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Waterford 3

W3F1-2011-0071

September 26, 2011

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

Subject: Licensee Event Report 2011-004-00
Waterford Steam Electric Station, Unit 3 (Waterford 3)
Docket No. 50-382
License No. NPF-38

Dear Sir or Madam:

Entergy is hereby submitting Licensee Event Report (LER) 2011-004-00 for Waterford Steam Electric Station Unit 3. This report provides details associated with the vendor notification of non-conforming part which rendered both trains of the Qualified Safety Parameter Display System (QSPDS) inoperable.

Based on this vendor notification and subsequent plant evaluation, it was determined that this condition is reportable under 10CFR50.73(a)(2)(i)(B) requirements.

This report contains no new commitments. Please contact William J. Steelman at (504) 739-6685 if you have questions regarding this information.

Sincerely,

A handwritten signature in cursive script that reads "William Steelman".

WJS/WH

Attachment: Licensee Event Report 2011-004-00

JE22
NRK

cc: Mr. Elmo E. Collins, Jr.
Regional Administrator
U. S. Nuclear Regulatory Commission
Region IV
612 E. Lamar Blvd., Suite 400
Arlington, TX 76011-4125

NRC Senior Resident Inspector
Waterford Steam Electric Station Unit 3
P.O. Box 822
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U. S. Nuclear Regulatory Commission
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Attachment to

W3F1-2011-0071

Licensee Event Report 2011-004-00

(This attachment contains 4 pages)

NRC FORM 366 U.S. NUCLEAR REGULATORY COMMISSION (10-2010)		APPROVED BY OMB NO. 3150-0104 EXPIRES 10/31/2013 Estimated burden per response to comply with this mandatory information collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA/Privacy Section (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects.resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.	
LICENSEE EVENT REPORT (LER) (See reverse for required number of digits/characters for each block)			
1. FACILITY NAME Waterford 3 Steam Electric Station		2. DOCKET NUMBER 05000 382	3. PAGE 1 OF 4
4. TITLE Vendor Notification of Non-Conforming Part Renders Both Trains of QSPDS Inoperable			
5. EVENT DATE		6. LER NUMBER	7. REPORT DATE
MONTH	DAY	YEAR	YEAR
07	27	2011	2011 - 004 - 00
		SEQUENTIAL NUMBER 004	REV NO 00
		MONTH 09	DAY 26
		YEAR 2011	
		8. OTHER FACILITIES INVOLVED	
		FACILITY NAME DOCKET NUMBER 05000	
		FACILITY NAME DOCKET NUMBER 05000	
9. OPERATING MODE 1		11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)	
10. POWER LEVEL 100		<input type="checkbox"/> 20.2201(b) <input type="checkbox"/> 20.2203(a)(3)(i) <input type="checkbox"/> 50.73(a)(2)(i)(C) <input type="checkbox"/> 50.73(a)(2)(vii)	
		<input type="checkbox"/> 20.2201(d) <input type="checkbox"/> 20.2203(a)(3)(ii) <input type="checkbox"/> 50.73(a)(2)(ii)(A) <input type="checkbox"/> 50.73(a)(2)(viii)(A)	
		<input type="checkbox"/> 20.2203(a)(1) <input type="checkbox"/> 20.2203(a)(4) <input type="checkbox"/> 50.73(a)(2)(ii)(B) <input type="checkbox"/> 50.73(a)(2)(viii)(B)	
		<input type="checkbox"/> 20.2203(a)(2)(i) <input type="checkbox"/> 50.36(c)(1)(i)(A) <input type="checkbox"/> 50.73(a)(2)(iii) <input type="checkbox"/> 50.73(a)(2)(ix)(A)	
		<input type="checkbox"/> 20.2203(a)(2)(ii) <input type="checkbox"/> 50.36(c)(1)(ii)(A) <input type="checkbox"/> 50.73(a)(2)(iv)(A) <input type="checkbox"/> 50.73(a)(2)(x)	
		<input type="checkbox"/> 20.2203(a)(2)(iii) <input type="checkbox"/> 50.36(c)(2) <input type="checkbox"/> 50.73(a)(2)(v)(A) <input type="checkbox"/> 73.71(a)(4)	
		<input type="checkbox"/> 20.2203(a)(2)(iv) <input type="checkbox"/> 50.46(a)(3)(ii) <input type="checkbox"/> 50.73(a)(2)(v)(B) <input type="checkbox"/> 73.71(a)(5)	
		<input type="checkbox"/> 20.2203(a)(2)(v) <input type="checkbox"/> 50.73(a)(2)(i)(A) <input type="checkbox"/> 50.73(a)(2)(v)(C) <input type="checkbox"/> OTHER	
		<input type="checkbox"/> 20.2203(a)(2)(vi) <input checked="" type="checkbox"/> 50.73(a)(2)(i)(B) <input type="checkbox"/> 50.73(a)(2)(v)(D) <input type="checkbox"/> Specify in Abstract below or in NRC Form 366A	
		12. LICENSEE CONTACT FOR THIS LER	
FACILITY NAME Waterford 3 Steam Electric Station William Steelman		TELEPHONE NUMBER (Include Area Code) (504) 739-6685	
13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT			
CAUSE	SYSTEM	COMPONENT	MANU-FACTURER
14. SUPPLEMENTAL REPORT EXPECTED <input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO		15. EXPECTED SUBMISSION DATE	
		MONTH	DAY
ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)			
<p>On July 27, 2011, the Waterford 3 Steam Electric Station (W3) received a Westinghouse Nuclear Safety Advisory Letter which informed W3 that a power supply harness supplied for the Qualified Safety Parameter Display System (QSPDS) may be undersized and not be able to handle the current to which it is exposed under all environmental conditions. W3 determined that the suspect harness had been installed in both QSPDS channels. No actual failure occurred.</p> <p>Technical Specification (TS) 3.3.3.6 requires the accident monitoring instrumentation channels (including QSPDS) to be OPERABLE in MODES 1, 2, and 3. The identified condition rendered both channels of QSPDS inoperable. TS 3.3.3.6 Action 30 specifies an allowed outage time (AOT) of seven days. The same vendor letter recommended installation of a jumper to restore operability. This was performed by site maintenance personnel to both QSPDS channels on July 29, 2011.</p> <p>This condition is reportable under 10CFR50.73(a)(2)(i)(B), operation or condition prohibited by Technical Specifications, because the suspect power supply harness was installed in both channels for greater than the TS AOT.</p>			

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NARRATIVE

REPORTABLE OCCURRENCE

An undersized power supply harness for the Qualified Safety Parameter Display System (QSPDS)[IP] was installed as a replacement on both safety related trains from August 2009 until July 2011. The Technical Specification (TS) allowed outage time (AOT) was seven days. This created a condition of past inoperability for both safety related trains.

This condition is reportable under 10CFR50.73(a)(2)(i)(B), operation or condition prohibited by Technical Specifications, within 60 days as a Licensee Event Report (LER).

INITIAL CONDITIONS

QSPDS is a safety related, class 1E microprocessor based display system utilized at W3 that meets the regulatory requirements for accident monitoring and assessment. Instrumentation systems such as the Saturation Margin Monitor, the Core Exit Thermocouples (CETs), and the Reactor Vessel Level Monitoring System (RVLMS) provide the necessary plant parameter inputs to QSPDS. QSPDS has two redundant channels of instrumentation and can perform its function coincident with any postulated single failure.

EVENT DESCRIPTION

On July 27, 2011, W3 received Westinghouse Nuclear Safety Advisory Letter NSAL-11-3 (dated July 15, 2011) which informed Waterford that a power supply harness for the QSPDS may be undersized in current carrying capacity. The concern identified is that the new cable harness, part number 6D30323G01, may not be able to handle the current to which it is exposed by these systems under all environmental conditions.

As stated in the Westinghouse letter, the vulnerability of QSPDS to this condition is subject to the actual loading on the QSPDS chassis and ambient temperature. At an ambient temperature of 137 degrees F, the highest load that the harness could support without exceeding the manufacturer's rating of the Molex connector would be 5.5 A. At an ambient temperature of 20 degrees C, the current harness could support 11 A without exceeding the manufacturer's temperature rating. Westinghouse has also run engineering tests with the harness loaded to 18 A and 30 A. The testing revealed that, although the connector did see significant temperatures, it did not melt or start a fire.

There are two power supplies feeding each channel of QSPDS for a total of four power supplies. The harness provides power from the power supply to the components in the QSPDS chassis. The suspect harness has been installed in three of the four power supplies. The power supply replacement for Channel 2 was in February 2007 and power supply replacement for Channel 1 was in August 2009.

This condition was entered into the corrective action program as Condition Report CR-WF3-2011-5327. An immediate operability assessment was performed. As a result, both channels of QSPDS were declared inoperable. Since CET indication is dependent on QSPDS operability, the CETs were also declared inoperable.

Technical Specification (TS) 3.3.3.6 requires the accident monitoring instrumentation channels (including QSPDS) to be OPERABLE in MODES 1, 2, and 3.

No actual failure occurred.

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It was also apparent that the same condition rendered both channels of QSPDS inoperable since August 2009 when the suspect power supply harness was installed in the second of the two channels.

CAUSAL FACTORS

W3 was notified by letter of a non-conforming replacement part procured from Westinghouse. W3 evaluation of the condition resulted in declaring both channels of QSPDS inoperable. W3 expeditiously performed the recommended repair to restore full operability to QSPDS.

CORRECTIVE ACTIONS

The same Westinghouse letter recommended instillation of a jumper to restore full current carrying capacity. This was performed by site maintenance personnel to both QSPDS channels on July 29, 2011 (CR-WF3-2011-5327 CA-5). This restored operability to both QSPDS channels.

SAFETY SIGNIFICANCE

The safety significance evaluates the limiting design basis accidents with respect to the potentially lost QSPDS indications. The only instrumentation not already supplied by other safety related indications is the QSPDS CETs, RVLMS, and saturation margin.

In the event that the QSPDS was lost, the failure described would not impact the reactor protection system (RPS). Operators could obtain hot leg temperature and pressurizer pressure from the RPS and/or plant process computer, depending on plant configuration, and manually calculate subcooled margin. By reviewing available hot leg temperature, the operators would have a back-up means for approximating CET data and reactor vessel level, based on hot leg temperature and pump flow rates. Hot leg temperature would also provide a coarse means of measuring CET temperatures. In addition, CET voltage information is available in the control room envelope cabinets such that in the longer term CET signal voltages could be correlated to CET temperatures.

The most limiting design basis accident that results in decrease in reactor vessel level and increase in CET temperature is the Loss of Coolant Accident (LOCA). Therefore, post-LOCA reactor vessel level and CET temperatures obtained from QSPDS are used in the LOCA Emergency Operating Procedure (EOP). Waterford 3 design basis post-LOCA Emergency Core Cooling System (ECCS) performance analyses is provided in Updated Final Safety Analysis Report (UFSAR) Section 6.3. The regulatory acceptance criteria for post-LOCA Emergency Core Cooling System (ECCS) are documented in 10CFR50.46. The ECCS performance analyses includes large break LOCA (LBLOCA), small break LOCA (SBLOCA) and long term cooling (LTC) analyses.

Waterford 3 analyses have demonstrated that the criteria of 10CFR50.46 are met for both large and small break LOCA. The post-LOCA short term cooling requirement, long term cooling requirement, required manual actions and post-LOCA instrumentation is listed in UFSAR 6.3 and does not specifically reference QSPDS RVLMS, CET, or saturation margin indications. The EOPS do use QSPDS indications to provide operations with additional decision making indications. The alternate QSPDS indications using hot leg temperature, pressurizer pressure, and pump flow rates could be used to provide the EOP information. Therefore, failure of QSPDS would not pose a significant impact on the post-LOCA short term and long term cooldown and would have low safety significance.

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SIMILAR EVENTS

None.

ADDITIONAL INFORMATION

Energy industry identification system (EIIIS) codes are identified in the text within brackets [].