater Initiation and Control System (EFIC)
  - Engineered Safeguards Actuation System (ES)
  - Nuclear Instrumentation (NI)
  - Reactor Protection System (RPS)
  
7. OPERATING LIMITS

**CR3 POWER LEVEL UPGRADE:**  
**EFFECT ON BALANCE OF PLANT SYSTEMS**

The following BOP Systems were evaluated:

1. MECHANICAL SYSTEMS
  - Main Steam
  - Condensate
  - Feedwater
  - Extraction Steam
  - Circulating Water
  - MSR's
  - Generator
  - Heater Drains
  
2. I/C SYSTEMS
  - ICS
  - NNI
  - AMSAC/DSS
  
3. ELECTRICAL SYSTEMS
  - Generator
  - Step-up and Auxiliary Transformers
  - 500kV switchyard
  - Isolated Phase Bus Duct

Safety functions of NSR Systems were evaluated in detail.

**CRYSTAL RIVER UNIT #3**  
**POWER LEVEL UPGRADE**

- **CORE THERMAL POWER INCREASE OF 24 MWt**
  - \* 2544 TO 2568
  
- **SIGNIFICANT ECONOMIC BENEFIT**
  - \* SAVE ~\$1.5M PER YEAR IN FUEL COST
  - \* ~.25 MILS/KW REDUCTION IN GENERATION COST
  
- **HISTORY OF CORE THERMAL POWER**
  - \* 1974 - SER FOR 2452 MWt ISSUED
  - \* 1981 - (TSA #41) INCREASED TO 2544 MWt
  - \* 1994 - REQUEST TO INCREASE TO 2568 MWt
  - \* HIGHER POWER LEVEL WOULD REQUIRE SIGNIFICANT EFFORT

**CRYSTAL RIVER UNIT #3**  
**POWER LEVEL UPGRADE**

- **ORIGINAL LICENSING BASIS**
  - \* **MOST SAFETY ANALYSES WERE PERFORMED AT EITHER 2568 OR 2772 MWt**
  - \* **2568 MWt IS BOUNDED BY MOST OF THE ORIGINAL SAFETY ANALYSES**
  
- **TMI AND ANO-1 ARE LICENSED TO 2568 MWt**