Florida Power
CORPORATION

June 29, 1979

File: 3-0-3-a-3

Director of Nuclear Reactor Regulations
Operating Reactors Branch #4
Division of Operating Reactors
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Attention: Robert W. Reid,Chief

Subject: Crystal River Unit 3
Docket No. 50-302
Operating License No. DPR-72
NRC Order for CR#3 dated May 17, 1979

Dear Mr. Reid:

This letter is to summarize Florida Power Corporation's response to the Nuclear Regulatory Commission Order for Crystal River Unit 3 dated May 17, 1979. We have provided several submittals dated May 16, 1979, June 15, 1979, and June 22, 1979 in response to the NRC Order as well as in response to additional items requested by the NRC Review Team during our meetings on May 20, 1979 and June 11, 1979. In addition, members of the NRC Review Team visited the Crystal River Unit 3 site on June 21, 1979, to evaluate the implementation of our commitments and operator training program as described in this letter.

In the attachment to this letter, the action taken at Crystal River Unit 3 in response to the items in Section IV (1) of the Order are referenced or summarized.

As of this date, Florida Power Corporation has completed all of its short term design, procedural, and training commitments as required by the NRC Order dated May 17, 1979 and hereby requests that Crystal River Unit 3 be allowed to resume operation. We believe that the action taken by Florida

283 110

7907030454

Power Corporation supports operation of CR#3 in a manner that will not pose undue risks to the health and safety of the public.

Very truly yours,

FLORIDA POWER CORPORATION

G. C. Moore
Assistant Vice President
Power Production

ECSekcR03
D6

STATE OF FLORIDA

COUNTY OF PINELLAS

G. C. Moore states that he is the Assistant Vice President, Power Production, of 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.

G. C. Moore

Subscribed and sworn to before me, a Notary Public in and for the State and County above named, this 29th day of June, 1979.

Notary Public

Notary Public, State of Florida at Large,
My Commission Expires: July 25, 1980

283 112

RESPONSE TO NRC ORDER DATED MAY 17, 1979

Item IV (1)(a): Upgrade the timeliness and reliability of delivery from the Emergency Feedwater System by carrying out actions as identified in Enclosure 1 of the licensee's letter of May 1, 1979.

RESPONSE:

The following summarizes how each of the nine (9) items of Enclosure (1) have been implemented at CR #3:

1. Emergency Procedure EP-101, Unit Blackout, has been revised to provide the operator with the proper steps and conditions necessary to ensure the timely starting of the motor-driven emergency feedwater pump from engineered safeguards bus A upon loss of offsite power and the failure of the turbine-driven emergency feedwater pump. This procedure has been reviewed and found acceptable by members of the NRC Review Team during their site visit on June 21, 1979. This revised procedure was included in the training program that was completed at CR #3 on June 27, 1979. Those operators who did not receive a score of 90% or greater are continuing training with a completion date of July 3, 1979; however, sufficient operators had completed the training necessary for plant startup on June 27, 1979.

2. Procedures have been revised and implemented and training completed to provide an operator at the necessary valves of the EFW system in communication with the control room during the surveillance mode on this system to carry out the valve alignment changes upon EFW demand events. In addition, SP-300, Operating Daily Surveillance Log, has been revised to require a double verification by two different operators following maintenance, modification or surveillance of the EFW system. The performance of SP-349, EFW System Operability Demonstration, on a monthly basis also insures the operability and proper alignment of the EFW system.

3. The emergency bypass valves (FWV-161 and FWV-162) will be placed in a throttled position to insure the availability of EFW during events when it is required. Procedure EP-108, Loss of Steam Generator Feed and AP-110, Reactor Trip, have been revised to include operator control of the EFW system independent of the ICS system. Procedures SP-300, Operating Daily Surveillance Log and OP-202, Plant Heatup, have been revised to include verification on a daily basis that those valves of EFW system not locked in position are in the proper position. The procedures have been reviewed by the NRC Review Team and were found acceptable. These procedures were included in the operator training program.

4. The EFW pumps will be verified operable in accordance with the CR #3 Technical Specifications and Surveillance Procedures prior to startup by performing SP-349, Emergency Feedwater System Operability Demonstration. This surveillance procedure is performed on a monthly basis. In addition to the performance of SP-349, a 36-hour EFW pump endurance test is being conducted at CR #3 on the motor-driven pump. The turbine-driven emergency FW pump has been verified previously to have operated for greater than 36 hours without failure. A flow verification test and a manual OTSG level control independent of ICS test of the EFW system at operating temperatures and pressures, as described in PT-123, will be performed as part of the startup sequence of CR #3. These surveillance and test procedures have been reviewed by the NRC Review Team.

5. Emergency Procedure, EP-108, Loss of Steam Generator Feed, instructs the operator to switch the emergency FW pump suction from the condensate storage tank to the condenser hotwell (200,000 gallon capacity) when the condensate storage tank reachs a low level (alarms at 15 feet). It further instructs the operator to open CDV-112 (demineralized water supply) and refill the condensate storage tank. This procedure was included in the Operator Training Program at CR #3 that was completed on June 27, 1979. EP-108 was reviewed and found acceptable by the NRC Review Team during the June 21, 1979 site visit.

6. The design change, described in our submittal of May 16, 1979, has been completed removing the interlock which prevents the turbine-driven emergency FW pump from operating when the motor-driven emergency feedwater pump is running. This design change was reviewed and determined to be acceptable by the NRC Review Team at our meeting on May 20, 1979.

7. In the event emergency FW is necessary and offsite power is available, an auto start signal has been installed at CR #3 for the motor-driven and turbine-driven emergency FW pumps. (The turbine-driven emergency FW pumps are not dependent on offsite power availability.) The start signal will be applied upon the coincident loss of both main feedwater pumps or coincident low-low level in both steam generators. The details of this design modification are contained within our submittal dated June 22, 1979.

8. Design changes have been installed at CR #3 to provide control room annunciation for auto start conditions of the EFW system. Details of this modification are contained within our submittal of June 22, 1979.

ECSekcR03
D6

9. Performance Testing Procedure, PT-107, has been performed to verify that a) the startup feedwater valves (FWV-39 and 40) fail to the 50% open position upon loss of electrical power, and b) the startup valves (FWV-39 and 40) fail in the "as is" position upon loss of instrument air. Test Procedure PT-107 was reviewed and found acceptable by the NRC Review Team prior to performance of the test. The test results have been reviewed on site by NRC I&E personnel and found to be acceptable and have been telecopied to C. Liang.

Item IV (1)(b): Develop and implement operating procedures for initiating and controlling emergency feedwater independent of Integrated Control System (ICS) control.

RESPONSE:

Procedures EP-108, Loss of Steam Generator Level and AP-110, Reactor Trip have been revised to provide instructions for the operator for initiating and controlling emergency feedwater independent of the Integrated Control System. These procedures were included in the Operator Training Program and were reviewed by the NRC Review Team. In addition, Performance Testing Procedure, PT-122 and PT-123, will be performed prior to startup to verify manual OTSG level control independent of ICS can be accomplished.

Item IV (1)(c): Implement a hard-wired control-grade reactor trip that would be actuated on loss of main feedwater and/or turbine trip.

RESPONSE:

A hard-wired control-grade reactor trip has been designed and installed at CR #3. This reactor trip would be actuated by a turbine trip above 20% power, by the coincident loss of both main feedwater pumps above 10% power, and/or a coincident low-low steam generator level signal at any time. The details of this design have been reviewed by the NRC Review Team and are described in our submittal dated June 22, 1979.

Item IV (1)(d): Complete analyses for potential small breaks and develop and implement operating instructions to define operator action.

RESPONSE:

Analyses for potential small breaks have been provided generically by B&W in their May 5, 1979 submittal to Dr. Mattson transmitting their report entitled "Operating Procedure Guidelines for Small Breaks." Part I of this report contains background information for the development of operating procedures for a spectrum of loss of coolant accidents. Part II of the report is a guideline for preparation of operating procedures for dealing with small breaks.

ECSekcR03(D6)

These guidelines were incorporated into the CR #3 procedures, copies of which have been reviewed by the NRC Review Team and found to be acceptable. These guidelines and analyses for potential small breaks were covered in the Operator Training Program at CR #3.

Item IV (1)(e): All Licensed Reactor Operators and Senior Reactor Operators will have completed the TMI-2 simulator training at B&W.

RESPONSE:

All Operators that will be on an operating shift at CR #3 have completed TMI-2 simulator training at B&W. In addition, Florida Power conducted extensive post-TMI-2 operator training as described in the attached training outline. This training program covered plant modifications, procedure changes, B&W small break analyses, and the TMI-2 sequence of events. A passing grade of 90% or better was required on the written exam at the completion of the training program. This training was reviewed by the NRC Review Team and the Office of Inspection & Enforcement and found acceptable. The program as identified in the attached training outline will be completed on June 30, 1979. The Office of Inspection & Enforcement will perform a records audit the week of July 2, 1979, which will complete the requirements of training addressed in the Order.

CR-3 SMALL BREAK TRAINING PROGRAM

Goals

The goal of this training program is to provide operator awareness not only of the small break accident and its consequences but of other expected transients such as the loss of feed to the OTSG's and others that have similar symptoms.

The training program shall increase operator awareness in areas such as small break, transients due to feedwater upsets, plant modifications, procedure changes, B&W small break analysis, symptoms of accidents similar to small breaks, and use of instrumentation in diagnosing these symptoms. The ultimate goal is to educate the operators so that they can operate the plant in a safe manner with knowledge learned from the TMI event and subsequent analysis.

Objectives

1. Simulator Training

   The objective of the simulator training is to provide operators with hands-on experience of handling small breaks or other transients that could lead to loss of heat removal and therefore, core voiding.

2. TMI Sequence of Events, 4/3/79-4/5/79

   The objective of this training was to make the operators aware of the TMI accident and the consequences of the accident, and to have them think through the same type of accident on CR-3. Additionally, to make them aware of changes in operational philosophy as far as we understood the impact of TMI. Such things as standing orders concerning RB sump pump operation, isolation of HPI and emerg. FW operation.

3. Procedure change training to make the operators aware of the changes to CR-3 procedures as affected by B&W operating procedures guidelines. They shall understand what, how, and why.

4. Plant modifications training to make the operators aware of the plant mods in effect and those proposed for long term as a result of the TMI accident. Knowledge shall include why changes are made, actual hardware changes, effects on operation and how they are to be implemented into systems.

5. Review of B&W small break analysis in to make operators aware of the spectrum of small breaks, the symptoms of small breaks and how to mitigate the consequences of small breaks. This shall include effects of HPI on small breaks.

6. Transients training shall include expected feedwater transients and others of similar symptoms so that the operator knows how to diagnose [illegible] of similar symptoms, which instruments to check as backups for indications he might see. It shall also provide him with instructions on operations of emergency systems to mitigate the consequences of those transients.

7. TMI review as a part of training for small break analysis is included to update the operators' knowledge of the sequence of events at TMI and to include lessons learned from that accident.

8. Items 3 through 7 shall be tested with a written examination administered by the CR-3 staff. It shall be passed with a grade of 90% or better.

9. The program 3 through 7 shall be audited by an outside agency (NUS) for program content, documentation and operator knowledge level.

A copy of the training program for items 3 through 7 is attached.

SMALL BREAK TRAINING PROGRAM

I. Introduction to Program

a) Explain program and its impact on CR-3 operation
b) Explain goals and objectives of program
c) Explain tests and audits that will be performed on the program as they impact operators.

II. TMI Accident Review

a) Introduction to TMI accident
b) Objectives of review
c) Review of sequence of events and curves
d) During c) explain where our plant is different and the effects of similar operations on CR-3
e) Long term cooldown of TMI-2 until cold shutdown and problems faced
f) Summary of lessons learned.

III. Small Break Analysis

a) Introduction
b) Objectives
c) Review of HT and FF as far as it impacts expected transients and small breaks
d) Safety evaluations and conclusions
e) Loss of feedwater
f) Small break description
g) Natural circulation
h) OTSG tube thermal stress
i) Restart of RCP's in a system with 50% voids
j) Operating guides for assesment of accidents and operation
k) Summary.

IV. Plant Modifications

a) Introduction
b) Objectives
c) Reactor trip mods
d) Emergency feedwater pump mods
e) Feed and emergency feed system flow and alarms
f) Rupture matrix system mods
g) Instrument air mods
h) Power operated relief valve setpoint change
i) HPI RB isolation MAR
j) Summary.

V. Procedure Review

a) Introduction
b) Objectives
c) Starting EFWP (motor driven) from ES Bus A with loss of off-site power
d) Auto start of motor driven EFW pump on loss of main feedwater
e) Failure of ICS OTSG low level limit control (control of EFW bypass valves by operations)
f) Loss of air to "startup" FW valves
g) Operator responsibility at EFW valve during surveillance testing of EFW
h) Procedures covering alternate sources of water to EFW pumps
i) Procedures to be reviewed are:

OP-103	EP-103	EP-105	AP-122
EP-103	OP-606	EP-104	EM-100
OP-302	EP-112	OP-210	EM-203
OP-204	EP-106	OP-203	EM-207
AP-113	AP-106	EP-101	

j) Summary.

VI. Exams

a) Written exams to be administered by training staff.

Session 1 0700 - 0855	Introduction to Program - 1 hour TMI Review	Small Break Analysis TMI-2 Loss of FW Analysis	Small Break Analysis Natural Circulation	Procedure Review
Session 2 0905 - 1055	TMI Review	Small Break Analysis Loss of FW Capacity Evaluation	Small Break Analysis S/G Tube Rupture - Removal of PCP in 50% voiding system	Procedure Review
Session 3 1105 - 1325 Lunchbreak 1200 - 1230	Small Break Analysis Introduction and Heat Transfer	Small Break Analysis The Small Break Phenomena	Small Break Analysis Operating Guidelines for Small Breaks	Procedure Review
Session 4 1335 - 1525	MAR's	Small Break Analysis Analyzing the Small Break	Small Break Analysis Summary Accident Recognition	Review
Session 5 1535 - 1730	Procedures Review	Procedures Review	Procedures Review	Test

PHASE 2 TRAINING

A 16-hour Phase 2 small break was included in the training program per agreement with NRC Inspectors, Mr. D. Quick and Mr. J. Buzy, based on their Audit findings. The program was discussed in the meeting 6/21 with S. Isreal and others and included the following:

Day I

4 hours Class Procedure Review
4 hours walk through of procedures

Day II

Thermodynamics - 3 hours, presented by General Physics Corp.
TMI-2 Incident Review - First 15 minutes
Small Breaks that Repressurize - 1.5 hours
Modifications - 1.5 hours
Review - 1 hour
Quiz - 1 hour

PYBhlcF03
D5