



# Florida Power

CORPORATION  
Crystal River Unit 3  
Docket No. 50-302

October 23, 1995  
3F1095-11

U. S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, D. C. 20555

Subject: Licensee Event Report (LER) 95-018-00

Dear Sir:

Please find the enclosed Licensee Event Report (LER) 95-018-00. This report is submitted by Florida Power Corporation in accordance with 10 CFR 50.73.

Sincerely,

B. J. Hickle, Director  
Nuclear Plant Operations

TWC:ff

Attachment

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

200060

IFRR  
11

CRYSTAL RIVER ENERGY COMPLEX: 15760 W Power Line St • Crystal River, Florida 34428-6708 • (904) 795-6486

<sup>4</sup> Florida Progress Company

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PDR ADOCK 05000302  
S PDR

LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HOURS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON DC 20503.

FACILITY NAME (1) CRYSTAL RIVER UNIT 3 (CR-3)						DOCKET NUMBER (2) 0 5 0 0 0 3 0 2			PAGE (3) 1 OF 0 8		
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TITLE (4)  
Inadequate ITS Note Allows Delayed Entry Into ITS LCO Resulting In Violation Of ITS

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)		
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES		DOCKET NUMBER(S)
0 9 2 2	9 5	9 5	9 5	0 1 8	0 0	1 0 2 3	9 5		N/A		0 5 0 0 0

OPERATING MODE (9) 1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (CHECK ONE OR MORE OF THE FOLLOWING) (11)																				
POWER LEVEL (10) 0 9 7	20.402(b)	20.405(a)(1)(i)	20.405(a)(1)(ii)	20.405(a)(1)(iii)	20.405(a)(1)(iv)	20.405(a)(1)(v)	20.405(c)	50.36(c)(1)	50.36(c)(2)	50.73(a)(2)(i)	50.73(a)(2)(ii)	50.73(a)(2)(iii)	50.73(a)(2)(iv)	50.73(a)(2)(v)	50.73(a)(2)(vii)	50.73(a)(2)(viii)(A)	50.73(a)(2)(viii)(B)	50.73(a)(2)(x)	73.71(b)	73.71(c)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
										X											

LICENSEE CONTACT FOR THIS LER (12)									
NAME T. W. Catchpole, Sr. Nuclear Licensing Engineer							TELEPHONE NUMBER		
							AREA CODE 9 0 4 5 6 3 - 4 6 0 1		

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE IN THIS REPORT (13)										
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	

SUPPLEMENTAL REPORT EXPECTED (14)							EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)							<input checked="" type="checkbox"/> NO			

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

On September 22, 1995, Florida Power Corporation's Crystal River Unit 3 was in MODE ONE (POWER OPERATION), operating at 97% reactor power and generating 848 megawatts. The Shift Supervisor questioned the validity of a Note contained in Improved Technical Specification (ITS) SR 3.3.7.1 allowing delayed entry into required actions during performance of the monthly functional test of the Engineered Safeguards Actuation System (ESAS) Automatic Actuation Logic, and elected to enter Limiting Condition for Operation (LCO) 3.3.7 Condition A. It was subsequently confirmed that the Note was incorrect and therefore, previous surveillances which had not entered LCO 3.3.7 Condition A, were in violation. Because of the design of ESAS and the way CHANNEL FUNCTIONAL TEST is performed, each time a function is put in "test", the automatic and manual actuation contacts are disabled and the components associated with the test group are not available. The cause of this event was personnel error. Corrective actions will include clarification of the Note in ITS SR 3.3.7.1, reviews of pertinent surveillance procedures to ensure consistency with the current intent of the Note, review of other ITS Notes for ambiguities, and making this LER required reading for Engineering and Licensing personnel. This report is submitted in accordance with 10CFR 50.73(a)(2)(i)(B).

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HOURS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (MNB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON DC 20503.

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TEXT (if more space is required, Use additional NRC Form 366A's (17))

**EVENT DESCRIPTION**

On September 22, 1995, Florida Power Corporation's (FPC) Crystal River Unit 3 (CR-3) was in MODE ONE (POWER OPERATION), operating at 97% reactor power and generating 848 megawatts. During performance of Surveillance Procedure SP-358C "Engineered Safeguards (ES) Monthly Automatic Actuation Logic Functional Test", the Shift Supervisor on Duty (SSOD), using conservative decision-making, questioned the applicability of a Note associated with Improved Technical Specification (ITS) Surveillance Requirement SR 3.3.7.1. The Note allows delayed entry into Conditions and Required Action "A" of Limiting Condition for Operation (LCO) 3.3.7 for up to 8 hours during performance of the surveillance, "provided the associated ES function is maintained." Condition A requires components to be placed in ES configuration or the associated components declared inoperable within one hour when one or more automatic actuation logic matrices is inoperable. The SSOD's question was based on the knowledge that the ES test group switches used during SP-358C block the actuation of specific groups of equipment and essentially removes them from service, regardless of the state of the three channels of ES. Therefore, the SSOD reasoned, the associated ES Function could not be maintained, and entry into Condition "A" was required. A Precursor Card was subsequently evaluated by Nuclear Licensing personnel who confirmed that the Note in ITS SR 3.3.7.1 was incorrect.

On August 30, 1995 and previous dates, SP-358B was performed without entering LCO 3.3.7, Condition A, thus violating the requirements of LCO 3.3.7. The Shift Supervisor's log for August 30, 1995 clearly indicates that the Required Actions of LCO 3.3.7 Condition A are not required per the note associated with SR 3.3.7.1. Likewise, the Shift Supervisor's log for August 8, 1995 also indicates that entry into LCO 3.3.7 was not required during the performance of SP-358C. LCO 3.3.7 Condition A was entered on August 4, 1995 during the performance of SP-358A; however, the reason was associated with troubleshooting being conducted of the ES relays for Core Flood Valve [BP,V] CFV-25.

**EVENT EVALUATION**

The Engineered Safeguards Actuation System [JE](ESAS) is a three-channel redundant system employing three channels for each monitored variable. Each set of three channels is arranged to obtain a 2-out-of-3 voting redundancy for the monitored variable to detect a loss of the Reactor Coolant System [AB](RCS) boundary integrity. ESAS also monitors Reactor Building [NH](RB) pressure on increased RB pressure. Upon detection of the "out of limit" condition of these variables, it initiates operation of the High Pressure Injection [BQ](HPI), Low Pressure Injection [BPI](LPI), Reactor Building Isolation & Cooling [JM](RBIC), Reactor Building Spray [BE](RBS), Emergency Diesel Generator [EK,GK](EDG) Start, and Control Complex Normal Recirculation [NA] systems. Redundancy in the operation of ES equipment is obtained by employing two sets of three instrumentation channels which serve actuation Trains "A" and "B". The two actuation trains are independent

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TEXT (If more space is required, Use additional NRC Form 368A's (17))

and each will tolerate a single failure. Each of the components actuated by the ESAS Functions has an associated automatic actuation logic matrix. SP-358 (A&B&C) verifies that upon an automatic actuation of 2 of the 3 Channels, the matrix of the associated equipment actuates properly. The ES Matrix signal is blocked during testing to prevent actuation of the equipment. SP-358A, Test #1 verifies that the matrix will actuate when Channels 1 and 2 trip. SP-358B, Test #2 verifies proper operation when Channels 2 and 3 trip. SP-358C tests Channels 3 and 1. These tests are performed on a staggered basis such that different combinations are tested at each test interval.

The ESAS is designed to be tested any time during plant operation or shutdown and fully complies with the requirements of IEEE 279-1968 "Criteria for Protection Systems for Nuclear Power Generating Stations."

Testing of the matrices is accomplished by actuating the auxiliaries they control each refueling outage. When testing during operations, the end devices are blocked downstream of the matrices and circuit monitoring devices ensure matrix actuation and circuit restoration after testing.

The ESAS equipment associated with each ES Function are grouped in specified test groups which can be tested simultaneously during power operation. The actuation channels output relays which control the ESAS equipment are similarly grouped in specified test groups.

A test circuit is provided, with control on the control room safeguard panel, to allow testing of a preselected group of output relays of two channels of the same function. It yields a true two-out-of-three actuation in the control circuit of each of the auxiliaries controlled by the preselected output relays. During testing, the end devices are blocked from operation as described above. All output relays may be de-energized in the same manner in order to test the safeguards actuation system.

The safety significance of this violation is negligible when considering that the design of Crystal River Unit 3 is based on single train capability of handling postulated accidents and the redundant Train ES function is available during SP-358 testing. A review of the completion times for ES functions associated with SR 3.3.7.1 indicates that none exceed one hour. While the overall performance of the ESAS Channel Functional Test may require up to 8 hours duration, the individual ES functions are bypassed only a fraction of that time. On August 30, 1995, while validating recent changes to SP-358B, the responsible System Engineer observed the performance of the procedure and noted that the "A" side took 1-1/2 hours to complete and the "B" side was completed in less than one hour. Per the System Engineer, the actual time the end devices for each ES function are inoperable ranges from 15 minutes to 1/2 hour which is less than the one hour allowed by

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TEXT (If more space is required, Use additional NRC Form 366A's (17))

Condition A of LCO 3.3.7. Therefore, the objective of LCO 3.3.7 is achieved during the test. This event did not compromise the health and safety of the general public.

CAUSE

The primary cause of the incorrect application of the Note was personnel error. There was an incomplete understanding by the ITS authors of the design and operation and testing of the ESAS system. The ITS authors relied on the surveillance procedure owners to communicate the validity of the Note for the testing method. A breakdown in communication contributed to the incomplete understanding. The Note appears in two places, SR 3.3.5.2 and SR 3.3.7.1. In the application of SR 3.3.5.2, the Note correctly interpreted the design of the ESAS leaving a full 2-out-of-2 logic to actuate. This ensured a functional ES system allowing all components to actuate on a valid ES signal. The second application of the Note in SR 3.3.7.1 was intended to serve the same purpose. Allowing delayed entry into an action statement permitted operating without single failure protection for the 8 hours of the surveillance test, but with a fully operable system - "fully operable" in that the testing method of SR 3.3.5.2 allowed for any and all ES components to actuate on a 2-out-of-2 logic. The difference is introduced due to the fact that the actuation matrix requires at least 2 channels tripped. In SR 3.3.7.1, the ES test group switches are used in SP-358A/B/C which blocks the actuation of specific groups of equipment, regardless of the state of the three instrumentation channels of ES. For example, when the test group containing the "A" HPI pump is being tested, the automatic 2-out-of-3 matrices and manual actuation contact for that pump are disabled. This removes "A" HPI from service and should require entry into the LCO. Utilizing the note, the HPI "function" is still maintained with the "B" HPI pump, but the BASES for SR 3.3.7.1 goes on to imply the function is by train and not safety function of the system. This caused the deviation from the identical Note in SR 3.3.5.2 and, in turn, the failure to enter the associated Condition during previous performance of SP-358A/B/C. This reportable event pointed out the error in having an identical note in separate ITS surveillance requirements which serve different purposes. SR 3.3.5.2 is the monthly functional test for the Instrumentation portion of the ES system which is capable of being tested on channel at a time whereas SR 3.3.7.1 is the monthly functional test for the Auto Actuation Logic Matrices, and in order to test the matrices, at least 2 channels must be tested.

IMMEDIATE CORRECTIVE ACTION

1. Immediate action taken by the SSOD on 9/22/95 during the performance of SP-358C was to enter LCO 3.3.7 Condition A for a total of 49 minutes. The

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TEXT (If more space is required, Use additional NRC Form 366A's (17))

actual time for the "A" Train of HPI logic was 19 minutes, for LPI logic 5 minutes, and for RBIC logic 15 minutes.

- A Precursor Card was written to obtain further review by Nuclear Licensing resulting in issuance of Problem Report PR 95-0184.

**ADDITIONAL CORRECTIVE ACTION**

- Other Shift Supervisors were notified on 9/28/95 via Short Term Instruction (STI) 95-0052, of the need to enter LCO 3.3.7 Condition A when performing SP-358A, B, or C.
- A Technical Specification Change Request has been generated by FPC to clarify the Note for SR 3.3.7.1. The change request is currently being reviewed within FPC and is scheduled to be sent to the NRC by December 1, 1996.
- SP-358 A/B/C will be reviewed by December 15, 1995 to ensure these procedures are consistent with the current interpretation of the Note in SR 3.3.7.1.

**ACTION TO PREVENT RECURRENCE**

- Nuclear Licensing has reviewed all other "notes" in ITS to ensure no other ambiguities exist. The results of this review will be discussed with Plant Operations and Systems Engineering. ITS changes will be initiated by December 15, 1995, as needed based on the results of this review.
- Upon issuance of this Licensee Event Report (LER), the Manager, Nuclear Plant Operations will issue a memo to Engineering and Licensing personnel making this LER required reading for all personnel in those organizations who may be involved in ITS interpretation regarding the ESAS system.

**PREVIOUS SIMILAR EVENTS**

There has been one previous event involving a failure to adequately understand the function of the actuation matrices as they relate to ES Automatic Actuation Logic. LER 87-005 reported that a portion of the circuit for the automatic actuation logic had been overlooked during performance of SP-358A. The cause of the LER was attributed to improper classification of the matrix during the design phase. The root cause was attributed to a difference in interpretation in-house regarding the scope of the channel functional test as defined in the Technical Specifications and its application to the actuation circuitry. The corrective action addressing this

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difference of interpretation was that Site Engineering, as part of the on-going biennial review process, performs a review of selected ES surveillance procedures to ensure affected ES actuation logic testing meets or exceeds the Technical Specification surveillance requirements.

ATTACHMENT

Attachment 1 -Abbreviations, Definitions and Acronyms

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TEXT (If more space is required, Use address of NRC Form 308A's (17))

ATTACHMENT 1 - ABBREVIATIONS, DEFINITIONS AND ACRONYMS

- CR-3                      Crystal River Unit 3
- EDG                      Emergency Diesel Generator
- ES                        Engineered Safeguards
- ESAS                     Engineered Safeguards Actuation System
- FPC                      Florida Power Corporation
- HPI                       High Pressure Injection
- IEEE-279                Criteria for Protection Systems for Nuclear Power Generating Systems
- LCO                      Limiting Condition for Operation
- LPI                       Low Pressure Injection
- MODE ONE                POWER OPERATION (Greater Than 5 Percent Rated Thermal Power)
- Precursor                A Precursor Card is used to provide initial identification of concerns, incidents or conditions which may result in minor corrective actions or by escalation to a more formal correction process, such as the Problem Report System.
- Problem Report         A Problem Report documents a condition or event which impacts CR-3 and warrants evaluation, root cause analysis, or corrective actions beyond what it would receive if documented and processed by other methods.
- RBIC                     Reactor Building Isolation & Cooling
- RBS                      Reactor Building Spray
- RCS                      Reactor Coolant System
- SP-358                  Operations ES Monthly Automatic Actuation Logic Functional Test
- SR                        Surveillance Requirement



