

**Florida
Power**

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

August 31, 2000
3F0800-13

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

Subject: License Amendment Request #261, Revision 0
Remote Shutdown System Instrumentation

Dear Sir:

Florida Power Corporation (FPC) hereby submits License Amendment Request (LAR) #261, Revision 0, requesting changes to the Crystal River Unit 3 (CR-3) Facility Operating License No. DPR-72 in accordance with 10 CFR 50.90. LAR #261 revises Improved Technical Specifications (ITS) Table 3.3.18-1, Remote Shutdown System Instrumentation, to update the list of instruments that would be used by the operators to place the plant in a safe shutdown condition from outside the control room. The changes to the table are the result of recent plant modifications and changes to the Appendix R safe shutdown strategy for CR-3.

FPC is requesting NRC approval of LAR #261 by September 2001 and implementation prior to restart from the CR-3 refueling outage scheduled to begin in October 2001. The requested approval date and implementation period will allow sufficient time to perform required surveillance testing for the instrumentation being added to Table 3.3.18-1 prior to ascension to Mode 3 at the completion of the outage.

This letter establishes no new regulatory commitments.

If you have any questions regarding this submittal, please contact Mr. Sid Powell, Manager, Nuclear Licensing at (352) 563-4883.

Sincerely,

John J. Holden
Vice President and Site Director

JJH/jal

xc: Regional Administrator, Region II
Senior Resident Inspector
NRR Project Manager
State of Florida, Department of Health and Rehabilitative Services

Attachments:

- A. Description of Proposed Changes, Background, Reason for Request, and Evaluation of Request
- B. No Significant Hazards Consideration Determination
- C. Environmental Impact Evaluation
- D. Proposed Revised Improved Technical Specifications and Bases Change Pages - Strikeout/Shadowed Format
- E. Proposed Revised Improved Technical Specifications and Bases Change Pages - Revision Bar Format

AC001

STATE OF FLORIDA

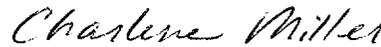
COUNTY OF CITRUS

John J. Holden states that he is the Vice President and Site Director 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.

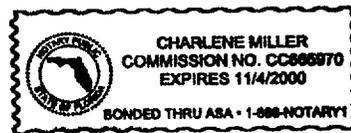


John J. Holden
Vice President and Site Director

Sworn to and subscribed before me this 31st day of August, 2000, by
John J. Holden.



Signature of Notary Public
State of Florida



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

Personally Known ✓ Produced Identification _____
-OR-

FLORIDA POWER CORPORATION

CRYSTAL RIVER UNIT 3

DOCKET NUMBER 50 - 302 / LICENSE NUMBER DPR - 72

ATTACHMENT A

**LICENSE AMENDMENT REQUEST #261, REVISION 0
Remote Shutdown System Instrumentation**

**Description of Proposed Changes, Background,
Reason for Request, and Evaluation of Request**

**LICENSE AMENDMENT REQUEST NO. 261, REVISION 0
REMOTE SHUTDOWN SYSTEM INSTRUMENTATION**

Description of Proposed Changes

Crystal River Unit 3 (CR-3) proposes to revise Improved Technical Specifications (ITS) Table 3.3.18-1, Remote Shutdown System Instrumentation, as follows:

1. A new Function 1.b, "Source Range Neutron Flux," with an associated minimum channel requirement of "1" will be added.
2. Function 3 will be changed from "Decay Heat Removal via Steam Generators (OTSGs)" to "RCS Temperature Control via Steam Generators (OTSGs)."
3. Current Function 3.b, "Decay Heat Removal Temperature," will be deleted and replaced by "Reactor Coolant Cold Leg Temperature" with an associated minimum channel requirement of "1 per loop."
4. The required number of channels for current Function 3.d, "OTSG Level," will be changed from "1 per OTSG" to "1 Low Range and 1 High Range per OTSG."
5. Current Function 3.e, "Motor-driven EFW Pump Discharge Pressure," will be deleted.
6. A new Function 3.e "Emergency Feedwater Flow," with an associated minimum channel requirement of "1 per OTSG" will be added.
7. A new Function 3.f, "Emergency Feedwater Tank Level," with an associated minimum channel requirement of "1" will be added.
8. Current Functions 3.f, "SW Cooler Outlet Temperature," and 3.g, "SW Pump Discharge Pressure," will be deleted.
9. A new Function 4.b, "High Pressure Injection Flow," with an associated minimum channel requirement of "1 per injection line" will be added.

Bases Section B 3.3.18 will also be revised to reflect the updated information in ITS Table 3.3.18-1. A new Table B 3.3.18-1 will be added that identifies, by equipment tag number, the specific instruments used to satisfy the requirements of ITS 3.3.18 and Table 3.3.18-1.

A detailed explanation for each of the above changes is provided in subsequent sections of this LAR.

Background

The Remote Shutdown System provides the operators with sufficient instrumentation and controls to place and maintain the unit in a safe shutdown condition from locations other than the control room. The instrumentation and controls are those needed for monitoring and controlling initial and long term core reactivity, reactor coolant system (RCS) pressure, decay heat removal using the emergency feedwater (EFW) system and the steam generator safety valves or atmospheric dump valves, and RCS inventory. Operability of the instruments listed in ITS Table 3.3.18-1, Remote Shutdown System Instrumentation, ensures there is sufficient information available for selected parameters to place and maintain the unit in Mode 3 should the control room become inaccessible.

Requirements for Remote Shutdown System Instrumentation have been included in the CR-3 Technical Specifications (TS) since their original issuance in December 1976. The instruments specified in previous TS Table 3.3.9, Remote Shutdown System Instrumentation, were based on the guidance provided in NUREG 0103, Standard Technical Specifications for Babcock and Wilcox Pressurized Water Reactors, as modified to reflect CR-3 specific equipment and operating philosophy.

In May 1977, FPC submitted Technical Specification Change Request #2, which proposed a revision to Table 3.3.9 that deleted decay heat closed cycle cooling system temperature as a monitored parameter and replaced it with decay heat removal temperature. The change was requested in order to ensure consistency between TS Table 3.3.9, NUREG 0103, and information contained in the CR-3 Final Safety Analysis Report (FSAR). This proposed change was approved by the NRC and issued as License Amendment No. 8 to the CR-3 Technical Specifications in November 1977. In 1985, FPC submitted Technical Specification Change Request #124, which proposed a change to TS Table 3.3.9 to reflect the relocation of specific remote shutdown monitoring instruments from the ES Switchgear Room to the Remote Shutdown Panel. The proposed change was approved by the NRC and issued as License Amendment No. 75 in July 1985. In August 1989, FPC submitted Technical Specification Change Request #171, which requested NRC approval of the CR-3 Improved Technical Specifications (ITS). As part of this request, the information contained in TS Table 3.3.9 was reformatted and moved to ITS Table 3.3.18-1. The proposed change was approved by the NRC and issued as License Amendment No. 149 in December 1993.

Reason For Request

Recent plant modifications have added equipment that would be used by the operators to perform a shutdown from outside the control room. As these modifications have been installed, associated changes have been made to the technical specifications for the systems being modified, and surveillance procedures have been developed or revised, as required, to demonstrate operability of the new equipment. In addition, revisions have been made to AP-990, Shutdown from Outside the Control Room, to include this new equipment and to address issues related to the Appendix R safe shutdown strategy for CR-3. Implementation of the changes proposed by LAR #261 will complete the process of updating the CR-3 technical

specifications to reflect the current equipment, instrumentation, and procedural guidance that would be used by the operators to perform a shutdown from outside the control room.

Evaluation of Request

CR-3 Abnormal Procedure AP-990 is the controlling procedure for performing a shutdown from outside the control room. The procedure specifies the actions and associated equipment, controls and indications that would be used by the operators to place and maintain the plant in a safe shutdown condition in the event that the control room becomes inaccessible. The proposed changes to Table 3.3.18-1 will result in a more direct correlation between the instrumentation listed in ITS and the instruments referenced in AP-990. The instruments listed in the revised Table 3.3.18-1 will also more closely agree with those in Table 3.3.18-1 of NUREG-1430.

Source Range Neutron Flux

New Function 1.b, Source Range Neutron Flux, will improve the ability of the operators to verify the reactor is shutdown following the manual reactor trip directed by AP-990. Periodic monitoring of the source range neutron flux, as directed by AP-990, will allow the operators to evaluate the effects of longer term reactivity changes due to RCS temperature reductions, RCS boron concentration changes, and post-trip xenon burnout. This proposed change is consistent with the guidance in NUREG-1430, which includes source range neutron flux in Table 3.3.18-1.

RCS Cold Leg Temperature

New Function 3.b, Reactor Coolant Cold Leg Temperature, will provide the operators with a parameter that can be used in conjunction with OTSG Pressure and RCS Hot Leg Temperature to verify and monitor natural circulation. CR-3 guidance for verifying natural circulation includes evaluating core differential temperature (RCS Hot Leg Temperature minus RCS Cold Leg Temperature), and verifying that RCS cold leg temperatures are approximately equal to the saturation temperatures for the OTSG pressures. This proposed change is consistent with the guidance in NUREG-1430.

Decay Heat Removal Temperature

Current Function 3.b, Decay Heat Removal Temperature, is being deleted from Table 3.3.18-1. The remote shutdown system instrumentation is used by the operators to place and maintain the plant in Mode 3 in the event of control room inaccessibility. With the plant in Mode 3, decay heat removal will be accomplished using the EFW system and main steam safety valves or atmospheric dump valves. In addition, Mode 3 RCS temperature and pressure conditions preclude placing the Decay Heat Removal System in service to control RCS temperature. This proposed change is consistent with the guidance in NUREG 1430, which does not include Decay Heat Removal Temperature in Table 3.3.18-1.

OTSG Level

The proposed changes to the required number of channels for Function 3.d, OTSG Level, will clarify the instruments needed by the operators to ensure proper OTSG level response following initiation of EFW. With all four reactor coolant pumps tripped, EFW should automatically initiate and raise OTSG levels to approximately 70% on the operate range. The location of the level taps and spans of the OTSG low range and high range level transmitters require both ranges of instrumentation to be available in order for the operators to continuously monitor OTSG levels as they are raised from a nominal post-trip value (approximately 30" on the startup range) to the natural circulation setpoint.

Emergency Feedwater Flow

AP-990 directs the operators to trip the reactor coolant pumps and verify that EFW is controlled in accordance with EOP Rule 3, EFW/AFW Control. New Function 3.e, Emergency Feedwater Flow, will improve the ability of the operators to ensure that EFW has initiated and that EFW flow is being properly controlled independent of the specific EFW pumps in operation.

Motor-driven EFW Pump Discharge Pressure

Current Function 3.e, Motor-driven EFW Pump Discharge Pressure, is being deleted. The addition of new function 3.e, Emergency Feedwater Flow, in combination with the OTSG level instrumentation discussed above, will provide the operators with the ability to evaluate EFW system status and proper operation regardless of the specific EFW pumps in operation. This proposed change is consistent with the guidance in NUREG-1430.

Emergency Feedwater Tank Level

In the event of extended operation in Mode 3 following a shutdown from outside the control room, the inventory in emergency feedwater tank EFT-2 may eventually be depleted. If a low EFT-2 level occurs, AP-990 provides guidance for aligning additional sources of emergency feedwater. New Function 3.f, Emergency Feedwater Tank Level, will allow the operators to monitor EFT-2 inventory and take timely actions to ensure continued availability of EFW to the OTSGs. This proposed change is consistent with the guidance in NUREG-1430.

SW Cooler Outlet Temperature and SW Pump Discharge Pressure

Current Functions 3.f, SW Cooler Outlet Temperature, and 3.g, SW Pump Discharge Pressure, are being deleted from Table 3.3.18-1. Operator actions in AP-990 related to the SW system are limited to ensuring that an emergency duty SW pump is in operation and SW is being supplied to required components. Monitoring of SW cooler outlet temperature in the event of a shutdown from outside the control room is not required, since the design heat removal capacity of the SW system bounds the heat removal requirements for normal operations, including maintaining the plant in hot standby. This proposed change is consistent with the guidance in

NUREG 1430, which does not include SW (or equivalent) cooling water system instrumentation in Table 3.3.18-1.

High Pressure Injection Flow

AP-990 directs the operators to maintain pressurizer level using one makeup pump and an available high pressure injection valve. New Function 4.b, High Pressure Injection Flow, will provide the operators with the indications for monitoring and controlling makeup flow to the pressurizer.

Bases Table B 3.3.18-1

The proposed changes will also add a table to ITS Bases Section B 3.3.18 that will list the specific equipment tag numbers of the instruments used to satisfy the requirements of ITS Table 3.3.18-1. This new Table B 3.3.18-1 will assist the operators in making accurate and timely determinations regarding remote shutdown system instrumentation operability and entry into the appropriate ITS 3.3.18 Conditions and Required Actions.

FLORIDA POWER CORPORATION

CRYSTAL RIVER UNIT 3

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ATTACHMENT B

LICENSE AMENDMENT REQUEST #261, REVISION 0
Remote Shutdown System Instrumentation

No Significant Hazards Consideration Determination

No Significant Hazards Consideration Determination

This licensee amendment proposes to revise Improved Technical Specification (ITS) Table 3.3.18-1, Remote Shutdown System Instrumentation, as follows:

1. A new Function 1.b, "Source Range Neutron Flux," with an associated minimum channel requirement of "1" will be added.
2. Function 3 will be changed from "Decay Heat Removal via Steam Generators (OTSGs)" to "RCS Temperature Control via Steam Generators (OTSGs)."
3. Current Function 3.b, "Decay Heat Removal Temperature," will be deleted and replaced by "Reactor Coolant System Cold Leg Temperature" with an associated minimum channel requirement of "1 per loop."
4. The required number of channels for current Function 3.d, "OTSG Level," will be changed from "1 per OTSG" to "1 Low Range and 1 High Range per OTSG."
5. Current Function 3.e, "Motor-driven EFW Pump Discharge Pressure," will be deleted.
6. A new Function 3.e "Emergency Feedwater Flow," with an associated minimum channel requirement of "1 per OTSG" will be added.
7. A new Function 3.f, "Emergency Feedwater Tank Level," with an associated minimum channel requirement of "1" will be added.
8. Current Functions 3.f, "SW Cooler Outlet Temperature," and 3.g, "SW Pump Discharge Pressure," will be deleted.
9. A new Function 4.b, "High Pressure Injection Flow," with an associated minimum channel requirement of "1 per injection line" will be added.

CR-3 also proposes to add a new Table B 3.3.18-1 to Bases Section B 3.3.18. The table will list, by equipment tag number, the specific instruments used to satisfy the requirements of ITS 3.3.18 and Table 3.3.18-1. In addition, Bases Section B 3.3.18 will be revised to delete the statement that the remote shutdown system instrumentation is used to monitor required support systems.

Florida Power Corporation (FPC) has reviewed the proposed revisions to ITS Table 3.3.18-1, Remote Shutdown System Instrumentation, and associated Bases Section B 3.3.18 against the requirements of 10 CFR 50.92(c). The proposed changes do not involve a significant hazards consideration. 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 analyzed.*

The instruments listed in Table 3.3.18-1 are used to provide information on selected parameters to the operators that will allow them to place and maintain the plant in a safe shutdown condition in the event the control room becomes inaccessible. The proposed license amendment revises Table 3.3.18-1, Remote Shutdown System Instrumentation, to more accurately reflect the instruments that would be used by the operators to perform abnormal operating procedure AP-990, Shutdown from Outside the Control Room. The proposed license amendment also revises ITS Bases Section B 3.3.18 to add a table that identifies, by equipment tag number, the specific instruments used to satisfy the requirements of ITS 3.3.18 and ITS Table 3.3.18-1. The instruments identified in ITS Table 3.3.18-1 and ITS Bases Table B 3.3.18-1 are not initiators of any design basis accidents. The design functions of the Remote Shutdown System Instrumentation and the initial conditions for accidents that require the Remote Shutdown System will not be effected by the change. Therefore, the change will not increase the probability or consequences of an accident previously evaluated.

- (2) *Does not create the possibility of a new or different kind of accident from any accident previously analyzed.*

The proposed amendment involves no changes to the CR-3 design or to the functions or operation of the Remote Shutdown System. The proposed amendment will ensure that sufficient and appropriate instrumentation is available to allow the operators to place and maintain the plant in a safe shutdown condition in the event the control room becomes inaccessible. The proposed amendment will also add information to Bases Section B 3.3.18 that will ensure timely and accurate operability evaluations and entry into the appropriate Conditions and Required Actions of ITS 3.3.18. The proposed amendment will not create any new plant configurations different from those already analyzed. Therefore, the proposed change will not create the possibility of a new or different kind of accident from any accident previously evaluated.

- (3) *Does not involve a significant reduction in the margin of safety.*

The proposed amendment revises Table 3.3.18-1, Remote Shutdown System Instrumentation, to more accurately reflect the instruments that would be used by the operators to perform a shutdown from outside the control room. The proposed amendment will revise ITS Bases Section B 3.3.18 to provide the operators with guidance that will assist them in making timely and accurate operability determinations and entries into the appropriate Conditions and Required Actions for ITS 3.3.18. The proposed changes will not reduce the ability of the Remote Shutdown System to monitor and control reactivity, RCS pressure, core heat removal, or RCS inventory. Thus, the proposed amendment will not result in a reduction in the margin of safety.

FLORIDA POWER CORPORATION

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ATTACHMENT C

LICENSE AMENDMENT REQUEST #261, REVISION 0
Remote Shutdown System Instrumentation

Environmental Impact Evaluation

Environmental Impact Evaluation

10 CFR 51.22(c)(9) provides criteria for and 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: (1) involve a significant hazards consideration, (2) result in a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (3) result in a significant increase in individual or cumulative occupational radiation exposure.

FPC has reviewed this license amendment request and has determined that 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 the issuance of the proposed license amendment. The basis for this determination is as follows:

1. The proposed license amendment does not involve a significant hazards consideration as described previously in the no significant hazards evaluation for this license amendment request.
2. The proposed changes revise ITS Table 3.3.18-1, which lists the instrumentation required to place and maintain the plant in a safe shutdown condition from outside the control room. The proposed changes will also add a new Table to ITS Bases Section B 3.3.18 that will identify, by instrument tag number, the specific instruments that required to meet ITS 3.3.18. The instrumentation listed in Table 3.3.18-1, and the specific instruments identified by ITS Table B 3.3.18-1 do not interface with any plant systems that are involved in the generation or processing of radioactive fluids. Therefore, the proposed license amendment will not result in a significant change in the types or increase in the amounts of any effluents that may be released off-site.
3. The proposed change involves instrumentation that does not interface with radiologically contaminated systems. The proposed changes do not require operator or other actions that could increase occupational radiation exposure. Therefore, the proposed license amendment will not result in a significant increase to the individual or cumulative occupational radiation exposure.

FLORIDA POWER CORPORATION

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ATTACHMENT D

**LICENSE AMENDMENT REQUEST #261, REVISION 0
Remote Shutdown System Instrumentation**

**Proposed Revised Improved Technical Specifications and Bases Change
Pages**

Strikeout / Shadow Format

Strikeout Text	Indicates deleted text
Shadowed Text	Indicates added text

Table 3.3.18-1 (page 1 of 1)
Remote Shutdown System Instrumentation

FUNCTION/INSTRUMENT	REQUIRED NUMBER OF CHANNELS
1. Reactivity Control	
a. Reactor Trip Breaker (RTB) Position	1 per trip breaker
b. Source Range Neutron Flux	1
2. Reactor Coolant System (RCS) Pressure Control	
a. RCS Wide Range Pressure	1
3. RCS Temperature Control via Steam Generators (OTSGs) Decay Heat Removal via Steam Generators (OTSGs)	
a. Reactor Coolant Hot Leg Temperature	1 per loop
b. Reactor Coolant Cold Leg Temperature Decay Heat Removal Temperature	1 per loop
c. OTSG Pressure	1 per OTSG
d. OTSG Level	1 Low Range and 1 High Range per OTSG
e. Emergency Feedwater Flow Motor-driven EFW Pump Discharge Pressure	1 per OTSG
f. Emergency Feedwater Tank Level SW Cooler Outlet Temperature	1 per cooler
g. SW Pump Discharge Pressure	1
4. RCS Inventory Control	
a. Pressurizer Level	1
b. High Pressure Injection Flow	1 per injection line

BASES

APPLICABLE SAFETY ANALYSES (continued) The Remote Shutdown System was determined by the NRC to be a risk significant item required to be retained in the Technical Specifications.

LCO The Remote Shutdown System LCO provides the requirements for the OPERABILITY of the indication instrumentation necessary to place and maintain the plant in MODE 3 from a location other than the control room. The instrumentation required are listed in Table-3.3.18-1 in the accompanying LCO.

The instrumentation are those required for:

- Core Reactivity Control;
- RCS Pressure Control;
- RCS Temperature Control (Decay Heat Removal); and
- RCS Inventory Control; and

~~• Support systems for the above functions.~~

Function of a Remote Shutdown System is OPERABLE if all instrument channels needed to support the Function are OPERABLE. Functionality of the control functions supported by the instrumentation included in this Specification is addressed outside Technical Specifications.

The Remote Shutdown System instruments covered by this LCO do not need to be energized to be considered OPERABLE. This LCO is intended to ensure the Remote Shutdown System instruments will be OPERABLE if plant conditions require that the Remote Shutdown System be placed in operation.

Bases Table B 3.3.18-1 identifies the specific instrument tag numbers for the Remote Shutdown System Instrumentation listed in Table 3.3.18-1.

APPLICABILITY The Remote Shutdown System LCO is applicable in MODES 1, 2, and 3 so that the plant can be placed and maintained in MODE 3 for an extended period of time from a location other than the control room.

This LCO is not applicable in MODE 4, 5, or 6. In these MODES, the plant is initially subcritical and in a condition of reduced RCS energy. Under these conditions, considerable

(continued)

Table B 3.3.18-1
Remote Shutdown System Instrumentation

FUNCTION	INSTRUMENT NUMBER
1. Reactivity Control a. Reactor Trip Breaker Position b. Source Range Neutron Flux	CB-1 CB-2 CB-3 CB-4 A B NI-014-NI2
2. Reactor Coolant System Pressure Control a. RCS Wide Range Pressure	RC-158-PI1 OR RC-159-PI1
3. RCS Temperature Control a. RCS Hot Leg Temperature b. RCS Cold Leg Temperature	"A" Loop: RC-4A-TI3-2 "B" Loop: RC-4B-TI4-2 "A" Loop: RC-5A-TI2-2 "B" Loop: RC-5B-TI4-2
c. OTSG Pressure	"A" OTSG: MS-106-PI2 OR MS-107-PI2 "B" OTSG: MS-110-PI2 OR MS-111-PI2
d. OTSG Level	"A" OTSG Low Range Level: SP-25-LI2 OR SP-26-LI2 "B" OTSG Low Range Level: SP-29-LI2 OR SP-30-LI2 "A" OTSG High Range Level: SP-17-LI2 OR SP-18-LI2 "B" OTSG High Range Level: SP-21-LI2 OR SP-22-LI2
e. Emergency Feedwater Flow	"A" OTSG: EF-25-FI2 OR EF-26-FI2 "B" OTSG: EF-23-FI2 OR EF-24-FI2
f. Emergency Feedwater Tank Level	EF-98-LI2 OR EF-99-LI2
4. RCS Inventory Control a. Pressurizer Level b. High Pressure Injection Flow	RC-1-LI1-2 OR RC-1-LI3-2 A1 Injection Line: MU-23-FI8-2 A2 Injection Line: MU-23-FI6-2 B1 Injection Line: MU-23-FI5-2 B2 Injection Line: MU-23-FI7-2

FLORIDA POWER CORPORATION

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ATTACHMENT E

**LICENSE AMENDMENT REQUEST #261, REVISION 0
Remote Shutdown System Instrumentation**

**Proposed Revised Improved Technical Specifications and Bases
Change Pages**

Revision Bar Format

Table 3.3.18-1 (page 1 of 1)
Remote Shutdown System Instrumentation

FUNCTION/INSTRUMENT	REQUIRED NUMBER OF CHANNELS
1. Reactivity Control	
a. Reactor Trip Breaker (RTB) Position	1 per trip breaker
b. Source Range Neutron Flux	1
2. Reactor Coolant System (RCS) Pressure Control	
a. RCS Wide Range Pressure	1
3. RCS Temperature Control via Steam Generators (OTSGs)	
a. Reactor Coolant Hot Leg Temperature	1 per loop
b. Reactor Coolant Cold Leg Temperature	1 per loop
c. OTSG Pressure	1 per OTSG
d. OTSG Level	1 Low Range and 1 High Range per OTSG
e. Emergency Feedwater Flow	1 per OTSG
f. Emergency Feedwater Tank Level	1
4. RCS Inventory Control	
a. Pressurizer Level	1
b. High Pressure Injection Flow	1 per injection line

BASES

APPLICABLE SAFETY ANALYSES (continued) The Remote Shutdown System was determined by the NRC to be a risk significant item required to be retained in the Technical Specifications.

LCO The Remote Shutdown System LCO provides the requirements for the OPERABILITY of the indication instrumentation necessary to place and maintain the plant in MODE 3 from a location other than the control room. The instrumentation required are listed in Table-3.3.18-1 in the accompanying LCO.

The instrumentation are those required for:

- Core Reactivity Control;
- RCS Pressure Control;
- RCS Temperature Control (Decay Heat Removal); and
- RCS Inventory Control.

Function of a Remote Shutdown System is OPERABLE if all instrument channels needed to support the Function are OPERABLE. Functionality of the control functions supported by the instrumentation included in this Specification is addressed outside Technical Specifications.

The Remote Shutdown System instruments covered by this LCO do not need to be energized to be considered OPERABLE. This LCO is intended to ensure the Remote Shutdown System instruments will be OPERABLE if plant conditions require that the Remote Shutdown System be placed in operation.

Bases Table B 3.3.18-1 identifies the specific instrument tag numbers for the Remote Shutdown System Instrumentation listed in Table 3.3.18-1.

APPLICABILITY The Remote Shutdown System LCO is applicable in MODES 1, 2, and 3 so that the plant can be placed and maintained in MODE 3 for an extended period of time from a location other than the control room.

This LCO is not applicable in MODE 4, 5, or 6. In these MODES, the plant is initially subcritical and in a condition of reduced RCS energy. Under these conditions, considerable

(continued)

Table B 3.3.18-1
Remote Shutdown System Instrumentation

FUNCTION	INSTRUMENT NUMBER
1. Reactivity Control	
a. Reactor Trip Breaker Position	CB-1 CB-2 CB-3 CB-4 A B
b. Source Range Neutron Flux	NI-014-NI2
2. Reactor Coolant System Pressure Control	
a. RCS Wide Range Pressure	RC-158-PI1 OR RC-159-PI1
3. RCS Temperature Control	
a. RCS Hot Leg Temperature	"A" Loop: RC-4A-TI3-2 "B" Loop: RC-4B-TI4-2
b. RCS Cold Leg Temperature	"A" Loop: RC-5A-TI2-2 "B" Loop: RC-5B-TI4-2
c. OTSG Pressure	"A" OTSG: MS-106-PI2 OR MS-107-PI2 "B" OTSG: MS-110-PI2 OR MS-111-PI2
d. OTSG Level	"A" OTSG Low Range Level: SP-25-LI2 OR SP-26-LI2 "B" OTSG Low Range Level: SP-29-LI2 OR SP-30-LI2 "A" OTSG High Range Level: SP-17-LI2 OR SP-18-LI2 "B" OTSG High Range Level: SP-21-LI2 OR SP-22-LI2
e. Emergency Feedwater Flow	"A" OTSG: EF-25-FI2 OR EF-26-FI2 "B" OTSG: EF-23-FI2 OR EF-24-FI2
f. Emergency Feedwater Tank Level	EF-98-LI2 OR EF-99-LI2
4. RCS Inventory Control	
a. Pressurizer Level	RC-1-LI1-2 OR RC-1-LI3-2
b. High Pressure Injection Flow	A1 Injection Line: MU-23-FI8-2 A2 Injection Line: MU-23-FI6-2 B1 Injection Line: MU-23-FI5-2 B2 Injection Line: MU-23-FI7-2