



**Entergy
Operations**

Ref. 10CFR50.73(a)(2)(i)

Entergy Operations, Inc.

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D. F. Packer

General Manager
Plant Operations
Waterford 3

W385-91-0336

A4.05

QA

January 20, 1992

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

Subject: Waterford 3 SES
Docket No. 50-382
License No. NPF-38
Reporting of Licensee Event Report

Gentlemen:

Attached is Licensee Event Report Number LER-91-008-02 for Waterford Steam Electric Station Unit 3. This Licensee Event Report supplement is submitted to provide corrected information for plant initial conditions. This Licensee Event Report is submitted pursuant to 10CFR50.73(a)(2)(i).

Very truly yours,

D.F. Packer
General Manager - Plant Operations

DFP/WEF/rk
Attachment

cc: Messrs. R.D. Martin
G.L. Floreisch
J.T. Wheelock - INPO Records Center
E.L. Blake
N.S. Reynolds
NRC Resident Inspectors Office

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LICENSEE EVENT REPORT (LER)

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 (F-30), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20545, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

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Waterford Steam Electric Station Unit 3										0 5 0 0 0 1 3 8 1 2										1 OF 1 6																																																	
TITLE (4) Reactor Coolant System Leakage in Excess of Technical Specifications due to Check Valve Leakage																																																																					
EVENT DATE (5)										LER NUMBER (6)										REPORT DATE (7)										OTHER FACILITIES INVOLVED (8)																																							
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ABSTRACT (Limit to 1400 spaces - i.e., approximately fifteen single spaced typewritten lines) (16)

At 1335 hours on May 17, 1991, with Waterford Steam Electric Station Unit 3 in Hot Shutdown (Mode 4), an Unusual Event was declared due to Reactor Coolant System (RCS) leakage from Pressurizer Spray Check Valve RC-303, in excess of Technical Specification (TS) requirements. TS 3.4.5.2(d) requires RCS leakage to be less than 10 gallon per minute (gpm). The leakage from RC-303 was calculated to be approximately 20 (gpm), requiring plant shutdown to Cold Shutdown (Mode 5) per TS's. During this event, TS 3.0.3 was entered due to closing the Safety Injection Tank (SIT) outlet isolation valves.

The root cause of this event is underdeveloped training on pressure seal valve installation. Corrective actions are to train Mechanical Maintenance personnel on pressure seal valve installation and to revise the pressure seal valve technical manual to include more detailed information on pressure seal gaskets. After RC-303 began to leak, RCS pressure and temperature was reduced, containment was evacuated, and RC-303 was repaired; therefore, the health and safety of the public was not jeopardized.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 600 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (F-830), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20549, 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 388A (1) (12)

REPORTABLE OCCURRENCE

On May 17, 1991, at 1335 hours, with Waterford Steam Electric Station Unit 3 in Hot Shutdown (Mode 4), primary temperature at 292 degrees Fahrenheit and primary pressure at approximately 1700 pounds per square inch absolute (psia), an Unusual Event was declared due to leakage from Pressurizer Spray Check Valve (EIIIS Identifier AB-V) RC-303, in excess of TS requirements. TS 3.4.5.2(d) requires Reactor Coolant System (RCS) (EIIIS Identifier AB) identified leakage to be less than 10 gpm. The leakage was estimated to be 20 gpm, based on letdown/charging mismatch.

INITIAL CONDITIONS

0% Power

Hot Shutdown (Mode 4)

CHRONOLOGY

May 15, 1991	New pressure seal gasket installed on RC-303
May 17, 1991	Plant in Hot Shutdown-Increasing RCS Pressure
May 17, 1991 1240 hours	Enter off-normal procedures for RCS leakage of RC-303. Commence depressurization of RCS
1319 hours	Isolated Safety Injection Tank's (EIIIS Identifier BP-TK) Entered TS 3.0.3
1335 hours	Unusual Event declared due to RCS leak rate of 20 gpm
1439 hours	TS 3.0.3 exited
1607 hours	Plant in Cold Shutdown and Emergency Plan exited
May 18, 1991	Work continues on RC-303
May 19, 1991	RC-303 work complete and no leakage during RCS heat-up

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 (7-530), 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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Waterford Steam
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TEXT (If more space is required, use additional NRC Form 306A's) (17)

EVENT SEQUENCE

On May 15, 1991, prior to the end of Refueling Outage 4, RC-303 valve internals were inspected and a new pressure seal gasket was installed. As pressure was raised in the RCS, RC-303 began to leak from one of the bonnet bolt holes. In an attempt to stop the leak, the bonnet bolts were retorqued. Although retorquing did not stop the leak, Mechanical Maintenance personnel continued to check the torque on RC-303 every 4 hours to ensure that the bonnet bolts remained tight. The leak rate began to increase and plans for a leak repair were initiated. At 1240, Operations entered off-normal procedures for RCS leakage and RCS depressurization began. Initially, venting of the SITs was being performed concurrently with RCS depressurization, but venting of the SIT's was proceeding slower than RCS depressurization and venting was contributing to the increase in containment pressure. The Shift Supervisor discussed the injection of closing the SIT isolation valves with the Control Room Supervisor, Operations Superintendent, and Duty Plant Manager. A decision to isolate the SIT was made to expedite RCS depressurization. At 1319, SIT Isolation Valves (SIT Identifier-ISV) were closed to prevent an injection of SIT borated water into the RCS and to control the increase in containment pressure.

TS 3.4.5.1 states that with the plant in Hot Shutdown (Mode 4), and the pressurizer less than 1750 psia, at least three SIT's must be operable. On May 17, 1991, at 1319 hours, TS 3.0.3 was entered when the SIT's were isolated to prevent the injection of borated water into the RCS as RCS pressure decreased, and to prevent a Safety Injection Actuation Signal/Containment Isolation Actuation Signal (SIAS/CIAS) and Main Steam Isolation Signal (MSIS) due to high containment pressure.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 30.5 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.

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Even with the SIT isolation valves closed, they would be able to perform their safety function and open on a SIAS.

On May 17, 1991, at 1335, an Unusual Event was declared due to a calculated leak rate in excess of 20 gpm from the RCS. Containment was evacuated and RCS depressurization to Cold Shutdown (Mode 5) continued. At 1607, the plant was in Cold Shutdown (Mode 5) and the Emergency Plan was exited.

On May 17, 1991, at 1439 hours, when the RCS was depressurized to less than 100 psia, TS 3.0.3, Limiting Condition for Operation was exited, as the SIT's were no longer required operable by TS's.

On May 17, 1991, with the plant in Mode 5 and at a reduced pressure and temperature, repairs commenced on RC-303. A vendor technical expert assisted in determining the cause of the valve failure. The maintenance division of the Institute of Nuclear Power Operations (INPO) was also contacted for recommendations.

On May 17, 1991, Mechanical Maintenance personnel performed a visual inspection of RC-303. Two of the bonnet bolts were loose and the valve bonnet was misaligned by 0.054 inches. As a result of the misalignment, the pressure seal gasket had a 2.5 inch long scuff mark. Additionally, during visual inspection, there was evidence that the valve bonnet had not cleared all four gasket retaining ring segments. If all four gasket retaining ring segments are not clear of the bonnet when the bonnet is drawn into place, the bonnet will contact the retaining ring segments and become misaligned.

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 20555, 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 of "NRC Form 305A" (17)

Surfaces of the bonnet and gasket retainer ring segments showed impressions of each other and the edge of the gasket retaining ring segments were deformed. This damage resulted from the bonnet not clearing all of the gasket retaining ring segments. Torquing of the cap screws pulled the bonnet against the gasket retaining ring segments and because of partial engagement, bonnet misalignment occurred. As a result, there was not sufficient contact between the bonnet and the gasket and the valve leaked. The valve was reassembled, using studs rather than cap screws, to pull the bonnet into place and preload the pressure seal gasket. The reassembly method allowed depth measurements to be taken from the top of the studs to the bonnet cover, which was a more accurate method than using cap screws and taking depth measurements from the bonnet to the bonnet cover. After the bonnet was pulled up and torqued, the studs were replaced with cap screws. On May 19, 1991, work was completed on RC-303 and there was no leakage during the subsequent plant heat-up.

CAUSAL FACTORS

The valve leakage was caused by the improper assembly of the retaining ring. The root cause was improper assembly of the retaining ring that resulted from underdeveloped training on pressure seal valve installation. A contributing cause might have been that the valve was in a vertical section of pipe. When this type of pressure seal valve is installed in a vertical section of pipe, the possibility exists for the gasket retaining ring segments to fall out of place cause a misalignment of the bonnet. The vendor technical expert said that similar problems had occurred at other plants with valves installed in vertical sections of pipe. The valve inside diameter was only 0.0025 inches out of round, which is not considered to be significant.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 60.0 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.

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

CORRECTIVE MEASURES

A training request has been submitted to train Mechanical Maintenance personnel on pressure seal valve installation. Training on the pressure seal valves was completed on January 16, 1992.

Technical Manual 457001492 was revised to include more detailed information on pressure seal gaskets from Anchor/Darling Valve Company.

SAFETY SIGNIFICANCE

Because the operators took immediate corrective actions by entering off-normal procedures for RCS leakage, reducing RCS pressure and temperature and evacuating containment, the health and safety of the public was not jeopardized during this event.

Similar Events

LER 85-013 reported unidentified leakage of 1.7 gallons per minute from CVC-115. Corrective action was Station Modification 461, which eliminated the relief collection header.

LER 85-018 reported unidentified leakage of 6.1 gallons per minute from RC-301A and 301B. Corrective action was Station Modification 926, which improved the reliability of the packing.

Plant Contacts

J.G. Hoffpauir, Plant Maintenance Superintendent, 504/464-3138