NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Waterford Steam Electric Station Unit 3	0 5 0 0 0 3 8 2	1 OF 0 5

TITLE (4)
Plant Shutdown Required Due to Leakage Past a Reactor Coolant Loop Drain Valve

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)
									N/A	0 5 0 0 0
0 6	1 3	8 8	8 8	— 0 1 5	— 0 0	0 7	1 3	8 8	N/A	0 5 0 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)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10): 0 7 0	20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
	20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
	20.405(a)(1)(iii)	X 50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
	20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	
	20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
	AREA CODE
R.S. Starkey, Cperations Superintendent	5 0 4 — 4 6 4 - 3 1 7 8

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED 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
YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO				

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

At 1125 hours on June 13, 1988, Waterford Steam Electric Station Unit 3 was operating at 70 percent power when the Technical Specification (TS) allowable 1 gpm unidentified reactor coolant system leakage was exceeded by 3 gpm. At 1525 hours an Unusual Event was declared and power reduction was commenced. The plant entered hot standby at 2028 hours. Therefore, the plant completed a shutdown required by TS 3.4.5.2. Operators determined the major source of leakage was leakage past two in-series Reactor Coolant Loop Drain Valves (RCLDVs) into the Reactor Drain Tank. When the valves were firmly shut the leak rate returned within TS limits. At 0555 hours on June 14, 1988, the plant exited from the Unusual Event.

The root cause of this event was that hand closing one of the drain valves using the installed operator was not adequate to fully shut it. Therefore the valve was not fully closed during the last valve lineup. Other RCLDVs did not move significantly when checked shut with a valve wrench. Engineering will evaluate the drain valves and recommend corrective action. Two other minor leaks which were discovered will be permanently repaired during the next refueling outage. The total leakage was always less than the leakage allowed by TSs for identified leakage. Since all the leakage was contained, there was no safety significance to this event.

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

At 1125 on June 13, 1988, Waterford Steam Electric Station Unit 3 was operating at 70 percent power when Technical Specification (TS) allowable unidentified Reactor Coolant System (RCS) (EIIS Identifier AB) leakage was exceeded. Preparations were made for a plant shutdown and at 1525 hours an Unusual Event was declared and power reduction was commenced. The plant entered hot standby at 2028 hours. Therefore, the plant completed a shutdown required by TS 3.4.5.2. Operators determined the major source of leakage was leakage past two in-series reactor coolant loop drain valves (EIIS Identifier AB-DRN). When the valves were seated firmly the leak rate returned within the TS limits. At 0555 hours on June 14, 1988, the plant exited from the Unusual Event.

At 0750 hours on June 13, 1988, Surveillance Procedure, OP-903-024, "Reactor Coolant System Water Inventory Balance" was completed satisfactorily. The leakrate calculated was 0.499 gallons per minute (gpm) identified leakage and 0.531 gpm unidentified leakage. At 0845 hours the Reactor Drain Tank (RDT) (EIIS Identifier AB-TNK) pressure indication pegged high. The RDT collects drainage from the RCS and is monitored to detect leakage from the RCS. When Operators attempted to lower RDT pressure by draining, level indication failed. It was therefore suspected that the RDT was filled with steam due to RCS inleakage. Since the cause of the indication failures could not be determined, and containment sump leakage had also increased slightly, leakage was suspected and OP-903-024 was commenced. At 0953 hours, as part of the surveillance procedure, Charging and Letdown (EIIS Identifier CB) was secured to help determine the location of the leakage. Operations personnel entered the Reactor Containment Building (RCB) (EIIS Identifier NH) to determine the source of the leak. The operators in the RCB discovered the RDT was very hot and apparently filled with steam. The relief from the RDT to the containment sump had lifted and steam was billowing out. The condensation from this steam was causing the increased leakage into the containment sump. Primary Makeup Water was used to cool off the RDT and lower its pressure so that the relief could be reset, thus stopping the release of steam to the containment atmosphere. RDT pressure and level indication returned when it was cooled. At 1125 hours the RCS unidentified leakage was calculated to be 3.975 gpm. In accordance with TS 3.4.5.2, when unidentified leakage exceeds 1 gpm the action requirement is entered.

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After OP-903-024 was completed, Charging and Letdown was restored to operation. The source of the leakage into the RDT could not be determined and preparations for a plant shutdown were made. Since it was necessary to continue flushing the RDT to condense the incoming steam, it was difficult to determine the amount of RCS fluid being collected in the RDT. A correction for RDT level changes was therefore not used and the RDT inleakage was therefore conservatively included in the unidentified leakage total. At 1525 hours an Unusual Event was declared and power reduction was commenced. Containment water leakage had been noted as higher than normal and at 1951 hours the containment water leak alarm came in. This alarm is an indication of a significant increase in leakage into the containment sump. The plant entered mode 2 at 2026 hours and hot standby at 2028 hours. As the RDT was cooled down, operators using a pyrometer determined the leak was coming from the reactor coolant loop drains common header. A list of valves draining into this header was compiled and operators again entered the containment to check these valves closed. Since the drain valves were checked to be already hand tight, operators, using appropriate caution, used a valve wrench to check the drain valves shut. Operations personnel in the control room were monitoring the Volume Control Tank (VCT) (EIIS Identifier CB-TK) level. The VCT provides a reservoir of reactor coolant for the charging pumps for makeup operations. By monitoring the VCT level, operators could roughly estimate the leak rate by monitoring the rate of VCT level decrease as VCT fluid replaced reactor coolant drained through the leak. While monitoring the level of the VCT it was visually determined that shutting the reactor coolant loop drain valves (RCLDVs) RC-206A and RC-207A firmly, stopped the leak. The upstream drain valve RC-206A, of the in-series pair of drain valves RC-206A and RC-207A, had to be tightened by approximately one turn. None of the other RCLDVs moved significantly when checked shut. These two drain valves are connected to Reactor Coolant Pump (EIIS Identifier AB-P) 2A suction cavity and are not accessible during plant operation. RC-206A had likely been one turn open for some time since it could not be closed further with the installed T-handle operator. Some combination of vibration, thermal expansion, or seat damage evidently resulted in a relatively sudden increase in leakage past RC-207A. It was determined that

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these two valves were the primary source of leakage. While operators were searching for the source of leakage, two other minor leaks were confirmed. RC-301A, the pressurizer normal spray control valve (EIIS Identifier AB-FCV) had a small body to bonnet leak and flange 2RC1-176, near pressurizer vent valve RC-318 (EIIS Identifier AB-VTV), had a minor leak. Surveillance Procedure OP-903-024, was completed satisfactorily at 0555 hours on June 14, 1988 with 0.053 gpm identified leakage and 0.4793 gpm unidentified leakage. The plant then exited from the action statement of TS 3.4.5.2 and the Unusual Event was terminated.

The root cause of this event was that hand closing valve RC-206A was not adequate to fully shut it. Therefore the valve was not fully closed during the last valve lineup. With a valve wrench, an operator shut RC-206A one turn and RC-207A a small portion of a turn. Condition Identification 257133 was issued to investigate and determine if the two drain valves require any corrective action. An engineering evaluation will be performed to determine if the drain valves should be always torqued closed and to specify a torque value. The evaluation will also investigate the possibility of capping these drain lines since these valves are rarely used. This evaluation will be completed by the start of the third refueling outage. Valve RC-301A has been temporarily repaired. Valve RC-301A and flange 2RC1-176 will be permanently repaired in the third refueling outage.

The total RCS leakage was always less than half that allowed by TS for identified leakage. All leakage was contained within the RCB or normal drainage systems, and no pressure boundary leakage occurred. There was, therefore, no safety significance to this event.

SIMILAR EVENTS

NONE

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

PLANT CONTACT

R.S. Starkey, Operations Superintendent, 504/464-3178

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

LOUISIANA POWER & LIGHT / WATERFORD 3 SES • P.O. BOX B • KILLONA, LA 70066-0751

MIDDLE SOUTH UTILITIES SYSTEM

July 13, 1988

W3A88-0077
A4.05
QA

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

Attached is Licensee Event Report Number LER-88-015-00 for Waterford Steam Electric Station Unit 3. This Licensee Event Report is submitted pursuant to 10CFR50.73(a)(2)(i).

Very truly yours,

N.S. Carns
Plant Manager - Nuclear

NSC/WMC:rk

Attachment

cc: R.D. Martin, NRC Resident Inspectors Office, INPO Records Center (J.T. Wheelock), E.L. Blake, W.M. Stevenson, D.L. Wigginton

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