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PR

September 19, 1996

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 Number LER-96-011-00 for Waterford Steam Electric Station Unit 3. This Licensee Event Report is submitted in accordance with 10CFR50.73(a)(2)(v).

Very truly yours,

Billy E. Thigpen for C.M. Dugger

C.M. Dugger
General Manager
Plant Operations

CMD/RTK/tjs
Attachment

cc: L.J. Callan, NRC Region IV
C.P. Patel, NRC-NRR
A. Garibaldi
J.T. Wheelock - INPO Records Center
R.B. McGehee
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NRC FORM 366 (4-95) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104
EXPIRES 04/30/98

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 INFORMATION AND 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.

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
WATERFORD STEAM ELECTRIC STATION UNIT #	05000 382	1 OF 8

TITLE (4)

CONTROL ROOM VENTILATION VALVE LEAKAGE

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
									N/A	05000
08	20	96	96	-- 011 --	00	09	19	96	FACILITY NAME: N/A	DOCKET NUMBER: 05000

OPERATING MODE (9)	1
POWER LEVEL (10)	100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)

20.2201(b)	20.2203(a)(2)(v)	50.73(a)(2)(i)	50.73(a)(2)(viii)
20.2203(a)(1)	20.2203(a)(3)(i)	50.73(a)(2)(ii)	50.73(a)(2)(x)
20.2203(a)(2)(i)	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)	X 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	TELEPHONE NUMBER (Include Area Code)
T.J. GAUDET, LICENSING MANAGER	(504) 739-6666

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
X YES (If yes, complete EXPECTED SUBMISSION DATE).	NO		12	13	96

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

The Control Room Heating Ventilation and Air Conditioning (HVAC) System at Waterford 3 is designed to maintain the Control Room in a safe condition following an accident as required by General Design Criterion 19 of Appendix A to 10CFR50 and as specified in the Standard Review Plan (Section 6.4). On July 27, 1996, it was confirmed during testing of the Control Room HVAC that the Control Room Normal Ventilation Isolation Valves (HVC-101, HVC-102) were leaking by when the Emergency Filtration System was in service. Past testing of these valves consisted of providing a close signal to both valves simultaneously. Both valves successfully closed during previous testing and the leakage rate was determined to be within acceptable limits with both valves closed. However, when the valves were tested individually, the identified leakage may have allowed an unacceptable amount of unfiltered air into the Control Room envelope following a Design Basis Accident as established on August 20, 1996. The Root Cause of this event has been determined to be debris which accumulated inside the valves' disc regions which prevented the valves from fully closing. This event did not compromise the health and safety of the public.

REQUIRED NUMBER OF DIGITS/CHARACTERS FOR EACH BLOCK

BLOCK NUMBER	NUMBER OF DIGITS/CHARACTERS	TITLE
1	UP TO 46	FACILITY NAME
2	8 TOTAL 3 IN ADDITION TO 05000	DOCKET NUMBER
3	VARIES	PAGE NUMBER
4	UP TO 76	TITLE
5	6 TOTAL 2 PER BLOCK	EVENT DATE
6	7 TOTAL 2 FOR YEAR 3 FOR SEQUENTIAL NUMBER 2 FOR REVISION NUMBER	LER NUMBER
7	6 TOTAL 2 PER BLOCK	REPORT DATE
8	UP TO 18 -- FACILITY NAME 8 TOTAL -- DOCKET NUMBER 3 IN ADDITION TO 05000	OTHER FACILITIES INVOLVED
9	1	OPERATING MODE
10	3	POWER LEVEL
11	1 CHECK BOX THAT APPLIES	REQUIREMENTS OF 10 CFR
12	UP TO 50 FOR NAME 14 FOR TELEPHONE	LICENSEE CONTACT
13	CAUSE VARIES 2 FOR SYSTEM 4 FOR COMPONENT 4 FOR MANUFACTURER NPRDS VARIES	EACH COMPONENT FAILURE
14	1 CHECK BOX THAT APPLIES	SUPPLEMENTAL REPORT EXPECTED
15	6 TOTAL 2 PER BLOCK	EXPECTED SUBMISSION DATE

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15	6 TOTAL 2 PER BLOCK	EXPECTED SUBMISSION DATE

REPORTABLE OCCURRENCE

It was identified that the Control Room Normal Ventilation Isolation Valves (HVC-101, HVC-102) [EIIS Identifier VI-ISV] were leaking by during operation of the Emergency Filtration System [EIIS Identifier VI]. This leakage path would have allowed unfiltered air into the Control Room envelope following a Design Basis Accident. An evaluation was performed by Waterford 3 Personnel to determine if the worst case leakage associated with the isolation valves would have allowed an unacceptable amount of unfiltered air into the Control Room envelope following a Design Basis Accident. The evaluation performed by Waterford 3 Personnel indicates that the thyroid dose criteria specified in the Standard Review Plan may have been exceeded by approximately 3 rem following a Design Basis Accident. NUREG 1022 states that reporting requirements apply to the system level rather than the train or component level. In determining the reportability of this condition, Waterford 3 considered the degraded condition (leaking valves) of both valves in series at the component level and the system level. Although Waterford 3 believes that based on the design of the valves (fail closed) that the system would have been able to perform its function, a decision was made to conservatively report this condition. Therefore, this event is being reported as a condition that alone could have prevented the fulfillment of a safety function of a system needed to mitigate the consequences of an accident pursuant to 10CFR50.73(a)(2)(v). In addition, a four hour report was submitted via the Emergency Notification System on August 20, 1996, in accordance with 10CFR50.72(b)(2)(iii).

INITIAL CONDITIONS

At the time the evaluation of this condition was completed and the condition was determined to be reportable, Waterford 3 was operating at approximately 100 percent power in Operational Mode 1 (Power Operation). Retesting of the Control Room envelope was being performed in accordance with Surveillance Procedure PE-005-004 "Control Room Air Conditioning System Surveillance". There was no major equipment out of service specific to this event and no Technical Specification Limiting Conditions

for Operation (LCOs) were in effect specific to this event at the time the evaluation of this condition was completed and the condition was determined to be reportable.

EVENT DESCRIPTION

This report is being submitted as a preliminary report because additional investigation into the effects that the Control Room ventilation normal outside air intake valve leakage would have had during a toxic gas event is still ongoing. A revision to this Licensee Event Report will be submitted when the investigation is complete.

The Control Room Ventilation System (HVC) at Waterford 3 is designed to maintain the Control Room in a safe condition following an accident as required by General Design Criterion 19 of Appendix A to 10CFR50 and as specified in the Standard Review Plan (Section 6.4). The Control Room envelope is a physical boundary which separates the Control Room Environment from surrounding areas.

On July 25, 1996, the Control Room envelope was declared inoperable due to a door latch failure. Technical Specification 3.7.6.5 Action Statement d was entered. The door was subsequently repaired and Operations Personnel attempted to perform a retest. Procedural problems associated with a new procedure prevented the retest from being performed satisfactorily.

On July 26, 1996, Systems Engineering Personnel were contacted to perform a retest in accordance with procedure PE-005-004 "Control Room Air Conditioning System Surveillance". During performance of this test, the "B" train Emergency Filtration Unit was unable to meet the acceptance criteria established in the procedure. Subsequently, the "A" train was utilized in accordance with procedure PE-005-004 and the results were acceptable. The Control Room envelope was declared operable based on the results of the "A" train test. Systems Engineering was requested to determine the cause for the "B" train test failure.

As a result of an extensive troubleshooting effort by Systems Engineering and Operations Personnel, it was determined that the Control Room Normal Ventilation Isolation Valve HVC-101 (which is in series with isolation valve HVC-102) must be leaking by, which impacted the test results obtained during testing of the "A" train. These isolation valves are designed to close during certain Design Basis Accidents and toxic chemical events. As a result, the Control Room envelope was declared inoperable on July 26, 1996, due to the inability of both trains of the Control Room Ventilation System to maintain the Control Room pressure at 0.125 inches of water gage with less than 200 cfm of identified makeup air flow.

On July 27,1996, Waterford 3 Management Personnel requested confirmation that HVC-101 was in fact leaking. Further troubleshooting revealed that HVC-101 was leaking approximately 22 cfm. Subsequently, HVC-102 was checked and it was determined to be leaking also. A walkdown was performed and local indications for isolation valves HVC-101 and HVC-102 revealed that the valves were not fully closed. Mechanical Maintenance Personnel attempted to readjust the valves' external mechanical stops but were unsuccessful.

On July 28, 1996, further testing was performed and it was determined that HVC-102 was leaking approximately 45 cfm. It was also determined that the leakage past both valves when the valves were closed was less than 10 cfm.

On August 20, 1996, the Licensing Department at Waterford 3 determined that the event described above was reportable on the basis of an evaluation performed by the Safety and Engineering Analysis Group and a 4 hour notification was made.

CAUSAL FACTORS

Upon initial troubleshooting of the cause for isolation valves HVC-101 and HVC-102 leaking, Systems Engineering and Plant Maintenance Mechanical Personnel discovered that neither of the valves was closing fully. An attempt was made to readjust the isolation valves to stop the leakage. However, this attempt was

unsuccessful. The isolation valves were subsequently removed and inspected by Design Engineering and Systems Engineering. As a result of this inspection, the root cause for the isolation valves leaking was determined to be debris which had accumulated inside the valves' disc region which prevented the valves from fully closing. The debris consisted of a compilation of dust and rust particles which had accumulated over time. Maintenance tasks and leak rate testing for isolation valves HVC-101 and HVC-102 had not been prepared/performed on these valves in the past. Therefore, the valve degradation was not previously identified.

IMMEDIATE CORRECTIVE MEASURES

Following the identification of this event, a Condition Report (CR-96-1156) was generated in accordance with Waterford 3 Site Procedure W2.501 "Corrective Action" to provide a means to implement the Waterford 3 Corrective Action Program. The event described in this CR was classified as significant and a Root Cause Investigation was initiated. To ensure the Control Room envelope integrity would be maintained and to allow for proper rework of isolation valves HVC-101 and HVC-102, a Temporary Alteration (TA) 96-009 was installed. This TA provided a safety/seismic related blank off plate for the normal outside air intake which effectively isolated the Control Room normal outside air intake from the Control Room. With this plate installed, all air entering the Control Room would be filtered by the Emergency Filtration System during normal and post accident conditions.

Condition Identifications (CIs) 304069 and 304444 were generated. CI 304069 was generated to rework both of the isolation valves (HVC-101, HVC-102). In order to rework the isolation valves, both valves had to be removed. Testing following the rework and reinstallation of the isolation valves indicated that HVC-101 was still leaking 5.5 cfm. Due to ongoing concerns about the effects of a toxic gas event, it was conservatively decided to further reduce the leakage through HVC-101. Therefore, CI 304444 was generated to provide an access to HVC-101 so that adjustments could be made to the isolation valve without having to remove the isolation valve. This access will also be utilized during future inspections of the isolation valves.

ACTIONS TO PREVENT RECURRENCE

Tasks were initiated by Systems Engineering for each of the ten Control Room isolation dampers [EIIS Identifier VI-DMP] which did not currently have maintenance tasks. The new tasks require the internals of the dampers to be inspected and cleaned on a ten year interval. The tasks also provide instructions for the replacement of the soft seats associated with these isolation dampers.

The Safety and Engineering Analysis Group at Waterford 3 performed a calculation to determine what leak rate for the normal outside air intake path (via HVC-101, HVC-102) would be acceptable. Based on the results of the calculation, an acceptable leak rate of 10 cfm was established for the normal outside air intake during a Design Basis Accident. This value will be used to establish future procedural/maintenance limits for monitoring the isolation valves for degradation.

The Systems Engineering Group will initiate tasks to perform leak rate testing on isolation valves HVC-101 and HVC-102 every 18 months. The tasks will initially be performed quarterly (for two to three quarters) to ensure that an 18 month interval is appropriate. As an interim measure pending resolution of the toxic gas evaluation, if leakage past either isolation valve is found to exceed approximately 8 cfm, the isolation valves will be inspected, cleaned, and retested. In addition, a procedure will be prepared which will provide the instructions for performing the tasks.

The Design Engineering Group and the Systems Engineering Group will review the current testing configuration to ensure that the Control Room Pressure Test is being properly performed and is in compliance with all licensing documents.

SAFETY SIGNIFICANCE

The initial evaluation performed by Waterford 3 Personnel indicated that the worst case leakage associated with the isolation valves would have resulted in the thyroid dose

criteria specified in the Standard Review Plan being exceeded by approximately 3 rem. This evaluation is very conservatively based on the same Operators being in the Control Room for all of the first 24 hours following a Design Basis Accident, 60 percent of the time for the following 3 days and 40 percent of the time for the next 26 days. Exceeding the thyroid dose criteria by approximately 3 rem, under these conservatively assumed circumstances would not have prevented the Operators from being able to safely shut down the plant following the postulated Design Basis Accident. In addition, as stated above, this evaluation assumes a worst case scenario. That is, a single failure of the isolation valve with the least leakage (HVC-101 with a leakage rate of approximately 22 cfm) to close is assumed with the other isolation valve (HVC-102 with a leakage rate of approximately 45 cfm) closing as required. Although this scenario is possible, it is also highly unlikely and did not occur. The probability of a Design Basis Accident occurring coincident with the single failure described above and the assumed Operator shift scheduling is remote. Also, neither isolation valve has failed to close during testing in the past and it is believed that both valves would have closed if required.

The Safety and Engineering Analysis Group at Waterford 3 also performed a second more realistic evaluation based on a conservatively assumed Control Room Operator work schedule following a Design Basis Accident. This second evaluation also assumed the worst case scenario concerning the isolation valves described above. The additional assumptions made for this second evaluation are as follows. The Operators work four 13 hour shifts consecutively (event assumed to occur at the beginning of the first shift) followed by 3 days off. Three 13 hour shifts are then worked followed by 5 days off (the number of days off is normally between 7 to 8 days). The Operators are then assumed to work 12 hours a day for the next 15 days. These shift schedule assumptions are more conservative than what the Operators currently work at Waterford 3. The results of this evaluation indicate that the doses received by the Operators to the thyroid would be below the acceptance criteria by approximately 3 rem.

The Safety and Engineering Analysis Group at Waterford 3 also determined that an acceptable leak rate through the isolation valves is 10 cfm as previously mentioned. Waterford 3 Personnel have determined that the actual leak rate through the isolation valves when both isolation valves were closed was approximately 9 cfm. It is important to note that the valves in question are designed to fail closed. Since these valves have never failed to close in the past, Waterford 3 believes that these valves, although degraded, would have closed and the actual Control Room dose would have been well below the acceptance criteria following an actual Design Basis Accident.

On the basis of the above information, this event did not compromise the health and safety of public.

SIMILAR EVENTS

A review of the Licensee Event Reports (LER) data base did not identify any similar events involving valves or dampers associated with the Control Room envelope. However, LER 90-019 documents a breach of the Control Room envelope that occurred when a Control Room penetration fire seal was removed in accordance with an approved Design Change. The breach was not immediately identified and existed for approximately seven days prior to discovery.