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D. F. Packer
General Manager
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Waterford 3

W3F1-92-0179
A4.05
QA

July 8, 1992

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-92-005-00 for Waterford Steam Electric Station Unit 3. This Licensee Event Report is submitted pursuant to 10CFR50.73 (a)(2)(iv).

Very truly yours,

D.F. Packer
General Manager - Plant Operations

DFP/TJG/dc
Attachment

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

IE22

NRC FORM 366 (6-89)

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104
EXPIRES: 4/30/92

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Waterford Steam Electric Station Unit 3	0 5 0 0 0 3 8 2	1 OF 0 8

TITLE (4)

Inadvertent Actuation of the Control Room Emergency Filtration System

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 NAMES	DOCKET NUMBER(S)
									N/A	0 5 0 0 0
0 6	0 9	9 2	9 2	— 0 0 5	— 0 0	0 7	0 8	9 2	N/A	0 5 0 0 0

OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
1		20.402(b)	20.405(c)	X 50.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10)		20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
1 0 0		20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
		20.405(a)(1)(iii)	50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
		20.405(a)(1)(iv)	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	TELEPHONE NUMBER
	AREA CODE
J.G. Hoffpauir, Plant Maintenance Superintendent	5 0 4 — 4 6 4 - 3 1 3 8

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
— YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO				

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

At 1353 hours on June 9, 1992, Waterford Steam Electric Station Unit 3 experienced an unplanned actuation of the Engineered Safety Feature (ESF) portion of the Control Room Ventilation System. The actuation was initiated when the high alarm setpoint was exceeded on one of the four normal Control Room Outside Air Intake (CROAI) radiation monitors, causing the Control Room Ventilation System to isolate and the associated Control Room Emergency Filtration Unit to automatically start. All other CROAI radiation monitors were indicating normal radiation levels, and subsequent air samples taken in the area of the alarming radiation monitor showed no detectable activity. This event is reportable under 10CFR50.73(a)(2)(iv) as an unplanned actuation of an ESF.

The root cause of this event was indeterminate. Since the Control Room Emergency Filtration System functioned as designed, and there was no actual release of radioactive material, this event did not result in an increased risk to the health and safety of the public or plant personnel.

REPORTABLE OCCURRENCE

At 1353 hours on June 9, 1992, Waterford Steam Electric Station Unit 3 experienced an unplanned actuation of the Engineered Safety Feature (ESF) portion of the Control Room Ventilation System (EIIS Identifier VI). The actuation was initiated when the high alarm setpoint was exceeded on ARM-IRE-0200.2BS, one of the four normal Control Room Outside Air Intake (CROAI) radiation monitors (EIIS Identifier IL-MON). Exceeding the setpoint caused the Control Room Ventilation System to isolate and Control Room Emergency Filtration Unit B (EIIS Identifier VI-AHU), an ESF, to automatically start. This event is reportable under 10CFR50.73(a)(2)(iv) as an unplanned actuation of an ESF.

INITIAL CONDITIONS

Plant Power: 100%

Mode: 1

Procedures Being Performed Specific to this Event:

None

Technical Specification Action Statements in Effect Specific to this Event:

None

Major Equipment Out of Service Specific to this Event:

None

EVENT SEQUENCE

The Control Room Outside Air Intake (CROAI) radiation monitors measure airborne activity levels in the CROAI ducts. In the event high airborne activity is detected, a signal is generated to isolate the normal CROAI ducts, place the Control Room Ventilation System in recirculation mode, and start the Control Room Emergency Ventilation System. The CROAI radiation monitors utilize scintillation detectors (model number RD-25-04, EIIS Identifier DET), mounted in the CROAI ducts, with the detector windows exposed to the duct interior. There are two normal CROAI ducts, each containing two radiation monitors.

Event Chronology:

June 9, 1992

1040: Emergency Feed Water (EFW) Pump AB (EIIS Identifier BA-P) was operated to perform routine maintenance.

1352: EFW Pump AB was started in accordance with Operating Procedure OP-903-046, Emergency Feed Pump Operability Check.

1353: CROAI radiation monitor ARM-IRE-0200.2BS spiked above its high alarm setpoint, causing Control Room Emergency Filtration Unit B to start; Operating Procedure OP-901-017, Off-Normal Procedure-High Airborne Activity in Control Room, was entered; The shift Health Physics technician was directed to obtain airborne activity samples in the area of ARM-IRE-0200.2BS.

1354: EFW Pump AB was secured in accordance with Operating Procedure OP-903-046, Emergency Feed Pump Operability Check.

1358: The high alarm cleared on ARM-IRE-0200.2BS.

1405: EFW Pump AB was started in accordance with Operating Procedure OP-903-046, Emergency Feed Pump Operability Check.

1428: EFW Pump AB was secured in accordance with Operating Procedure OP-903-046.

1433: Airborne samples taken in the area of ARM-IRE-0200.2BS indicated no detectable activity.

1438: Control Room Emergency Filtration Unit B was secured; Operating Procedure OP-901-017, Off-Normal Procedure-High Airborne Activity in Control Room, was exited.

1731: EFW Pump AB was started in accordance with Operating Procedure OP-903-046, Emergency Feed Pump Operability Check.

1733: EFW Pump AB was secured in accordance with Operating Procedure OP-903-046.

1740: EFW Pump AB was started in accordance with Operating Procedure OP-903-046.

1812: EFW Pump AB was secured in accordance with Operating Procedure OP-903-046.

Work Authorization (WA) 01095408 was generated to evaluate the affected CROAI radiation monitor for the cause of the apparently erroneous alarm. Two mechanisms known to cause a spurious CROAI radiation monitor alarm are electrical noise (spiking), and illumination of the detector multiplier resulting from light

penetrating the beta radiation window light shield. Instrumentation and Control technicians applied an external light source to the detector to determine if damage to the shield caused the alarm; no increase in counts was noted, therefore the shield had not been damaged.

A review of the sequence of events for a previous Control Room Emergency Filtration System actuation, which occurred on April 27, 1992 (reported in LER 92-003), revealed that in that instance, as well as in the most recent actuation, EFW Pump AB was started immediately prior to receiving the same CROAI radiation monitor alarm. Even though EFW Pump AB has been started on several occasions before and after these actuations, with no radiation monitor alarms received, WA 01095408 included steps to determine if there is a correlation between these two events.

June 17, 1992

Initial electrical checks of ARM-IRE-0200.2BS and associated circuitry were completed with no conclusive indication of the source of the spiking.

June 18, 1992

Electrical diagnostic equipment was connected to ARM-IRE-0200.2BS circuitry while starting and securing EFW Pump AB. No electrical spikes were recorded during pump operation.

June 22, 1992

EFW Pump AB was again operated with electrical monitoring equipment connected to

ARM-IRE-0200.2BS circuitry. Additionally, monitoring of the radiation monitor was performed during a test of the Engineered Safety Features Actuation System. No spiking occurred on ARM-IRE-0200.2BS during either activity.

June 23, 1992

1230: CROAI radiation monitor ARM-IRE-0200.2BS was declared operable.

CAUSAL FACTORS

The root cause of this event is indeterminate. A detailed examination of the electrical circuits associated with CROAI radiation monitor ARM-IRE-0200.2BS was unable to decermine the origin of the spike that apparently caused the monitor to alarm; a light check verified that the beta radiation window light shield was intact. Additionally, operation of EFW Pump AB, in an effort to duplicate the conditions that may have caused this event and a similar occurrence on April 27, 1992, was unsuccessful in producing a spike on the CROAI radiation monitor.

CORRECTIVE ACTION

Instrumentation and Control technicians will continue to monitor CROAI radiation monitor ARM-IRE-0200.2BS performance, particularly during EFW Pump AB operation. If the root cause of the CROAI radiation monitor alarm is positively determined, a revision to this report will be submitted to provide the basis for the determination.

SAFETY SIGNIFICANCE

During this event, the Control Room Emergency Filtration System functioned as designed and there was no actual release of radioactive material; therefore, this event did not result in an increased risk to the health and safety of the public or plant personnel.

SIMILAR EVENTS

Spurious Control Room Emergency Filtration System actuations were reported in LERs 84-001, 85-002, 85-005, 85-030, 85-036, 85-039, 85-043, 85-045, 85-048, 86-003, 86-020, 86-022, 86-029, and 87-015. Many of these actuations were attributed to electrical spiking of the CROAI radiation monitors. As outlined in LER 87-015, in an effort to reduce their sensitivity to electrical noise, the monitors were single-point grounded, and resistance-capacitance filters were installed in the associated circuitry.

LER 87-022 reported two actuations of the Control Room Emergency Filtration System due to a control circuit card failure. The failed circuit card and an associated relay were subsequently replaced.

LERs 88-003 and 90-011 reported several actuations of the Control Room Emergency Filtration System caused by perforations in the aluminum foil beta radiation window light shields on the CROAI radiation monitors, which allowed light to illuminate the detector multiplier, resulting in an alarm. A design change installed mylar shields in the detectors to prevent shield failures. Another spurious actuation reported in LER 88-003 was due to an improper clearance in a feeder breaker, which allowed the breaker to open when it was bumped; the breaker was subsequently replaced. Two additional actuations were reported in LER 90-011, the cause of which has not been positively determined; however, several

suspect components were replaced in an effort to prevent recurrence.

LER 90-014 reported an actuation of the Control Room Emergency Filtration System due to inadequate procedures, which allowed the CROAI radiation monitor high alarm setpoint to be set too low; the appropriate procedures were subsequently revised.

LER 90-015 reported an actuation of the Control Room Emergency Filtration System due to failure of a CROAI radiation monitor high voltage power supply; the power supply was subsequently replaced.

LER 91-002 reported an actuation of the Control Room Emergency Filtration System caused by a perforation in the beta radiation window light shield; the defective shield was subsequently replaced. This is the only reported perforation of a beta radiation window light shield since mylar shields were installed.

LER 92-003 reported an actuation of the Control Room Emergency Filtration System. That event, which also had an indeterminate root cause, is discussed in this report. Both events appear to be independent of any previously identified corrective action.