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Waterford 3

10CFR50.73(a)(2)(v)(A)

W3F1-2006-0039

August 11, 2006

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

Subject: Licensee Event Report 06-001-00
Waterford 3 SES
Docket No. 50-382
License No. NPF-38

Dear Sir or Madam:

Attached is Licensee Event Report (LER) 06-001-00 for Waterford Steam Electric Station Unit 3. This report provides details of the discovery of a condition involving the potential for damage to both trains of equipment required for safe shutdown during a fire in Fire Area Reactor Auxiliary Building (RAB) 7. This condition is being reported pursuant to 10CFR50.73(a)(2)(v)(A), as an event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to shut down the reactor and maintain it in a safe shutdown condition.

There are no commitments contained in this submittal. If you have any questions please contact Oscar Pipkins at (504) 739-6707.

Sincerely,

RJM/OPP/cbh

Attachment: LER 06-001-00

IE22

cc: Mr. Bruce S. Mallett
Regional Administrator
U. S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive, Suite 400
Arlington, TX 76011-8064

NRC Senior Resident Inspector
Waterford Steam Electric Station Unit 3
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U. S. Nuclear Regulatory Commission
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R.K. West, lerevents@inpo.org - INPO Records Center,

NRC FORM 366 (6-2004) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 06/30/2007

Estimated burden per response to comply with this mandatory collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@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	2. DOCKET NUMBER	3. PAGE
Waterford Steam Electric Station, Unit 3	05000 382	1 OF 5

4. TITLE

Potential For Loss of Both Trains of Safe Shutdown Equipment From Damage Due To Fire

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
									N/A	05000 N/A
06	12	2006	2006	- 001 -	00	08	11	2006	FACILITY NAME: N/A	DOCKET NUMBER: 05000 N/A

9. OPERATING MODE: 1

10. POWER LEVEL: 100

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: *(Check all that apply)*

- ☐ 20.2201(b)
- ☐ 20.2201(d)
- ☐ 20.2203(a)(1)
- ☐ 20.2203(a)(2)(i)
- ☐ 20.2203(a)(2)(ii)
- ☐ 20.2203(a)(2)(iii)
- ☐ 20.2203(a)(2)(iv)
- ☐ 20.2203(a)(2)(v)
- ☐ 20.2203(a)(2)(vi)
- ☐ 20.2203(a)(3)(i)
- ☐ 20.2203(a)(3)(ii)
- ☐ 20.2203(a)(4)
- ☐ 50.36(c)(1)(i)(A)
- ☐ 50.36(c)(1)(ii)(A)
- ☐ 50.36(c)(2)
- ☐ 50.46(a)(3)(ii)
- ☐ 50.73(a)(2)(i)(A)
- ☐ 50.73(a)(2)(i)(B)
- ☐ 50.73(a)(2)(i)(C)
- ☐ 50.73(a)(2)(ii)(A)
- ☐ 50.73(a)(2)(ii)(B)
- ☐ 50.73(a)(2)(iii)
- ☐ 50.73(a)(2)(iv)(A)
- ☒ 50.73(a)(2)(v)(A)
- ☐ 50.73(a)(2)(v)(B)
- ☐ 50.73(a)(2)(v)(C)
- ☐ 50.73(a)(2)(v)(D)
- ☐ 50.73(a)(2)(vii)
- ☐ 50.73(a)(2)(viii)(A)
- ☐ 50.73(a)(2)(viii)(B)
- ☐ 50.73(a)(2)(ix)(A)
- ☐ 50.73(a)(2)(x)
- ☐ 73.71(a)(4)
- ☐ 73.71(a)(5)
- ☐ OTHER

Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME	TELEPHONE NUMBER (Include Area Code)
Oscar P. Pipkins, Senior Licensing Engineer	(504) 739-6707

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☒ NO

15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR

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

On June 12, 2006, at approximately 13:00, with the plant operating in Mode 1 at 100% Reactor Power, it was determined that a fire in Fire Area Reactor Auxiliary Building (RAB) 7 could potentially challenge the ability of the plant to achieve safe shutdown due to apparent non-feasible manual actions and potential equipment damage from a hot gas layer in the area. It has subsequently been determined that operators had other available feasible manual actions prescribed in an Emergency Operating Procedure that would have facilitated achievement of safe shutdown. However, preliminary engineering evaluations indicate that damage to redundant safe shutdown trains could have occurred from a hot gas layer in the fire area during a postulated fire. Fire Area RAB 7 has part height walls that separate the fire area into fire zones. The part height wall arrangement is part of the Waterford 3 license basis via an approved deviation. Adequate compensatory measures are in place to support current operability. The condition did not involve an actual fire event. This event did not compromise the health and safety of the general public. This event is not considered a Safety System Functional Failure since there was no actual loss of safety function.

1. FACILITY NAME	2. DOCKET NUMBER (2)	6. LER NUMBER			3. PAGE
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Waterford Steam Electric Station, Unit 3	05000 382	2006	-- 001 --	00	2 OF 5

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

REPORTABLE OCCURRENCE

The condition, as described below, was reported to the NRC Operations Center on June 12, 2006 within 8 hours of discovery, as a condition that could have prevented fulfillment of the safety function of structures or systems that are needed to shutdown the reactor and maintain it in a safe shutdown condition [10CFR50.72(b)(3)(vi)]. The condition, as reported, involved a preliminary analysis indicating non-feasible manual actions (due to potential for smoke in the fire area during a fire). The preliminary analysis also indicated the potential for damage to equipment in the room resulting from a potential hot gas layer, that could impact operability of safe shutdown equipment. Based on subsequent reviews, it has been determined that there were steps in an emergency operating procedure that would have been performed by the Control Room operators that would have been a concurrent success path to the non-feasible manual action that was required to be performed within 10 minutes. However, the condition remains reportable based on the preliminary analysis indications that there could be damage to redundant safe shutdown trains from a hot gas layer in the room. Further analysis is planned using more accurate fire modeling techniques to provide definitive information regarding potential damage to redundant safe shutdown trains. Therefore the condition is being reported herein under the 60 day reporting requirements of 10CFR50.73(a)(2)(v)(A).

INITIAL CONDITIONS

At the time of discovery, Waterford 3 was operating in Mode 1 at 100% Reactor Power. There were no plant systems, structures, or components out of service specific to the reported condition.

1. FACILITY NAME	2. DOCKET NUMBER (2)	6. LER NUMBER			3. PAGE
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Waterford Steam Electric Station, Unit 3	05000 382	2006	-- 001 --	00	3 OF 5

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

EVENT DESCRIPTION

On June 12, 2006, while reviewing a preliminary analysis of feasibility of manual actions designated to be performed in a fire area (RAB 7), it was discovered that the actions were not feasible due to postulated environmental conditions (smoke) that could be present in the fire area during a fire in any adjacent zone of that fire area. The preliminary analysis indicated that the manual actions could not be performed within the time prescribed in the Post Fire Safe Shutdown Analysis. Furthermore, the preliminary analysis indicated that there could be damage to equipment in the room needed to achieve safe shutdown, due to a hot gas layer that could be present in the room. The subject fire area is subdivided into fire zones by part height fire walls. The fire zones share a common ceiling. The room is a relay room, with the most fire sensitive equipment in the area being the relays [RLY]. Waterford 3 has an approved Appendix R deviation for the part height fire wall configuration. Assuming a fire in Fire Area RAB 7, Operator entry into that same fire area is required to perform manual actions. Results of preliminary analysis using CFAST modeling techniques indicate that the conditions in Fire Zone RAB 7B rapidly exceed the habitability threshold. Conditions there do not moderate before ten minutes. Therefore, a manual action required to be performed in Fire Zone RAB 7B within 10 minutes became non-feasible. Further reviews, including circuit analysis, identified that steps in an existing approved Operator emergency operating procedure, performed concurrently from the Control Room, would have achieved the same desired result as the non-feasible manual action. Therefore the non-feasible manual action was not required. However, as stated above, the preliminary analysis also indicated that there could be damage to equipment due to a hot gas layer that would be present throughout the room.

CAUSAL FACTORS

The condition was caused by an inadequate firewall design in the form of part height walls between fire zones in the affected fire area (RAB 7). The design allows smoke and hot gases that are products of a fire in one zone of the fire area to travel to the other zones of the fire area due to the common ceiling arrangement. This could result in damage to equipment in multiple zones of the fire area. The firewall design is included in Waterford 3's licensing basis in the form of a NRC approved Appendix R deviation. However, based on the preliminary analysis results, the wall design, in this specific application, appears to be inadequate to protect equipment. Additional analysis using a more robust fire modeling technique is being pursued to further evaluate the condition.

1. FACILITY NAME	2. DOCKET NUMBER (2)	6. LER NUMBER			3. PAGE
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Waterford Steam Electric Station, Unit 3	05000 382	2006	-- 001 --	00	4 OF 5

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

CORRECTIVE ACTIONS

As an immediate action taken, a temporary compensatory action was initiated, establishing a fire watch in Fire Area RAB 7 in accordance with Section 3.7.11 of the Technical Requirements Manual (TRM). The fire watch is designated to detect a fire in the incipient stage. Special written instructions and equipment have been given to the fire watch to extinguish a fire in that area while it is in the incipient stage.

A project is currently in progress at Waterford 3 to convert to NFPA-805. The condition described herein will be evaluated in that NFPA conversion.

Corrective actions are being addressed under the plant corrective action program.

SAFETY SIGNIFICANCE

The computer based model results detailing the potential exposure of redundant safe shut down trains to a common fire (hot gas layer) are being validated via the use of a more robust fire model that accounts for fire attributes not normally considered using the CFAST model. The results of this model and additional engineering reviews may result in the retraction of this LER. The area of concern is a relay room with a combustible loading (area averaging method) of approximately 10 minutes. The area is a room not normally accessed by through traffic. In addition any hot work performed in the area, per station procedures, would require a fire watch. Thus the potential of a fire due to an outside ignition source and/or transient combustibles is very low. The area is provided with fire detection and automatic sprinkler systems which would further mitigate and potentially reduce the impact of a fire in the area. The more robust fire model currently being initiated will provide more details with respect to the true safety significance of this condition. To ensure operability, a fire watch has been established in Fire Area RAB 7, in accordance with Section 3.7.11 of the Technical Requirements Manual (TRM) as a compensatory measure. The fire watch is designated to detect a fire in the incipient stage. Special written instructions and equipment have been given to the fire watch to extinguish a fire in that area while it is in the incipient stage. This condition did not compromise the health and safety of the general public.

SIMILAR EVENTS

No similar events have been identified or reported at Waterford 3.

1. FACILITY NAME	2. DOCKET NUMBER (2)	6. LER NUMBER			3. PAGE
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Waterford Steam Electric Station, Unit 3	05000 382	2006	-- 001 --	00	5 OF 5

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

ADDITIONAL INFORMATION

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