



**Florida
Power**
CORPORATION
Crystal River Unit 3
Docket No. 80-302

October 28, 1994
3F1094-14

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

Subject: Licensee Event Report (LER) 94-005-00

Dear Sir:

Attached is Licensee Event Report (LER) 94-005-00 which is submitted in accordance with 10 CFR 50.73.

Sincerely,

G. L. Boldt
Vice President
Nuclear Production

GLB/JAF:ff

Attachment

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

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CRYSTAL RIVER ENERGY COMPLEX: 16780 W Power Line St • Crystal River, Florida 34428-6708 • (804) 795-6486

A 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 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)

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Crystal River Unit 3 (CR3)

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TITLE (4)
Personnel Error Leads to Failure to Perform Reactor Coolant Pump Motor Flywheel
Surveillance Resulting in Violation of Technical Specifications

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	8	9	4	9	4	0	0	5
0	9	2	8	9	4	0	0	5	0	0
OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)								
1		20.402(b)								
POWER LEVEL (10)		1 0 0								
		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)(1)								
		20.405(c)(2)								
		20.73(a)(2)(i)								
		20.73(a)(2)(ii)								
		20.73(a)(2)(iii)								
		20.73(a)(2)(iv)								
		20.73(a)(2)(v)								
		20.73(a)(2)(vi)								
		20.73(a)(2)(vii)								
		20.73(a)(2)(viii)(A)								
		20.73(a)(2)(viii)(B)								
		20.73(a)(2)(ix)								
		73.71(b)								
		73.71(c)								
		OTHER (Specify in Abstract below and in Text, NRC Form 366A)								

LICENSEE CONTACT FOR THIS LER (12)

NAME

TELEPHONE NUMBER

J. A. Frijouf, Nuclear Regulatory Specialist

AREA CODE

9 0 4 5 6 3 - 4 7 5 4

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC

SUPPLEMENTAL REPORT EXPECTED (14)

EXPECTED SUBMISSION DATE (15)

MONTH DAY YEAR

☐ YES (If yes, complete EXPECTED SUBMISSION DATE)☒ NO

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

On September 28, 1994, Florida Power Corporation's (FPC) Crystal River Unit 3 (CR-3) was in MODE ONE (POWER OPERATION), operating at 100% reactor power and generating 878 megawatts. Discussions were being conducted by FPC personnel addressing the ISI examinations and requirements relative to the upcoming Refuel 10 outage. At that time, it was determined that CR-3 had violated the Technical Specifications (TS) relative to Inservice Inspection (ISI) requirements, due to failure to perform reactor coolant pump motor flywheel surface examinations during the first ISI ten year interval expiring in 1987.

The cause of this event was cognitive personnel error for failure to perform the required examination, to establish and document an alternative examination, or to secure relief from the requirement. Corrective action includes counselling, a regulatory review to determine future actions, and appropriate flywheel surface examinations. Following a review of ISI data and industry experience, FPC has concluded that this event has not created a safety concern. This report is submitted in accordance with 10CFR50.73(a)(2)(i)(B).

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20586, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

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		94	005	00	02	OF	05

Crystal River Unit 3 (CR3)

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94-005-00 02 OF 05

TEXT (If more space is required, use additional NRC Form 366A (1) (17))

EVENT DESCRIPTION:

On September 28, 1994, Florida Power Corporation's (FPC) Crystal River Unit 3 (CR-3) was in MODE ONE (POWER OPERATION), operating at 100% reactor power and generating 878 megawatts. Discussions between Inservice Inspection (ISI) and Licensing personnel were being conducted addressing the ISI examinations and requirements for the upcoming Refuel 10 outage, which would be the last outage of the second ten year ISI interval. At that time, it was determined that CR-3 had violated the Technical Specifications (TS) relative to ISI requirements, due to failure to perform reactor coolant pump (RCP) motor [AB,MO] flywheel surface examination during the first ten year ISI interval. This report is submitted in accordance with 10CFR50.73(a)(2)(i)(B) for operation or condition outside plant TS.

Technical Specification 5.6.2.8c, Inservice Inspection Program requires the inspection of each RCP flywheel per the recommendation of Regulation Position c.4.b of Regulatory Guide (Reg. Guide) 1.14, Revision 1, August 1975. Reg. Guide 1.14 states, in part, that "A surface examination of all exposed surfaces and complete ultrasonic volumetric examination at approximately 10 year intervals, during plant shutdown coinciding with the inservice inspection schedule as required by Section XI of the ASME code" be performed.

Prior to the expiration of the first ten year interval at CR-3 in 1987, FPC personnel recognized and understood the requirements of Reg. Guide 1.14, however, the RCP motor design prohibited performance of a complete surface examination of the RCP motor flywheel without substantial disassembly of the upper motor area. Removal of the flywheel inspection port (see Figure 1), exposing a segment of the circumferential area of the flywheel and RCP motor rotation would enable examination of the total circumferential area, however, examination of this small area, relative to the total surface area of the flywheel, would not have provided meaningful technical data and could have potentially resulted in introduction of foreign material into the RCP motor. Additionally, FPC personnel thought that the examination was not required since there was no exposed surface.

Based on these considerations, a consensus was reached that surface examinations would not be performed. Further, a draft Relief Request, seeking exemption from the examination requirement was subsequently prepared, but never submitted because compliance was determined to be a TS issue and was not a requirement of ASME Section XI. General discussion was held concerning revision of the TS requirement as part of the Improved TS effort. This discussion was not documented and no tracking mechanism was initiated to ensure the issue was resolved. As a result the first ten year interval at CR-3 has expired, and CR-3 is currently approaching the end of its second ten year interval with no formal surface inspection performed nor TS relief obtained.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 500 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20585, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
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TEXT (If more space is required, use additional NRC Form 366A's) (17)

EVENT EVALUATION

The RCP motor flywheels are an integral part of the rotating mass of the RCP assembly. This rotating mass provides a finite forced flow (coastdown) period during which the RCP would continue to provide reactor coolant flow to the reactor following loss of power to the RCPs. The capability of the RCPs coastdown after a loss of power was utilized in the safety analysis of Loss-of-Coolant-Flow Accident (FSAR 14.1.2.6) and Load Rejection Accident (FSAR 14.1.2.8). RCP motor flywheel failure would reduce coastdown. Reduced coastdown times due to a single failed RCP motor flywheel would not place the plant in an unanalyzed condition since a locked rotor (substantially an instantaneous coastdown) is analyzed in the FSAR.

ISI examination requirements are also imposed to prevent RCP motor flywheel failure by fragmentation and subsequent missile damage to associated and proximate structures, systems and components. Potential mechanical and/or fire damage consequences are bounded by existing Loss-of-Coolant Accidents (LOCA) and Fire Hazards Analyses evaluations.

An evaluation of this occurrence has been performed by FPC ISI personnel. As part of this evaluation, a review of industry information through both the Babcock and Wilcox (B&W) and Westinghouse Owner's Groups, and the Nuclear Plant Reliability Data System (NPRDS) has shown that there have been no critical flaws identified and no reported failures of RCP motor flywheels. Volumetric examinations of the RCP motor flywheels were performed by FPC to satisfy Reg. Guide 1.14 requirements. The examinations were performed in accordance with B&W Nondestructive Testing (BWNT) procedure ISI-117 "Ultrasonic Examination of Reactor Coolant Pump Motor Flywheel Forging". These examinations exceeded the requirements of Reg. Guide 1.14 in that substantially complete volumetric examinations were performed in lieu of the ultrasonic volumetric examination of only the bore and keyway area as required by Reg. Guide 1.14. Additionally, dye penetrant examinations were performed for information purposes by the vendor during motor refurbishment. These examinations included areas of high stress concentrations, specifically, surface areas of the flywheel near the shaft and around the keyways, with no indications detected. These dye penetrant examinations were performed in April 1989 for RCPs 1A, 1B, and 1C, and in May 1990 for RCPs 1B, 1C, and 1D.

Based on the low probability of RCP motor flywheel failure as demonstrated by industry operating experience, the partial surface examinations performed during motor refurbishment, and performance of volumetric ultrasonic examinations, FPC has concluded that this event has not created a safety concern, and does not compromise the health and safety of the general public.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-830), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20585, 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 2) (17)

CAUSE

The cause of this event was cognitive personnel error for failure to perform the required examination, to establish and document an alternative examination, or to seek relief from the requirement.

CORRECTIVE ACTION

Corrective actions for this event include the following:

1. Licensing and ISI personnel will be counselled concerning the importance of properly documenting and tracking ISI issues.
2. A Regulatory Review will be conducted to determine further actions or modifications to be taken relative to current programs or procedures. These actions may include a cost beneficial licensing action to secure relief from this inspection requirement or to develop an alternative inspection criteria which will satisfy the requirements of Reg. Guide 1.14;
3. While the regulatory review described in corrective action #2 is being performed, a surface examination will be performed on any RCP motor flywheel that becomes available for examination (exposed) due to RCP motor repair requiring disassembly. This alternative examination will be considered as one of the possible means to meet the long term requirements of Reg. Guide 1.14; and
4. The appropriate procedure will be revised to ensure that ISI personnel will be notified when a determination is made that a RCP will be disassembled sufficiently to expose the RCP motor flywheel for a surface examination.

PREVIOUS SIMILAR EVENTS

There have been three previous reportable events involving administrative deficiencies relative to the ISI program.

ATTACHMENT

Figure 1 is a representation of the Reactor Coolant Pump Motor illustrating the complexity of RCP motor disassembly to expose all surfaces of the RCP motor flywheel.

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TEXT CONTINUATION

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TEXT (If more space is required, use additional NRC Form 354A's) (17)

FIGURE 1

