



**Entergy
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D. F. Packer
General Manager
Plant Operations
Waterford 3

W3F1-94-0018
A4.05
PR

February 17, 1994

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-94-001-00 for Waterford Steam Electric Station Unit 3. This Licensee Event Report is submitted in accordance with 10CFR50.73(a)(2)(ii).

Very truly yours,

D.F. Packer
General Manager
Plant Operations

DFP/GCS/ssf
Attachment

cc: L.J. Callan, NRC Region IV
G.L. Florreich
J.T. Wheelock - INPO Records Center
R.B. McGehee
N.S. Reynolds
NRC Resident Inspectors Office
Administrator - LRPD

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LICENSEE EVENT REPORT (LER)

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

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNRB 7214), 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.

FACILITY NAME (1)

Waterford Steam Electric Station Unit 3

DOCKET NUMBER (2)

05000 382

PAGE (3)

1 OF 07

TITLE (4)

Component Cooling Water System Cross-Connected Through Incorrect Valve Positioning

EVENT DATE (5)			LER NUMBER (6)			REPORT NUMBER (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
01	18	94	94	001	00	02	17	94	N/A	05000
									N/A	05000

OPERATING MODE (9)	POWER LEVEL (10)	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)				
1	100	20.402(b)	20.405(a)(1)(i)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
		20.405(a)(1)(ii)	20.405(a)(1)(iii)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
		20.405(a)(1)(iv)	20.405(a)(1)(v)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER
		20.405(a)(1)(iii)	20.405(a)(1)(iv)	50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	(Specify in Abstract below and in Text, NRC Form 366A)
		20.405(a)(1)(iv)	X 20.405(a)(1)(v)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	
		20.405(a)(1)(v)		50.73(a)(2)(iii)	50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME

J.G. Hoffpauir, Maintenance Superintendent

TELEPHONE NUMBER (include Area Code)

(504) 464-3138

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRPDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRPDS

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE)	X	NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
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ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On January 18, 1994 Waterford 3 was at 100% power when it was discovered that component cooling water (CCW) valves CC-82 1A and CC-8251B were open approximately 30%. These valves were required to be fully closed. This condition was discovered while troubleshooting what was originally thought to be a leak past the seats of CCW valves CC-807B, CC-823B and CC-835B. With valves CC-8241A and CC-8251B open, train A and train B of the CCW system were incorrectly cross-connected which placed the CCW system outside of its design.

The root cause of this event was a lack of work instructions for the change-out of the operators of these valves when station modification package 1960 was implemented. Valves CC-8241A and CC-8251B operators were changed from pneumatic to manual without the aid of work instructions. The valves were apparently installed with the disc partially open but with the position indicator showing closed. During the evaluation of this event the plant determined that the CCW system was operable. As a result, this event did not compromise the health and safety of the public. LER 91-023 documents a similar occurrence where the CCW system was incorrectly cross-connected.

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	VARIABLES	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 0500	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

**LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION**

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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
Waterford Steam Electric Station Unit 3	05000 382	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	02 OF 07
		94	001	00	

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

REPORTABLE OCCURRENCE

On January 18, 1994 Waterford 3 was at 100% power when it was discovered that component cooling water (CCW) valves CC-8241A (EIIS Identifier-CC-V) and CC-8251B (EIIS Identifier-CC-V) were open approximately 30%. These valves were required to be fully closed. The incorrect positioning of these valves was discovered while troubleshooting what was originally thought to be a leak past the seats of CCW valves CC-807B (EIIS Identifier-CC-V), CC-823B (EIIS Identifier-CC-V) and CC-835B (EIIS Identifier-CC-TCV). With valves CC-8241A and CC-8251B open, train A and train B of the CCW system were incorrectly cross-connected which placed the CCW system outside its design. A one hour Non-Emergency notification per 10CFR50.72(b)(1)(ii)(B) was made to the NRC describing this event on January 19, 1994 as a condition where the plant is operating outside its design basis. Although the CCW system was operated outside its design due to the valve misalignment and thus the plant was in a degraded condition, this condition did not specifically represent the plant being operated outside its design basis. Regardless, Waterford 3 has decided to conservatively report this event per 10CFR50.72(b)(1)(ii)(B) for 1 hour reporting and 10CFR50.73(a)(2)(ii) for this 30 day report.

INITIAL CONDITIONS

Plant Power: 100%

Mode: 1

Procedure Being Performed Specific to this Event:
 Special Test Procedure "01117875 CCW Pump Discharge Ck Vlv"
 CCW and ACCW Pump Operability Test "OP-903-050"

Major Equipment Out of Service Specific to this Event: None

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Waterford Steam Electric Station Unit 3	05000 382	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	03 OF 07
		94	001	00	

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

EVENT SEQUENCE

On January 14, 1994 a special test was being performed as corrective action to a problem identified in condition report CR-94-003. The purpose of the special test was to verify maximum accident flow through the CCW pumps and check valves. In order to maximize flow in train A of the CCW system and compensate for post-accident loads that are not present during normal operation, full post accident flow was established through the A and C containment fan coolers. At the same time, in order to maintain normal cooling water flow to the Reactor Coolant Pump air, oil and seal coolers (EIIS Identifier-AB-CLR) which were being supplied by train B of the CCW, flow was secured to the B and D containment fan coolers (EIIS Identifier-VA-CLR). Although containment fan cooler B had been isolated during the performance of the test, it was observed by flow indication in the control room that 400 gpm of CCW was flowing from train B of the CCW through containment fan cooler B (CFC B). The on shift personnel believed that flow through CFC B was the result of seat leakage past valves CC-807B, CC-823B and CC-835B. A condition identification was written to investigate this problem.

On January 18, 1994 maintenance personnel began troubleshooting valves CC-807B and CC-823B for seat leakage. Troubleshooting these valves led to the discovery of flow through isolation valves CC-8241A and CC-8251B and their associated piping. When these valves were inspected, they were found to be about 30% open with their local position indicator showing closed. Condition report CR-94-044 was written to address this event. Immediate corrective measures included adjusting the manual operators on valves CC-8241A and CC-8251B to their proper orientation and then locking them

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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (4)			PAGE (3)
Waterford Steam Electric Station Unit 3	05000 382	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	04 OF 07
		94	001	00	

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closed. Waterford 3 then entered into its Nonconformance/Indeterminate Analysis Process to determine if the CCW system was operable with train A and train B of the CCW system manually cross-connected via CC-8241A and CC-8251B being partially open.

On January 19, 1994 an engineering evaluation confirmed the operability of the CCW system. Operability was based on the fact that CCW flow was not being diverted from safety components due to the location of the cross-connect and that CCW make-up capability exceeded cross-connect flow so that if any leakage occurred in one train the remaining train would have sufficient capacity to maintain operability.

CAUSAL FACTORS

The root cause of this event was a lack of any work instructions for the change-out of the operators for valves CC-8241A and 8251B when station modification package (SMP) 1960 was implemented. The operators were changed from pneumatic to manual without the aid of work instructions. These valves were incorrectly installed with the valve discs not properly aligned with their position indicators. Valves CC-8241A and CC-8251B were purchased as pneumatically operated butterfly valves. Per station modification package SMP-1960, which required installation of these valves in the spring of 1988, the air operators on these valves were to be removed and replaced with manual handwheel operators. The air operators were removed from these valves and replaced with handwheels. This was done without the use of work instructions describing the steps necessary to properly remove the air operator from the valves and install the handwheels.

**LICENSEE EVENT REPORT (LER)
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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (4)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Waterford Steam Electric Station Unit 3	05000 382	94	001	00	05 OF 07

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

A contributing cause of this event is inadequate post-modification acceptance testing. There were no testing requirements established subsequent to the installation of SMP 1960 which would have verified the valves to be correctly aligned or able to isolate train A and train B of the CCW system correctly.

A non-causal factor was failure to correctly prioritize a Condition Identification (CI) which had identified a potentially safety significant condition. In October of 1989 CI-265759 had been written to troubleshoot valve CC-8251B for seat leakage. The mechanical stop adjustment performed under CI-265759 did not correct the seat leakage problem. CI-272856 was then generated to rework the valve. The completion of this task was given a routine priority based on the problem description. Due to parts delays and the need to qualify a welding procedure, the CI was not scheduled for work until refueling outage 6 (March of 1994). If CI 272856 had been worked Waterford 3 is confident that the discovery of the partially open valves CC-8241A and CC-8251B would have occurred.

IMMEDIATE CORRECTIVE MEASURES

The valve operators for CC-8241A and CC-8251B were adjusted to close the valves, and the valves were locked closed.

ACTIONS TO PREVENT RECURRENCE

The Construction Manager will ensure that their programs and procedures have been revised such that they require appropriate work instructions be included in all work packages.

This review will be completed by March 31, 1994.

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Waterford Steam Electric Station Unit 3	05000 382	94	001	00	06 OF 07

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

System Engineering and Design Engineering will review their programs and procedures to ensure that they provide for adequate post modification testing.

This review will be completed by March 31, 1994.

Operational Engineering Experience will review the events of this LER with system engineers, design engineers, maintenance and operations personnel to emphasize the lessons learned with regard to effect of leaking or open valves which cross-connect safety trains.

This review shall be completed by December 31, 1994.

SAFETY SIGNIFICANCE

The CCW system is required by 10CFR50 appendix A, GDC 44, Reg. Guide 1.53-1973 and ANSI N51.7-1976 to fulfill its safety functions in the event of a single failure. The CCW system has been designed so that two redundant, separate trains are formed after a Safety Injection Actuation System (SIAS). A SIAS causes the separation of the A and B trains but the train A is still used to supply cooling water to the Reactor Coolant pumps and the Control Element Drive Mechanism (CEDMs). Each train is capable of fulfilling all of the safety requirements of the CCW system.

With the cross-connection through valves CC-8241A and CC-8251B, that redundancy and separation was degraded thus the system was operated outside of its design. Even though separation was degraded, adequate cooling was maintained to all safety related components. The flow path through the partially open valves occurred downstream of the containment fan coolers

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Waterford Steam Electric Station Unit 3	05000 382	94	001	00	07 OF 07

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

and did not bypass any safety related components. The flow path constituted an alternate path for cooling water to return to the CCW pump suction. This alignment, however, was determined not to affect system operability, and thus maintained the plant design basis.

The CCW system is designed and built to ASME Class 2 and 3 requirements and is a moderate energy piping system. Pipe failures are considered passive failures, so no single active failure would result in the loss of both trains of CCW (common mode failure) post-accident even though cross-connected in this manner. In the event of a passive failure, only through-wall cracking of pipe needs to be considered. Previous analysis has shown this to be limited to 455 gpm which is enveloped by the 600 gpm capacity of the CCW Make-up Pumps. Operator action would be required in this case to isolate the leak in order to prevent exhaustion of the 170,000 gallon Condensate Storage Pool inventory and loss of both CCW trains while attempting to achieve safe shutdown. Therefore, this event did not compromise the health and safety of the public.

SIMILAR EVENTS

LER 91-023 documents a similar occurrence where the CCW system was incorrectly cross-connected. The one hour notification and the subsequent LER were appropriately reported per 10CFR50.72(b)(1)(ii)(B) as a condition where the plant was outside its design basis. Because of the location of the cross-connection described in LER 91-023 (which is different than location described for this event) the supply of CCW to the operating essential chiller would be reduced to the extent that, without operator action, the design basis heat load would not be removed by the operating essential chiller, thus placing the plant outside its design basis.