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Waterford 3

W3F1-2000-0034
A4.05
PR

April 3, 2000

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

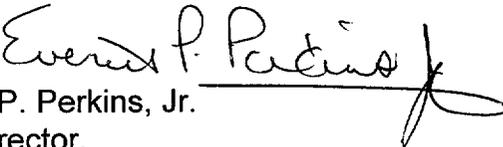
Subject: Waterford 3 SES
Docket No. 50-382
License No. NPF-38
Reporting of Licensee Event Report

Gentlemen:

Attached is Licensee Event Report (LER) 00-002-00 for Waterford Steam Electric Station Unit 3. This report provides details of a condition involving Technical Specification violations associated with changing plant operating modes with Steam Generator #1 inoperable (three snubbers inoperable) when two Steam Generators were required by Technical Specifications. The condition also involved violation of an administrative Technical Specification regarding inadequacies in prescribing vendor requirements for maintaining the snubbers in plant procedures. This condition is being reported pursuant to 10CFR50.73(a)(2)(i)(B).

This letter contains one new commitment, which is documented on the attached Commitment Identification Form. If you have any questions, please contact O.P. Pipkins at (504) 739-6707.

Very truly yours,


E.P. Perkins, Jr.
Director,
Nuclear Safety Assurance

EPP/OPP/rtk

cc: E.W. Merschoff, N. Kalyanam, (NRC-NRR), A.L. Garibaldi,
P. Lewis - INPO Records Center, J. Smith, N.S. Reynolds, NRC
Resident Inspectors Office, Louisiana DEQ/Surveillance Division

JE22

Estimated burden per response to comply with this mandatory information collection request: 50.0 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Forward comments regarding burden estimate to the Records Management Branch (T-6 F33), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, and to the Paperwork Reduction Project (3150-0104), Office of Management and Budget, Washington, DC 20503. If 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)

FACILITY NAME (1)
Waterford Steam Electric Station, Unit 3

DOCKET NUMBER (2)
05000-382

PAGE (3)
01 of 04

TITLE (4)
Technical Specification Violations Due To Plant Mode Changes With Inoperable Steam Generator Snubbers

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 NAME	DOCKET NUMBER
03	03	00	00	002	00	04	03	00	N/A	N/A
									N/A	N/A

OPERATING MODE (9)	POWER LEVEL (10)	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more) (11)								
1	100	20.2201(b)	20.2203(a)(2)(v)	X	50.73(a)(2)(i)	50.73(a)(2)(viii)				
		20.2203(a)(2)(i)	20.2203(a)(3)(i)		50.73(a)(2)(ii)	50.73(a)(2)(x)				
		20.405(a)(1)(ii)	20.2203(a)(3)(ii)		50.73(a)(2)(iii)	73.71				
		20.2203(a)(2)(ii)	20.2203(a)(4)		50.73(a)(2)(iv)	OTHER				
		20.2203(a)(2)(iii)	50.36(c)(1)		50.73(a)(2)(v)	Specify in Abstract below or in NRC Form 366A				
		20.2203(a)(2)(iv)	50.36(c)(2)		50.73(a)(2)(vii)					

LICENSEE CONTACT FOR THIS LER (12)
 NAME: **O.P. Pipkins, Senior Licensing Engineer**
 TELEPHONE NUMBER (Include Area Code): **(504) 739-6707**

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)		
YES	X	NO		MONTH	DAY	YEAR
(If yes, complete EXPECTED SUBMISSION DATE.)						

ABSTRACT (Limit to 1400 spaces, i. e., approximately 15 single-spaced typewritten lines) (16)

On March 3, 2000, with the plant operating in Mode 1, at approximately 100% reactor power, it was determined that the plant had changed modes, during two plant outages between Refuel 8 and Refuel 9 and during cooldown for entry into Refuel 9, with an inoperable Steam Generator (#1). Both Steam Generators were required by Technical Specifications. The Steam Generator became inoperable when three of four snubbers on the Steam Generator became inoperable during plant cooldown / heatup mode changes in Modes 3 and 4. Leaks in snubber reservoir hoses or hose connections had resulted in loss of fluid level to just above the control valve on each of the three snubbers, allowing air to enter the snubber during cooldown / heatup. An operability review (performed on March 3, 2000) indicated that, based on the level of fluid remaining, the snubbers would not have functioned properly in Modes 3 and 4. The condition was not reported during Refuel 9 due to a human performance error associated with the original operability calculation. The condition no longer existed when the hoses were replaced and fluid levels were restored during Refuel 9. The condition is hereby being reported for past operability considerations for violation of Technical Specifications. There were no actual seismic events associated with the condition. The affected Steam Generator was determined to have been operable during Modes 1 and 2 plant operations. This condition is not considered a Safety System Functional Failure (SSFF). The condition did not compromise the health and safety of the general public.

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FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
Waterford Steam Electric Station, Unit 3	05000-382	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	02 OF 04
		00	002	00	

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

REPORTABLE OCCURRENCE

On March 3, 2000, during an Engineering review of an operability calculation that had been performed during Refuel 9, it was determined that the plant had apparently changed modes with one Steam Generator (#1) inoperable, when both Steam Generators were required to be operable by Technical Specifications. The violations occurred during heatups and cooldowns associated with two plant outages between Refuel 8 and Refuel 9 and the cooldown for entry into Refuel 9. Therefore, it is being reported based on past reportability due to:

- Violation of Tech Spec 3.0.4 for changing modes with inoperable snubbers on SG#1.
- Violation of Tech Spec 6.8.1a for not prescribing a five-year frequency in maintenance procedures or tasks for replacement of snubber reservoir hoses and seals as prescribed in the snubber vendor manual.
- Violation of Tech Spec 3.7.8 for not having all hydraulic snubbers operable in Modes 3 and 4 during two outages between Refuel outages 8 and 9 and cooldown for entry into Refuel 9.
- Violation of Tech Spec 3.4.4 for increasing T_{ave} above 200 degrees F prior to restoring operability to Steam Generator #1.

The condition is being reported within 30 days of discovery, in accordance with the requirements of 10CFR50.73(a)(2)(i)(B), as a condition in violation of Technical Specifications.

INITIAL CONDITIONS

At the time of discovery of the condition, on March 3, 2000, the plant was operating in Mode 1 at approximately 100% reactor power. No major systems, structures or components were out of service specific to this condition.

EVENT DESCRIPTION

On March 3, 2000, it was discovered, during a review of a Steam Generator #1 snubber [SNB] operability evaluation calculation performed during Refuel 9, that the plant had apparently violated Technical Specifications. It was determined that, during two heatups and cooldowns that had occurred between Refuel 8 and Refuel 9 and during cooldown for entry into Refuel 9, the plant had changed modes (in modes 3 and 4) with an inoperable Steam Generator (#1). Refuel 8 occurred in the second quarter of 1997. Refuel 9 occurred in the first quarter of 1999. The Steam Generator was inoperable due to three of four snubbers on that vessel being inoperable. Leaks in the snubber reservoir hoses or

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hose connections had resulted in fluid in the respective snubber reservoirs draining down. For operability, fluid level has to remain above the snubber control valves. The operability calculation performed (during Refuel 9) concluded that the snubbers were operable since fluid level could be demonstrated to cover the snubber control valve on each of the three affected snubbers. Therefore, the condition was not reported during Refuel 9 since the affected Steam Generator was believed to be operable. However, a review of the calculation on March 3, 2000 indicated the calculation was inadequate in that it effectively only evaluated operating conditions in Modes 1 and 2. The calculation did not adequately address plant heatups and cooldowns in Modes 3 and 4. There were two plant heatups and cooldowns between Refuel 8 and Refuel 9 and during cooldown for entry into Refuel 9 that were not adequately covered in the operability calculation for Steam Generator #1. During the review of the calculation, it was determined that air was probably introduced into the affected snubbers rendering them inoperable. Therefore, the mode changes made in Modes 3 and Mode 4 during the applicable plant heatups and cooldowns constituted violations of Technical Specifications 3.0.4, 3.7.8, and 3.4.4. The review indicated that, during return to power operation from the two outages, the air in the snubber was expelled and fluid again covered the control valve. The review indicated that the Steam Generator had been operable during Modes 1 and 2 preceding and subsequent to the two outages between Refuel 8 and Refuel 9. It was further determined that a vendor manual recommendation for replacing the snubber reservoir hoses and rubber seals on a five year interval had not been reflected in plant procedure or task requirements. This constituted a violation of administrative Technical Specification 6.8.1a. Maintenance tasks will be generated to change the hoses and seals as prescribed by the vendor.

CAUSAL FACTORS

The failure to report the condition was due to a human performance error made in performance of the operability evaluation calculation performed during Refuel 9. The calculation failed to account for parameters during plant heatups and cooldowns. The calculation only adequately evaluated Mode 1 and Mode 2 parameters; therefore, the snubbers were not determined to be inoperable for modes 3 and 4. The root cause for Steam Generator #1 being inoperable was the snubber reservoir hoses / connections leaking.

CORRECTIVE ACTIONS

The Steam Generator snubber hoses were changed out during Refuel 9 (first quarter 1999). Maintenance tasks will be generated (via CR-1999-0212) to replace snubber hoses and seals in accordance with the snubber vendor manual. The operability calculation (EC-C99-004) has been revised (via CR-2000-0191) to adequately account for plant parameters during heatups and cooldowns as well as for Modes 1 and 2.

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SAFETY SIGNIFICANCE

The Steam Generator snubbers are required for Large Break Loss of Coolant Accident (LBLOCA) loads and Safe Shutdown Earthquake (SSE) seismic loads. The probability of a LBLOCA or seismic event occurring during the approximate total of 16 days that the snubbers were inoperable between Refuels 8 and 9, was 2.5E-6 per year. The core damage frequency is significantly less than this value due to other systems that would need to fail prior to core damage. Since no actual seismic event or LBLOCA occurred, there was no safety significance to this event.

The hydraulic snubbers on the Steam Generator are designed so that the blind side and the rod side volumes are filled with fluid to provide rigid support during an unlikely seismic or LOCA event, while allowing the vessel to expand and contract during plant heat-ups and cool-downs. The operability evaluation supports that Steam Generator #1 snubbers remained operable during Modes 1 and 2. However, during two heatup and cooldown cycles between Refuels 8 and 9 and during cooldown for entry into Refuel 9, the snubbers were believed to have become inoperable due to fluid demand exceeding available fluid inventory in the system. The snubbers experienced a "dead band" during Modes 3, 4 and transition due to lack of fluid inventory on the blind side and/or rod side of the snubbers. The consequence of dead band in the Steam Generator #1 snubbers during modes 3, 4 and transition is undetermined and was not quantified for the operability evaluation. Based on the low probability of the event, the relatively short exposure (approximately 16 days), and the fact that the condition no longer exists, no further evaluation is deemed necessary. No actual consequences were experienced since no seismic event or LBLOCA occurred. The condition ceased to exist when the snubber reservoir hoses were replaced and fluid level was restored during Refuel 9 (first quarter 1999).

This condition is not considered a Safety System Functional Failure (SSFF). The unaffected Steam Generator would have remained intact and available. Neither Steam Generator would have been required for safe shut down if a large break LOCA had resulted. In addition, based on the level of fluid found remaining in the three inoperable snubbers, it is believed that the snubbers would have provided support after a relatively small movement of the snubber piston. While it remains undetermined as to the exact impact, it is believed that the damage incurred would not have exceeded plant capability to maintain safe shutdown.

SIMILAR EVENTS

No similar events have been reported.

ADDITIONAL INFORMATION

Energy Industry Identification System (EIIS) codes are identified in the text within brackets [].

COMMITMENT IDENTIFICATION/VOLUNTARY ENHANCEMENT FORM

Attachment 2 to W3F1-2000-0034
 Licensee Event Report (LER-00-002-00)
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COMMITMENT(S)	ONE-TIME ACTION*	CONTINUING COMPLIANCE*	SCHEDULED COMPLETION DATE (IF REQUIRED)	ASSOCIATED CR OR ER
Maintenance tasks will be generated (via CR-1999-0212) to replace snubber hoses and seals in accordance with the snubber vendor manual.		X		CR-WF3-1999-0212

*Check one only

VOLUNTARY ENHANCEMENT(S)	ASSOCIATED CR OR ER