

James A. FitzPatrick  
Nuclear Power Plant  
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Harry P. Salmon, Jr.  
Resident Manager

December 4, 1992  
JAFF-92-0828

United States Nuclear Regulatory Commission  
Document Control Desk  
Mail Station P1 437  
Washington, D.C. 20555

SUBJECT: DOCKET NO. 50-333  
LICENSEE EVENT REPORT: 92-047-00 - Automatic Shutdown  
Cooling Isolation Due to  
Voltage Transient

Dear Sir:

This updated report is submitted in accordance with 10 CFR  
50.73(a)(2)(iv).

Questions concerning this report may be addressed to  
Mr. Verne Childs at (315) 349-6071.

Very truly yours,

A handwritten signature in cursive script, appearing to read 'Harry P. Salmon, Jr.'.

HARRY P. SALMON, JR.

HPS:WVC:tld  
Enclosure

cc: USNRC, Region 1  
USNRC Resident Manager  
INPO Records Center

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## LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 500 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (F-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.

FACILITY NAME (1) James A. FitzPatrick Nuclear Power Plant										DOCKET NUMBER (2) 0 5 0 0 0 3 3 3										PAGE (3) 1 OF 0 5																													
TITLE (4) Automatic Shutdown Cooling Isolation Due To Voltage Transient When Starting A Large Electrical Load																																																	
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OPERATING MODE (9) N										THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5. (Check one or more of the following) (11)																																							
POWER LEVEL (10) 0 0 0										20.402(b)										20.405(c)										<input checked="" type="checkbox"/> 50.73(a)(2)(ix)										73.71(b)									
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										20.405(a)(1)(iii)										50.73(a)(2)(i)										50.73(a)(2)(viii)(A)																			
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LICENSEE CONTACT FOR THIS LER (12)																																																	
NAME Mr. W. Verne Childs, Senior Licensing Engineer																				TELEPHONE NUMBER AREA CODE 3 1 5 3 4 9 - 6 0 7 1																													
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																																																	
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<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)																				<input checked="" type="checkbox"/> NO																													

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

EIS Codes are in []

Abstract

The plant was shutdown and in the cold condition for maintenance and refuel. Fuel loading and reactor reassembly had been completed. On 11/4/92 at 1420 hours Residual Heat Removal/Low Pressure Coolant Injection (RHR/LPCI) [BO] System shutdown cooling suction isolation valve 10MOV-17 automatically closed due to a loss of power to Reactor Protection System (RPS) [JC] electrical bus [EE] B when a protective device tripped on undervoltage. The transient undervoltage condition was caused by the starting of a large (4,500 horsepower) electrical load. Shutdown cooling was returned to service approximately 13 minutes after isolation and the indicated reactor coolant temperature increase was less than two degrees. Corrective actions include procedure revisions and evaluation of the protective device set point.

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 600 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P&SD), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

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

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Description

The plant was shutdown and in the cold condition for refuel, maintenance and modification. Refueling and reactor vessel reassembly had been completed. One Residual Heat Removal/Low Pressure Coolant Injection (RHR/LPCI) [BO] pump was operating in the shutdown cooling mode. Reactor coolant temperature was approximately 160F. Reactor core [AC] decay heat was at a low level because the plant had been shutdown for approximately 340 days. It was known that reactor coolant heat losses to ambient were greater than decay heat production for reactor coolant temperatures above approximately 150F.

Plant electrical power was being provided from the offsite 115KV system through the reserve station service transformers. The Reactor Protection System (RPS) [JC] Electrical Bus [ZE] B (Division 1) was powered from the alternate power source. The alternate power source is provided with undervoltage, overvoltage and underfrequency protection by two Electrical Protection Assemblies (EPAs) arranged in series. Reactor Protection System Motor Generator (MG) B was out of service to allow maintenance work to be performed on an EPA associated with RPS MG B. RPS electrical bus A (Division 1) was in a normal electrical lineup with power to the RPS bus being provided by RPS MG A. Operations personnel were conducting post work testing of condensate system [KA] booster pumps to verify proper electrical and mechanical operation following modification and maintenance work. The condensate booster pumps are driven by 4,500 horsepower motors and, except for the reactor water recirculation system [AD] motor generator drive motors are the largest electric motors connected to the plant electrical distribution system.

At 1420 hours on November 4, 1992, operations personnel started condensate booster pump 33P-9B. RPS B was immediately deenergized due to trip of an EPA on the RPS Bus alternate power source. Deenergizing RPS B resulted in automatic closure of RHR/LPCI shutdown cooling outboard suction valve 10MOV-17; automatic isolation of Reactor Building [NG] (secondary containment) ventilation and automatic starting of the Standby Gas Treatment (SGT) System [BH]. The automatic actuations were in accordance with design.

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 500 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.

FACILITY NAME (1)  James A. FitzPatrick Nuclear Power Plant	DOCKET NUMBER (2)  0 5 0 0 0 3 3 3	LER NUMBER (9) <table border="1"><thead><tr><th>YEAR</th><th>SEQUENTIAL NUMBER</th><th>REVISION NUMBER</th></tr></thead><tbody><tr><td>9 2</td><td>0 4 7</td><td>0 0</td></tr></tbody></table>	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	9 2	0 4 7	0 0	PAGE (3)  0 3 OF 9 2
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TEXT (If more space is required, use additional NRC Form 366A's) (17)

Approximately two minutes after the starting of condensate booster pump B, the tripped EPA and the Engineered Safety Feature (ESF) Activation System [JE] trips were reset. Valve 10MOV-17 was opened and one RHR pump was started to restore shutdown cooling approximately 13 minutes after the event was initiated. The indicated reactor coolant temperature increase was less than 2 degrees F. Reactor Building ventilation was restored to service and SGT was returned to a normal standby status approximately 35 minutes after the initiating event.

Cause

The event was caused by the voltage drop associated with starting the large (4,500 horsepower) condensate booster pump motor when RPS Bus E was being provided power from the alternate source. Starting of condensate booster pump A for similar post-work testing did not cause a loss of power to RPS Bus A because RPS Bus A was provided with power from the normal source. That is, RPS Bus A was powered from the motor generator set. The rotating inertia of the motor generator set and the Generator Voltage Regulator allowed the motor generator to operate through the voltage transient without a significant effect on RPS Bus A voltage.

Examination of strip chart recorder traces of non-safety related 4KV Bus [EA] voltages recorded in 1982 during starting of condensate booster pump B reveals a voltage drop of equal to or greater than 10 percent (with a maximum voltage drop of 11.1 percent) for approximately 3.6 seconds.

Technical Specifications 4.9.G.2 requires an EPA under voltage trip setting of equal to or greater than 108V with a maximum time delay of 4.0 seconds. A voltage of 108V is 10 percent below the normal 120V. Examination of the test and calibration procedures reveals that the EPA was set to trip at 109.5 +/- 1.5 volts with a time delay setting of 3.5 +/- 0.2 seconds.

Operating procedures do not contain any precautions to inform the operator that starting a condensate booster pump (or other large electrical load) while an RPS bus is being powered from the alternate source may result in a transient undervoltage trip condition on the RPS Bus. This deficiency is considered to be a contributing cause.

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 580 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (F-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.

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TEXT (If more space is required, use additional NRC Form 365A's) (17)

Analysis

The event requires a report under 10CFR50.73 (a)(2)(iv) due to the unplanned automatic actuation (closure) of RHR/LPCI shutdown cooling suction path primary containment [NH] isolation valve 10MOV-17. The automatic isolation of Reactor Building ventilation and the automatic starting of Standby Gas Treatment due to the "invalid" actuation signals do not require reporting under 10CFR50.72 or 10CFR50.73.

The event was not safety significant due to the long time period since reactor shutdown (340 days) and the resulting low level of decay heat.

Events which result in loss of shutdown cooling during time periods when significant core decay heat is present, such as shortly after plant shutdown from power operation, can result in significant increases in reactor coolant temperature. The magnitude of the temperature increase is generally dependent on the amount of time that has passed since shutdown, the availability of alternate means of removing decay heat and how quickly shutdown cooling can be returned to service. For this event, as with others that occur as part of planned work activities, shutdown cooling can be returned to service within a short time period. The resulting coolant temperature increase would be small and would not be safety significant.

Corrective Actions

1. Shutdown cooling was returned to service approximately 13 minutes after the isolation.
2. Procedures will be reviewed and revised as necessary to provide operators with precautions concerning the starting of loads which cause significant RPS Bus voltage transients when the RPS is being powered from the alternate source. Due date, March 30, 1993.
3. An evaluation will be conducted to determine whether or not RPS power source EPA undervoltage and time delay setpoints can be adjusted to values that are closer to the Technical Specification limits without incurring significant risk of exceeding the limits due to instrument drift. Due date, July 30, 1993.
4. An evaluation will be conducted to determine the bases for the RPS power source EPA undervoltage and time delay setpoints to determine whether or not Technical Specification changes are appropriate. Due date, December 30, 1993.



LICENSEE EVALUATION REPORT (LER)  
TEXT CONTINUATION

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TEXT (If more space is required, use additional CRF Form 395A (1/1))

Additional Information

Failed Components: None

Similar Events: There have not been any previous events in which the starting of large electrical loads has caused primary containment isolation or loss of shutdown cooling.