



**Florida
Power**
CORPORATION

Crystal River Unit 3
Docket No. 50-302

November 16, 1997
3F1192-08

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

Subject: Licensee Event Report (LER) 92-015-01

Dear Sir:

Enclosed is Licensee Event Report (LER) 92-015-01 which is submitted in accordance with 10 CFR 50.73.

This supplement describes additional corrective actions relative to this event.

Sincerely,

G. L. Boldt
Vice President
Nuclear Production

EEF:mag

Enclosure

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

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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 (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)

CRYSTAL RIVER UNIT 3 (CR-3)

DOCKET NUMBER (2)

0 5 0 0 0 3 0 2 1 OF 0 4

PAGE (3)

TITLE (4)

Emergency Feedwater Actuation On Low Steam Generator Level While Isolating Steam From 'A' Steam Generator

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	7	1	7	9	2	9	2	0	1	5	0	1	1	1	6	9	2	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 0 8

20.402(b)

20.405(c)

X 50.73(a)(2)(v)

79.71(b)

20.405(a)(1)(i)

50.39(c)(1)

50.73(a)(2)(v)

79.71(c)

20.405(a)(1)(ii)

50.96(c)(2)

50.73(a)(2)(v)

OTHER (Specify in Abstract below and in Text, NRC Form 366A)

20.405(a)(1)(iii)

50.73(a)(2)(v)

50.73(a)(2)(v)(kA)

20.405(a)(1)(iv)

50.73(a)(2)(v)

50.73(a)(2)(v)(KB)

20.405(a)(1)(v)

50.73(a)(2)(v)

50.73(a)(2)(v)

LICENSEE CONTACT FOR THIS LER (12)

NAME:

W. A. Stephenson, Nuclear Safety Supervisor

TELEPHONE NUMBER

AREA CODE

9 0 4 7 9 5 - 6 4 8 6

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRRDS										
D	S	B	I	S	V	C	6	6	5	YES									

SUPPLEMENTAL REPORT EXPECTED (14)

EXPECTED SUBMISSION DATE (15)

MONTH DAY YEAR

YES (If yes, complete EXPECTED SUBMISSION DATE)

X NO

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

On July 17, 1992, Crystal River Unit 3 was operating at 8% power with the turbine off-line when an Emergency Feedwater Initiation and Control (EFIC) system actuation occurred due to low Once Through Steam Generator (OTSG) level. Steam flow from the "A" OTSG was being isolated in preparation for repairing condenser tube leakage. Partial isolation of the "A" OTSG created a high pressure in the OTSG. With feedwater pump control in manual, there was no automatic compensation to overcome the OTSG high pressure. Main feedwater flow to the affected OTSG therefore temporarily stopped and OTSG level reached the low level setpoint for EFIC actuation. Operators reduced reactor power, stabilized the plant, and secured Emergency Feedwater.

During the transient, a steam leak occurred from the packing of a manual isolation valve for one of the two turbine bypass valves associated with the "A" OTSG. The valve packing was replaced with a new five ring packing system uniquely designed for each specific valve application. Corrective actions include changes to procedures and main control board alarms, as well as changes to training plans. Further evaluation of automatic feedwater control problems is being conducted by engineering.

EXPIRES 4/30/92

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST 60.0 HOURS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-630), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20546, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON DC 20503.

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CRYSTAL RIVER UNIT 3 (CR-3)	0 5 0 0 0 3 0 2	9 2	0 1 5	0 1	0 2 OF 0 4

TEXT (If more space is required, use additional NRC Form 305A's (17))

EVENT DESCRIPTION

On July 17, 1992, the Emergency Feedwater Initiation and Control system (EFIC) [JE] actuated due to low level in the "A" Once Through Steam Generator (OTSG) [AB,SG] at Crystal River unit 3 (CR-3).

Prior to the event, the turbine [TA,TRB] was off-line due to tube leaks in two condenser waterboxes [SG,COND]. One condenser waterbox associated with the "A" OTSG had already been isolated. Operators were in the process of attempting to isolate the remaining condenser waterbox associated with the "A" OTSG for repair. Reactor power was 8% of full power with the average reactor coolant temperature approximately 555 degrees. Main feedwater [SJ] control was in manual due to problems previously experienced with automatic control when the plant was at low power levels. Both OTSGs were operating on low level limits with a steam pressure of approximately 900 psi.

At 0907, while isolating the remaining condenser waterbox associated with the "A" OTSG for repair, the control room operator began to close the associated turbine bypass valve (TBV) [SB,PCV]. This was being done to decrease the flow through the steam line and thus the differential pressure across the upstream manual isolation valve, MSV-21 [SB,ISV], to allow the valve to close more easily.

Decreasing the steam flow through the "A" OTSG TBVs caused the "A" OTSG pressure to increase rapidly. With the main feedwater pump controller [JA,FCO] in manual, there was no control function to compensate for and overcome the high pressure in the OTSG. Thus flow to the "A" OTSG decreased to zero and at 0908 the EFIC actuated on low OTSG level. Shortly after beginning to close the TBVs and receiving the EFIC actuation, the control room operators received a radio report of a steam leak near the TBVs.

With feedwater flow stopped to the "A" OTSG, the Reactor Coolant System (RCS) [AB] pressure and temperature began to increase. The control room operators slowly reopened the TBV, decreased reactor power and sprayed the pressurizer [AB,PZR] to reduce RCS pressure. Once EFIC actuated and emergency feedwater was being supplied to the OTSG, in addition to the operator actions mentioned previously, pressure and temperature decreased. Operators stabilized the plant at approximately 5% reactor power and 553 degrees (average temperature). At 0913, after verifying that Main Feedwater was again supplying adequate feedwater, the control room operators secured the emergency feedwater pumps [BA,P].

At 0929, the control room operator closed the upstream isolation valve [SB,20] MSV-53 to MSV-21 which effectively terminated all steam flow from the "A" OTSG to the condenser. The steam leak from the packing failure on MSV-21 was then isolated. The control room operators used the Atmospheric Dump Valves (ADVs) [SB,PCV] to control heat removal from the "A" OTSG. Reactor power was lowered to 2% and

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LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST \$0.0 HOURS. 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.

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		0 5 0 0 0 3 0 2 9 2	0 1 5	0 1	

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

average temperature was lowered further to approximately 550 degrees to reduce OTSG pressure below the ADV setpoint and thus allow the ADVs to close.

CAUSE

EFIC actuated, due to low OTSG level, when adequate feedwater flow to the OTSG was not maintained. With the main feedwater pump controller in manual, the operator must manually increase pump demand. The root cause of this event was the failure of the control room operators to anticipate the pressure response in the OTSGs when the second waterbox was removed from service.

The cause of the steam leak was a packing failure on MSV-21. MSV-21 had been previously packed with twelve rings of packing material with an uneven packing density, this allowed uneven compaction during packing adjustments and resulted in a history of packing leaks.

EVENT ANALYSIS

The Emergency Feedwater system actuated as designed on low OTSG level. The emergency feedwater pumps started and the control system responded as designed. Operators quickly assessed the availability of main feedwater and secured emergency feedwater operation.

The steam leak from MSV-21, which occurred during the EFIC actuation, had a minor effect on plant operation and transient response. The steam leak was quickly identified and isolated.

It is not likely that this event would have occurred at high power operation, with the turbine on-line. During high power operation, the main feedwater pump controllers are typically in automatic. Thus a pressure transient in the OTSG is quickly mitigated by the control system. With the turbine on-line, the packing leak from MSV-21 can be isolated with very little impact since the steam flow from the "A" OTSG is via the turbine and not the TBVs.

CORRECTIVE ACTION

Florida Power has evaluated the operator actions associated with this event. The following corrective actions have been identified from that evaluation.

The plant startup procedure will be revised to assure that both main feedwater pumps are capable of controlling main feedwater flow when the Integrated Control System [JA] (ICS) is in Automatic Differential Pressure Control mode.

EXPIRES 4/30/92

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 (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.

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CRYSTAL RIVER UNIT 3 (CR-3)

YEAR

SEQUENTIAL
NUMBERREVISION
NUMBER

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TEXT (If more space is required, Use additional NRC Form 365a (17))

An annunciator alarm will be provided to alarm when the controlling differential pressure signal to the main feedwater pumps is less than or equal to 40 pounds per square inch differential pressure.

The packing on MSV-21 was replaced on July 17, 1992 under the recently established valve packing improvement program. This program is a comprehensive program to reduce external leakage from valves by using the latest technology in valve packing systems. An advanced program is used to determine the best packing design, typically five-ring packing, for each valve while specifying all critical parameters such as ring size, density, gland load and friction.

PREVIOUS SIMILAR EVENTS

A review of reports submitted to the NRC show that there have been 13 EFIC actuations during the past four years. Four of the actuations were initiated by OTSG low level.