

LICENSEE EVENT REPORT (LER)

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

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.

FACILITY NAME (1) Susquehanna Steam Electric Station - Unit 2		DOCKET NUMBER (2) 05000388	PAGE (3) 1 OF 3
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TITLE (4)
Isolation Of CRMs Following Electrical Transient - ESF Actuation

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
5	29	98	98	007	01	8	19	98		05000
										05000

OPERATING MODE (9) 1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more) (11)			
POWER LEVEL (10) 100	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(viii)
	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(x)
	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 20.2203(a)(3)(iii)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 73.71
	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 20.2203(a)(4)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> OTHER
	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(1)	<input type="checkbox"/> 50.73(a)(2)(v)	Specify in Abstract below or in NRC Form 366A
	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(vii)	

LICENSEE CONTACT FOR THIS LER (12)

NAME Stephen J. Ellis - Senior Engineer, Licensing	TELEPHONE NUMBER (Include Area Code) 717 / 542-3537
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE).	<input checked="" type="checkbox"/> NO				

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

On May 29, 1998, with Unit 2 in Condition 1 (Power Operation) at 100% power, the outboard primary containment isolation valves to both Unit 2 Containment Radiation Monitors (CRM) closed due to an electrical transient. The transient was caused by a trip of the 'B' Auxiliary Boiler as it was being placed in service to support Unit 1 startup. The closure of the isolation valves is considered an (non-valid) Engineered Safety Feature (ESF) actuation, and is reportable per 10CFR50.73(a)(2)(iv). The auxiliary boiler trip caused an overcurrent condition resulting in a momentary loss of bus voltage. The loss of voltage condition affected the electrical distribution system down to the 120 Volt Instrument AC bus. The CRM isolation valves closed on a momentary loss of power. The 'B' Auxiliary Boiler has been internally inspected with no damage identified. The root cause of the boiler trip has been determined to be closure of the 13.8 KV breaker with the boiler pressure less than 50 psig. The CRMs were restored to service twelve minutes after the electrical transient occurred. Corrective actions include: counseling of the subject operator; procedural clarifications; and additional training for operators on lessons-learned.

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

EVENT DESCRIPTION

On May 29, 1998, at 2145 hours, with Unit 2 in Condition 1 (Power Operation) at 100% power, an electrical transient was experienced when attempting to place in service the 'B' Auxiliary Boiler (EISS Code: SA). The boiler was being placed on line to provide sealing steam to the Unit 1 main turbine in preparation for startup of that unit. The resultant transient caused a number of actions to occur, including the closure of outboard primary containment isolation valves to both Unit 2 Containment Radiation Monitors (CRM) (EISS Code: IL). The CRMs tripped following the isolation, as designed. The closure of the isolation valves is considered an ESF actuation, and as such, is reportable to the Commission per 10CFR50.73(a)(2)(iv).

CAUSE OF EVENT

The outboard primary containment isolation valves to both Unit 2 CRMs closed as a result of an electrical transient following the trip of the 'B' Auxiliary Boiler. An assessment of the transient was performed. It is estimated that there was a complete loss of voltage for approximately 15 cycles following the boiler trip. This momentary loss of power was experienced from the 13.8 KV bus down to the 120 Volt Instrument AC panel, and was of a long enough duration to allow the seal-in relay that keeps the CRM isolation valves open to de-energize, allowing the valves to close. The valve closure is consistent with what would be expected from a transient of this nature.

The plant operator (utility; non-licensed) using his procedure, controls three main parameters when starting the Auxiliary Boiler from hot standby: initial conductivity, initial pressure, and demand signal to the spray flow valve. An extensive review was performed to identify the cause of this event. The event timeline indicates that the operator was challenged in achieving a conductivity reading within the required band. In the process of controlling conductivity, the operator blew down the boiler and made up with chemicals, in accordance with the procedure. The chemical addition overshot the required band, so the operator added cold water. Although the boiler was at sufficient pressure at the start of this evolution, the blow down and cold water addition acted to reduce the boiler pressure. The operating procedure prerequisite requires a boiler pressure of between 50-75 psi. The operating procedure has a caution, immediately before the 13.8 KV breaker is closed, warning the operator that boiler pressure less than 50 psig increases the risk of electrode arc-over. The operator does not specifically remember checking the auxiliary boiler pressure at the time of startup. The Auxiliary Unit Supervisor (utility; licensed) observed that the Auxiliary Boiler was less than 50 psig one hour after the electrical transient.

The conclusion reached, as a result of the above information, is that the Auxiliary Boiler was less than 50 psig after chemical addition, and prior to startup, resulting in a high current transient when the 13.8 KV switchgear was closed. This current transient propagated to several buses, resulting in the ESF actuation.

REPORTABILITY/ANALYSIS

This event was determined to be reportable per 10CFR50.73(a)(2)(iv), as an ESF actuation. Both CRM

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

outboard primary containment isolation valves operated to their safety position (closed). A number of other components were affected as a result of the electrical transient, all of which were quickly restored to service. No equipment was damaged. None of the affected equipment would have adversely affected the ability of the plant to shutdown safely. Therefore, the safety significance of this event is minimal, and the health and safety of the public was not compromised.

CORRECTIVE ACTIONS

The following corrective actions have been completed:

- The CRMs were quickly restored to service.
- The 'B' Auxiliary Boiler was internally inspected. No damage was observed.

The following corrective actions are scheduled for completion:

- The operator on the event will be counseled, emphasizing the importance of cautions in procedures.
- Make Auxiliary Boiler operating procedure changes to provide guidance with regard to achieving the required conductivity, and add statements that cold water addition will reduce Auxiliary Boiler pressure.
- Provide additional training to operators on Auxiliary Boiler operation, specifically the affect of conductivity, pressure, and power on boiler operation.

ADDITIONAL INFORMATION

Past Similar Events: Docket No. 50-388 LER 87-010-00

Docket No. 50-387 LER 84-043-02

Failed Component: None