

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Waterford Steam Electric Station Unit 3 DOCKET NUMBER (2) 05000382 PAGE (3) 1 OF 019

TITLE (4) Missed Penetrant Test on Two Welds Due to Personnel Error

Table with columns: EVENT DATE (5), LER NUMBER (6), REPORT DATE (7), OTHER FACILITIES INVOLVED (8). Includes sub-columns for month, day, year, sequential number, revision number, and facility names.

Table with columns: OPERATING MODE (9), POWER LEVEL (10), and regulatory codes (20.406, 80.73, 73.71). Includes a section for 'THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 50.101'.

LICENSEE CONTACT FOR THIS LER (12) NAME: C.R. Gaines, Event Analysis & Reporting Department Head TELEPHONE NUMBER: 504 464-3137

Table with columns: CAUSE, SYSTEM, COMPONENT, MANUFACTURER, REPORTABLE TO NRCDS. Header: COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13).

SUPPLEMENTAL REPORT EXPECTED (14) YES (if yes, complete EXPECTED SUBMISSION DATE) NO (checked) EXPECTED SUBMISSION DATE (15)

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

At 2055 hours on August 2, 1988, Waterford Steam Electric Station Unit 3 was operating at 100% power when Nuclear Operations Engineering (NOE) personnel identified the failure to perform dye penetrant testing (PT) on five socket welds as potentially reportable. The welds are located on the Reactor Water Level Indicator System (RWLIS) tubing which connects to a pressurizer condensate pot. Further review of the documentation indicated that 3 of the welds were PT'ed and 2 welds probably were not PT'ed. 1 of the 2 welds in question experiences normal Reactor Coolant System (RCS) pressure, and the other is isolated by a single valve. These welds were visually inspected and observed with the RCS at normal operating pressure. There is no evidence that these welds constitute an abnormal degradation of the RCS and the failure of the one unisolated weld would result in a leak rate within the capacity of the plant to maintain coolant inventory and pressure control. Since the PT, a required retest per the ASME Boiler and Pressure Vessel Code Section III, was not performed, the plant has operated in a condition outside its design bases.

The root cause of this event was a failure to follow procedures. A Justification for Continued Operation has been approved. The procedures will be revised, training will be held, and the welds will be PT'ed during the next cold shutdown.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1) Waterford Steam Electric Station Unit 3	DOCKET NUMBER (2) 0   5   0   0   0   3   8   2   8   8	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		8   8	—   0   2   2	—   0   0	0   2	OF 0   9

TEXT (If more space is required, use additional NRC Form 368A (9/83))

On June 20, 1988, Quality Assurance (QA) personnel completed Quality Surveillance (QS) 88-062. This surveillance was performed to verify the adequate installation of Station Modification (SM) 138. SM 138 was developed to provide local and remote indication of refueling water level. This indication is provided by narrow and wide range transmitters (EIS Identifier AB-LT) which are connected by stainless steel tubing between the Reactor Coolant System (RCS) (EIS Identifier AB) Hot Leg Number One and a pressurizer condensate pot (EIS Identifier AB-PZR-CDU).

QS 88-062 identified a failure to perform non-destructive evaluation (NDE) dye penetrant testing (PT) on five safety class 2 socket welds. The five welds are located on stainless steel tubing which connects to a pressurizer condensate pot. Four of the welds, Field Welds (FWs) 1, 2, 3, and 4, experience RCS normal operating pressure and the fifth weld, FW 7, is isolated from the RCS by a single valve (See Figure 1).

As a result of QS 88-062, Quality Notice (QN) QA 88-082 was initiated by QA personnel on June 27, 1988, and sent to Nuclear Operations Construction (NOC) personnel for corrective action. QA 88-082 stated that the requirements for a PT were not identified nor performed since a Weld Specification Documentation Sheet (WSDS) was not properly generated to identify FWs 1, 2, 3, 4, and 7. The WSDS is a four-page attachment to procedure MM-1-054, "Weld Control and Documentation." The first page of the WSDS specifies various welding parameters including welding and NDE procedures, welding identification numbers, safety classification, joint design, and base metal. The welding identification numbers on page 1 identify the welds documented on the page 2 or 3 WSDS's. The second page provides signature blocks for inspection of each seismic and safety-related weld including NDE by QA personnel. The third page is similar to the second except that it deals with non-safety non-seismic welds. The fourth page is a continuation sheet. Procedure MM-1-056, "Weld Test and Inspection," indicates socket welds on safety class 2 piping shall be examined by either penetrant testing (PT) or magnetic testing (MT) and that the Mechanical Maintenance Assistant Superintendent (MAS) or his Designee/Quality Control shall identify the required NDE in accordance with MM-1-054.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)  Waterford Steam Electric Station Unit 3	DOCKET NUMBER (2)  0   5   0   0   0   3   8   2	LER NUMBER (5)			PAGE (3)		
		YEAR	SEQUENTI- NUMBER	REVISION NUMBER			
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TEXT (if more space is required, use additional NRC Form 365A's) (17)

NOC personnel responded to QA 88-082 on July 15, 1988. The response included generating a nonconformance condition identification (NCI) to identify the welds needing a PT. The NCI was placed on the Forced Outage List for the next plant shutdown to Mode 5. Additionally, on August 11, 1988, a training class was held for NOC engineers and supervisors to reiterate the requirements of MM-1-054 and MM-1-056. The response attributed the root cause of the event as an oversight by NOC personnel in the use of the WSDS's due to these welds being deleted and added again during implementation of SM 138.

NCI 257406 was initiated on July 28, 1988, by NOC personnel to comply with the corrective actions of QA 88-082. At 2055 hours on August 2, 1988, Waterford Steam Electric Station Unit 3 was operating at 100% power when Nuclear Operations Engineering (NOE) personnel reviewing CI 257406 identified this event as potentially reportable.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1) Waterford Steam Electric Station Unit 3	DOCKET NUMBER (2) 0   5   0   0   0   3   8   2	LER NUMBER (6)			PAGE (3)	
		YEAR 88	SEQUENTIAL NUMBER 022	REVISION NUMBER 010	04	OF 09

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

On August 3, 1988, a Justification for Continued Operation (JCO) was prepared and approved by the Plant Operations Review Committee (PORC). The JCO discussed the effect on plant operation of a failure of one of the above described 4 welds unisolated from the RCS. A weld failure would cause a loss of pressure to three channel 'A' safety-related pressure transmitters (EIIS Identifier AB-PT), RC-IPT-0101A, RC-IPT-0102A, and RC-IPT-0103. RC-IPT-0101A supplies a Core Protection Calculator (CPC) (EIIS Identifier JC-CPU) pressure input and a pressurizer high pressure trip instrument (EIIS Identifier JC). RC-IPT-0102A supplies a pressurizer low pressure trip instrument (EIIS Identifier JC). A weld failure could cause a CPC Channel 'A' trip and a Plant Protective System (EIIS Identifier JC) low RCS pressure trip via RC-IPT-0102A and no protective action via RC-IPT-0101A.

RC-IPT-0103 provides the pressure input for the low pressure protection permissive interlocks for Safety Injection (SI) Valves (EIIS Identifier BP-V) 332A, 333A, and 401A. SI 332A and SI 333A are the outlet isolation valves for Safety Injection Tanks (SITs) (EIIS Identifier BP-TK) 1A and 2A. During normal operation, SI 332A and SI 333A are normally open, and their respective supply breakers are open to prevent remote operation. SI 401A, which isolates shutdown cooling suction from the RCS hot leg, is normally closed.

The instrument nozzle at the pressurizer contains a flow restricting orifice (EIIS Identifier AB-OR) which would limit the leak rate to the capacity of one charging pump (EIIS Identifier CB-P). The leak would also be within the capacity of the pressurizer heaters (EIIS Identifier AB-PZR-EHTR) to maintain RCS pressure.

The RWLIS tubing is supported by seismic Category 1 supports, and the welds are located in a no-flow section of the tubing during normal operations. These welds all received a visual inspection and an inservice inspection at normal operating RCS pressure and temperature. Since other welds associated with the tubing passed the required inspections and no inservice problems were noted, there is a high level of confidence that FWs 1, 2, 3, and 4 (the four welds under RCS pressure) will hold and a weld failure is unlikely.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)  Waterford Steam Electric Station Unit 3	DOCKET NUMBER (2)  0   5   0   0   0   3   8   2   8   8   -   0   2   2   -   0   0   0   5   OF   0   9	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		

TEXT (if more space is required, use additional NRC Form 388A's) (17)

The JCO concluded that the forced thermal cycling of the plant from a shutdown was not warranted simply to perform the PTs. NCI 257406 ensures that the PTs will be performed at the first available opportunity. SM 138 was reviewed for other deficiencies by NOE and QA personnel, and no other weld testing discrepancies were found.

As a result of the management review of the event, NOC personnel performed a comprehensive review of SM 138 documentation to clarify some of the corrective actions of QA 88-082 submitted on July 15, 1988. A review of WSDS's revealed FWs 1, 2, 3, and 4 were made and visually accepted on May 2, 1988. Detailed Construction Package Change (DCPC) 15 was then issued to eliminate interference with the tubing run. This caused FWs 1, 2, 3, and 4 to be cut out and discarded. New WSDS's were written and submitted to the Operations QA Inspector for establishment of hold (inspection) points for the new welds. After implementation of DCPC 15, FWs 1, 2, 3, 4, and 7 were made and visually inspected on May 6, 1988. It is not clear by examination of the new WSDS's whether or not the welds were PT'ed on May 6, 1988.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)  Waterford Steam Electric Station Unit 3	DOCKET NUMBER (2)  0 5 0 0 0 3 8 2	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		8 8	0 2 2	0 0	0 6	OF	0 9

TEXT (if more space is required, use additional NRC Form 388A's) (17)

On May 15, 1988, PT's were performed on FWs 1, 2, and 3. The NDE inspector placed his signature on the old page 2 WSDS's for the original FWs 1, 2, and 3 which were cut out and discarded versus the new page 2 WSDS's generated per DCPC 15. Evidently, it was not clear to the NDE Inspector on which page 2 WSDS's in the work package to place his signature. This oversight by the NDE Inspector resulted in FWs 4 and 7 not receiving a PT on May 15, 1988.

A review of the welding package reveals that weld identification numbers were not specified on the page 1 WSDS, but the phrase "see attached WSDS sheets" was written in the block instead. Thus, there was not an adequate means of positively identifying which page 2 WSDS's should have been attached to page 1 of the WSDS. Additionally, the method of NDE testing was not specified by an NDE Inspector as required by the WSDS forms on some of the page 2 WSDS's. Thus, the root cause of the event was a failure to follow procedures by NOC and QA personnel. A contributing cause was inadequate procedures since the signature block on the WSDS form does not clearly identify which NDE tests were performed. MM-1-054 and MM-1-056 did not specifically address documentation of repair or replacement welds made as a result of the design change process.

Revision 7 to MM-1-054, approved on August 8, 1988, added the term "replacement weld" to the procedure. This provides a means to distinguish by weld identification number the welds which have been completely replaced versus repaired. MM-1-054 and MM-1-056 are also being revised to adequately address the design change program and identify paperwork for welds removed during a design change. The WSDS form will be upgraded to adequately identify which NDE tests were performed and to ensure these tests are completed for the final weld. Additional training of NOE/NOC personnel will be conducted to stress the significance of this event. These actions are expected to be complete by October 31, 1988.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1) Waterford Steam Electric Station Unit 3	DOCKET NUMBER (2) 0   5   0   0   0   3   8   2	LER NUMBER (6)			PAGE (3)	
		YEAR 88	SEQUENTIAL NUMBER - 0   2   2	REVISION NUMBER - 0   0	d 7	OF 0   9

TEXT (if more space is required, use additional NRC Form 388A's) (17)

A review by NOC personnel of PT reports for welds made during the second refueling outage indicated that 66 PTs were performed on seven design modifications. All the PTs were acceptable and were requested as per the applicable procedure and requirements as set forth by the respective modification work packages. Thus, the failure to perform PTs on FWs 4 and 7 of SM 138 was classified as an isolated incident.

Penetrant testing these welds has been interpreted by plant staff as meeting the criteria of a "controlling parameter as a reference bound for design" in the definition for design bases of 10CFR50. Since FWs 4 and 7 form part of the RCS pressure boundary and probably did not receive PTs as required by the ASME Boiler and Pressure Vessel Code Section III Subsection NC-5261, the plant is considered to have operated outside its design bases. This report is therefore submitted in accordance with 10CFR50.73.a.2(11)(B).

There was no evidence of any defects in FWs 4 and 7 during their visual and inservice inspections, FWs 1, 2 and 3 satisfactorily passed the required NDE tests, and the JCO determined FWs 4 and 7 could be considered operable until the next opportunity to PT them. A break in the RWLIS tubing is bounded by the accident analysis of the Final Safety Analysis Report (FSAR) Section 15.6.3.1. In the unlikely event of a failure of FW 4, the leak rate would be within the design capacity of a single charging pump (EIIS Identifier CB-P) to maintain coolant inventory and the pressurizer heaters to maintain pressure control. This would not prevent a controlled shutdown, and the leak would be contained inside the Reactor Containment Building (RCB) (EIIS Identifier NH). Thus, this event does not constitute a significant safety hazard or a condition outside the design basis accident analysis for the plant and therefore does not threaten the health or safety of the general public.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)  Waterford Steam Electric Station Unit 3	DOCKET NUMBER (2)  0   5   0   0   0   3   3   2	LER NUMBER (3)			PAGE (3)		
		YEAR 8   8	SEQUENTIAL NUMBER -   0   2   2	REVISION NUMBER -   0   0   0			

TEXT IF more space is required, use additional NRC Form 388A's (17)

SIMILAR EVENTS

NONE

PLANT CONTACT

C.R. Gaines, Event Analysis & Reporting Department Head, 504/464-3137.



LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)

Waterford Steam  
Electric Station Unit 3

DOCKET NUMBER (2)

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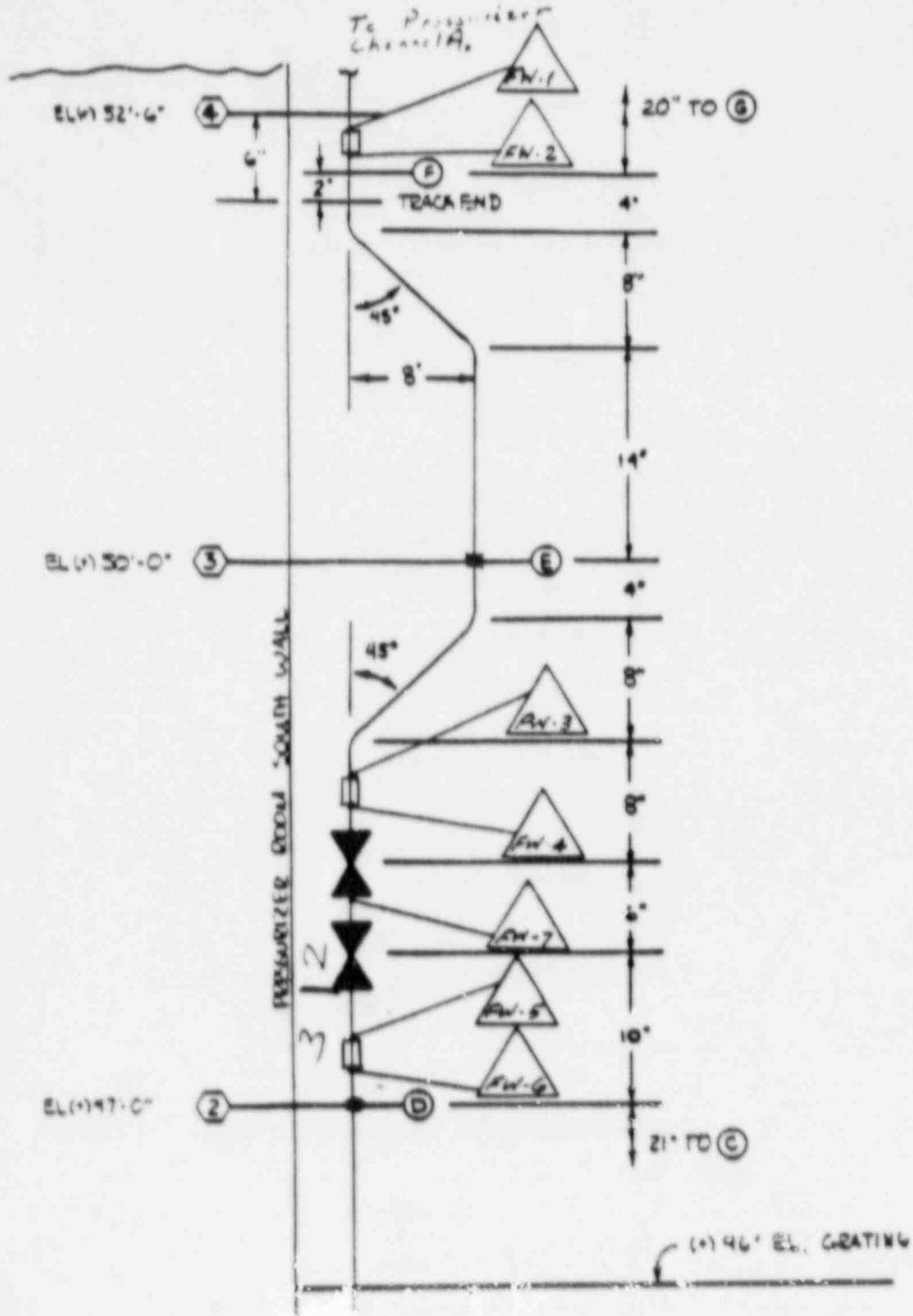
LER NUMBER (6)

YEAR	SEQUENTIAL NUMBER	REVISION NUMBER
88	022	00

PAGE (3)

0 | 9 | OF | 0 | 9

TEXT: If more space is required, use additional NRC Form 365A's (17)





**LOUISIANA**  
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Ref: 10CFR50.73(a)(2)(ii)

September 1, 1988

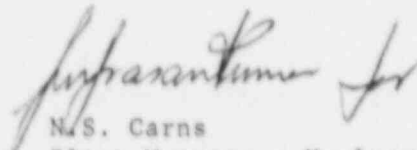
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U.S. Nuclear Regulatory Commission  
ATTENTION: Document Control Desk  
Washington, D.C. 20555

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

Attached is Licensee Event Report Number LER-88-022 for Waterford Steam Electric Station Unit 3. This Licensee Event Report is submitted pursuant to 10CFR50.73(a)(2)(ii).

Very truly yours,

  
N.S. Carns  
Plant Manager - Nuclear

NSC/WEM: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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