

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.

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TITLE (4)
Opening Incorrect Electrical Cubicle Causes Loss of Shutdown Cooling and Leads to Failure to Meet Technical Specification Required Action in the Required Time

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
10	18	98	1998	036	01	02	11	99	None	05000
									None	05000

OPERATING MODE (9) 4	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)									
POWER LEVEL (10) 000	20.2201(b)	20.2203(a)(2)(v)	<input checked="" type="checkbox"/>	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)		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 Tim Staber, Shift Manager	TELEPHONE NUMBER (Include Area Code) (217) 935-8881, Extension 3101
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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).	<input checked="" type="checkbox"/> NO			

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

On October 18, 1998, at 2241 hours, operations personnel were restoring a tagout when the wrong electrical cubical door was opened. This caused the low voltage auto trip relay to trip the 1A1 reserve feed breaker de-energizing the Division 1 electrical bus. The Residual Heat Removal (RHR) "A" pump tripped off, causing a loss of shutdown cooling, loss of reactor core circulation, automatic start of the Division 1 emergency diesel generator. Technical Specification Limiting Condition for Operation (LCO) 3.4.10, "RHR Shutdown Cooling System - Cold Shutdown," Required Action B.1, requires that reactor coolant circulation be established within one hour of the loss of shutdown cooling. Reactor coolant circulation was not established until three hours and fourteen minutes after shutdown cooling was lost. The cause of this event is attributed to the procedure for restoration of reactor core circulation not adequately supporting timely system recovery, and the Operations shift crew's execution of recovery activities was insufficient to meet the Technical Specification one hour action statement and to restore reactor coolant circulation in a timely manner. Corrective actions for this event include: providing training to licensed operators reinforcing management expectations regarding Technical Specification compliance, and revising the procedure for restoring RHR to support a more timely restoration of the system.

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DESCRIPTION OF EVENT

On October 18, 1998, the plant was in Mode 4 (Cold Shutdown) with reactor [RCT] level being maintained between 70 and 100 inches using the shutdown range instruments and temperature being maintained between 95 and 115 degrees Fahrenheit, reactor pressure was atmospheric. At 2200 hours, non-licensed plant operators were briefed on restoring safety tagout 98-1148 and performing a load dispatch switching order. The safety tagout was prepared in order to remove the reserve auxiliary transformer supply [XFMR] feed from service for maintenance on a disconnect switch. At 2241 hours, the non-licensed operators were restoring the safety tagout. The tagout restoration required the non-licensed operators to open the 1A1 main feed breaker [BKR] potential transformer [XPT] fuse [FU] cubicle door. However, the non-licensed operators opened the 1A1 Division 1 safety-related electrical bus [BU] potential transformer fuse cubicle door in error. The operators opened the front electrical cubicle door that contained the 1A1 Division I safety-related potential transformer fuses instead of the rear door as stated on the tagout restoration.

Opening the incorrect potential transformer fuse cubicle door caused the Division 1 electrical bus loss of power instrumentation to sense low bus voltage. This caused the low voltage auto trip relay to trip the 1A1 reserve feed breaker. Since the 1A1 main feed breaker was already out of service, the Division 1 electrical bus was de-energized. Upon de-energization of the Division 1 electrical bus, the "A" residual heat removal (RHR) system [BO] pump [P] tripped, causing a loss of shutdown cooling and coolant circulation for the reactor vessel. The Division 1 emergency diesel generator [DG] automatically started and energized the Division 1 electrical bus. The RHR pump does not automatically restart when the bus is re-energized by the Division 1 emergency diesel generator. The fuel pool cooling and cleanup [DA] pump; and fuel building ventilation [VG] tripped. The instrument air supply valves [ISV] to containment closed.

Technical Specification Required Limiting Condition For Operation (LCO) 3.8.2 Action A.2.4 was entered, due to the loss of offsite power to the Division 1 electrical bus. This requires that action be taken to immediately restore a required offsite power circuit to an operable status. Technical Specification LCO 3.4.10 Required Action B.1 for loss of shutdown cooling was also entered. Required Action B.1 requires that reactor coolant circulation be verified using an alternate method within one hour. At Clinton Power Station, the accepted alternate method of reactor coolant circulation in Mode 4 is by use of one of the reactor recirculation loops, residual heat removal system trains in the shutdown cooling mode of operation, or operation of one reactor water cleanup pump [P].

The status of these forced circulation systems was such that none of them were immediately available. Starting the RHR "A" pump required a fill and vent of the system by operators outside of the control room. The RHR "B" pump, which is powered by the Division II safety related bus was available, but would need to be flushed and prepared for operation. This activity would exceed the one hour Required Action time. Reactor recirculation [AD] pump "A" was out of service for maintenance. Reactor recirculation pump "B" support systems were not available for startup. The reactor water cleanup system [CE] was out-of-service for maintenance. Shift Supervision determined that the most prudent success path for restoring reactor coolant circulation was the restoration of the "A" RHR system in the shutdown cooling mode of operation.

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At 2243 hours, the instrument air system was restored to the containment. Off-normal procedures for loss of shutdown cooling and loss of AC power were entered.

At 2246 hours, control room operators determined the cause of the loss of offsite power to the Division 1 electrical bus.

At 2255 hours, shutdown cooling suction valves were isolated per Clinton Power Station procedure 4006.01, "Loss of Shutdown Cooling."

At 2300 hours, the control room supervisor assigned two reactor operators to restore the RHR "A" system in the shutdown cooling mode of operation.

At 2320 hours, the Control Room Supervisor informed the Shift Manager that Technical Specification Required Action B.1 for LCO 3.4.10 to establish core circulation within one hour would not be met.

At 2323 hours, one of the two area operators assigned to fill and vent the RHR "A" system, in order to restore it to service, entered the control room.

At 2334 hours, a briefing was conducted in the control room on restoration of the Division 1 electrical bus back to the emergency offsite power source.

At 2336 hours, the second area operator assigned to fill and vent the RHR "A" system entered the control room.

At 2341 hours, Technical Specification Required Action B.1 required by LCO 3.4.10 to establish forced reactor coolant circulation was not completed within the required one hour time.

At 2342 hours, a briefing was conducted in the control room with the area operators on filling and venting the RHR system. At 2346 hours, the area operators left the control room area to fill and vent the RHR system.

At 0005 hours, the Illinois Power Load Dispatcher was requested to turn off the Auto Recloser for the circuit feeding the emergency reserve auxiliary transformer in preparation for the Division 1 emergency diesel generator being operated in parallel with the offsite power source. This activity is required by plant procedures.

The RHR "A" containment spray and heat exchanger piping sections are vented at 0018 and 0023 hours respectively. RHR "A" is pressurized with cycled condensate at about 0026 hours. At 0035 hours, RHR "A" activities associated with filling and venting RHR "A" are complete.

At 0054 hours, all activities required for starting the RHR "A" pump for operation in the shutdown cooling mode of operation were complete. RHR "A" was now ready to start in the shutdown cooling mode of operation.

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The Director-Operations was in the control room, having arrived from home following notification by the Shift Manager of the event. He questioned shift supervision when offsite power would be restored.

At 0055 hours, discussions with the Illinois Power Load Dispatcher disclosed that it should only be an additional ten to fifteen minutes before the auto recloser is off, allowing the Division 1 emergency diesel generator to be operated in parallel with the offsite power source.

Shift supervision assessed the safety significance of unsuccessful bus transfer as it related to further delays in reactor coolant circulation restoration, and reached the conclusion that it was prudent to restore the RHR "A" pump following offsite power restoration. The time to boil without shutdown cooling was greater than 60 hours.

At 0108 hours, a briefing was conducted in the main control room to discuss the restoration of offsite power to the Division 1 electrical bus. Illinois Power Load Dispatch informs control room personnel that the auto recloser for the emergency reserve auxiliary transformer was off at 0110 hours.

At 0140 hours, the Division 1 emergency diesel generator was paralleled with off-site power. At 0145 hours, the Division 1 emergency diesel generator was shutdown.

At 0155 hours, the RHR "A" pump was started and placed into service in the shutdown cooling mode of operation. This satisfied LCO 3.4.10 Required Action B.1.

CAUSE OF EVENT

There were two items that could be attributed to cause this event. The procedure for restoration of reactor core circulation did not adequately supporting timely system recovery. The Operations shift crew's execution of recovery activities was insufficient to meet the Technical Specification one hour action statement and to restore reactor coolant circulation in a timely manner.

The inadequate procedure is supported by information that prior to 1996 Clinton Power Station (CPS) procedure 3312.03 "RHR-Shutdown Cooling & Fuel Pool Cooling and Assist" did not require that fill and vent operations of the previously running RHR loop be performed upon receipt of the RHR system low pressure alarm. This low pressure alarm actuated when power was lost to the operating RHR loop. Filling and venting may not always be necessary but is required by procedure. Also, the need to flush the out of service RHR piping loop when it has been aligned to the suppression pool is not necessary when the system is immediately needed.

The lack of adequate execution of recovery activities is supported by the event timeline that shows that the event occurred at 2241 hours, two reactor operators were assigned to restore RHR "A" at 2300 hours, and the briefing to perform required operations to restore the system was not held until 2342 hours. Also, supervisory communications during the event did not emphasize the need to comply with the Technical Specification Action requirement for restoring reactor coolant circulation.

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CORRECTIVE ACTIONS

Training will be provided to licensed operators reinforcing management expectations regarding Technical Specification compliance. Specifically, the importance of meeting Technical Specification Action time limits, and ensuring adequate crew focus necessary to be successful will be stressed. CPS procedure 3312.03 will be revised to provide alternate means for ensuring adequate system fill and vent prior to restoration, and to allow restoration of a RHR loop previously aligned to the suppression pool without performing a piping flush when necessary to meet Technical Specification reactor coolant circulation requirements.

ANALYSIS OF EVENT

This event is reportable per 10CFR50.73(a)(2)(i)(B) as operation of the plant prohibited by the Technical Specifications. LCO 3.4.10 Required Action B.1 was not completed within one hour as required by the plant Technical Specifications.

Failure to restore reactor coolant circulation within one hour had little impact on core cooling due to the minimal decay heat load at the time of the event. The reactor coolant time to boil curves showed that time to boil was greater than 60 hours. Reactor coolant temperature increased three degrees Fahrenheit during the three hours and fourteen minutes it took to restore forced reactor coolant circulation. If this event had occurred during a period of higher decay heat loads there would have been a greater impact on reactor core cooling.

ADDITIONAL INFORMATION

Review of Licensee Event Reports for the last two years revealed one other occasion where Technical Specification LCO 3.4.10 Required Action B.1 was not completed within the required time. The cause of that event related to a lack of adequate work planning.

For additional information on this event contact Tim Staber, Shift Manager, at (217) 935-8881, extension 3101.