

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)
Susquehanna Steam Electric StationDOCKET NUMBER (2)
0 5 0 0 0 3 8 7PAGE (3)
1 OF 0 3TITLE (4)
Emergency Service Water Spray Networks in Degraded Condition

EVENT DATE (6)			LER NUMBER (8)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)			
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES	DOCKET NUMBER(S)		
01	06	84	84	002	01	02	28	84	Susquehanna, Unit 2	0 5 0 0 0 3 8 8		
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OPERATING MODE (9)	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)									
5	20.402(b)		20.406(c)		50.73(a)(2)(iv)		73.71(b)			
POWER LEVEL (10)	20.406(a)(1)(i)		50.36(e)(1)		50.73(a)(2)(v)		73.71(c)			
01010	20.406(a)(1)(ii)		50.36(e)(2)		50.73(a)(2)(vii)		OTHER (Specify in Abstract below and in Text, NRC Form 365A)			
	20.406(a)(1)(iii)		50.73(a)(2)(i)		50.73(a)(2)(viii)(A)					
	20.406(a)(1)(iv)		50.73(a)(2)(ii)		50.73(a)(2)(viii)(B)					
	20.406(a)(1)(v)		50.73(a)(2)(iii)		50.73(a)(2)(ix)					

LICENSEE CONTACT FOR THIS LER (12)
NAME
L.A. Kuczynski - Nuclear Plant Specialist-IIITELEPHONE NUMBER
AREA CODE
7 1 7 5 4 2 - 2 1 8 1

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
B	*	PISIF	S 3 2 5	N					
B	*	IISIV	J 0 1 0	Y					

SUPPLEMENTAL REPORT EXPECTED (14)
YES (If yes, complete EXPECTED SUBMISSION DATE) ☐ NO ☒
EXPECTED SUBMISSION DATE (15)
MONTH DAY YEAR

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

- Because the 'B1' Emergency Service Water (ESW) spray network inlet valve was leaking past its seat, the 'B1' spray risers could not be pumped down. To prevent the water in the risers from freezing, the appropriate ESW pumps (B/D) were run intermittently, discharging through the 'B' network. Ice formation on the spray nozzles caused some spray distribution arms to break off of the riser assemblies. Investigation showed that there was minimal thread engagement between the distribution arm coupling and riser nipple for most distribution assemblies. The distribution arms were welded to the distribution arm coupling and the coupling welded to the riser nipple for all assemblies. Procedural changes and a preventive maintenance activity will be implemented which will prevent recurrence of this event.

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* System codes not available.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES 8/31/85

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Susquehanna Steam Electric Station Unit 1	0500038784	—	002	—	01	02	OF 03

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

At the completion of Unit 1-Unit 2 Tie-in Outage work on the 'B' loop of the Emergency Service Water (ESW) system, Operations personnel began pumping down the 'B' ESW spray network to remove water in the spray nozzles and distribution arms to prevent damage to those components from the water freezing. Pumpdown commenced at 0100 on 12/22/83. It was determined approximately 13.5 hours later that the larger of the 'B' spray network (B1-89 risers) was still not drained and its pumpdown discontinued. The smaller 'B' spray network (B2-43 risers) pumpdown was completed by 1730 on 12/22/83.

Investigation into why the 'B1' spray network could not be pumped down revealed that the Spray Pond Network 'B1' inlet valve (HV-01224B1, 30" butterfly) was leaking past its seat. Other outage work prevented the immediate repair of HV-01224B1. As an interim action to prevent standing water in the distribution arm and/or nozzle from freezing, Operations personnel ran ESW pumps B and/or D intermittently, discharging through the affected riser network. Due to the extremely cold seasonal temperature, ice formation began on the spray nozzles and continued until the weight of the ice was sufficient to break some distribution arms from the spray pond risers. The broken arms were identified on 1/4/84. (A Significant Operating Occurrence Report (SOOR) was initiated on 1/6/84. The SOOR is the station's triggering mechanism for a Licensee Event Report.) The inlet valve, HV-01224B1, was repaired by 1/15/84.

Examination showed that there was inadequate thread engagement between the riser nipple and the distribution arm coupling. Work has been completed to fillet weld the threaded connections between the distribution arms and their distribution arm couplings and the connections between the couplings and riser nipples. Also, the distribution arm piping was tilted slightly to allow the piping to drain back into the riser headers. The operating procedures for the Unit 1 and Unit 2 Residual Heat Removal Service Water Systems have been revised to include guidelines regarding spray pond network operation at various Spray Pond water temperatures and to direct the performance of a weekly preventive maintenance (PM) activity. The PM activity will fill the distribution piping and then pump it down between September 30 and March 31. By filling the distribution piping until water is observed at the spray nozzles, this PM activity will verify that the distribution piping is not plugged with ice and also ensure that the piping is drained weekly.

The 'A' spray network of the ESW was operationally unaffected by the ice formation. The spray pond network 'A' inlet isolation valves seated properly and the risers were able to be pumped down. The 'A' spray network was available for operation throughout the event. The station remained in Operational Condition 5 (Refuel) throughout the event. A review of meteorological data for February and March of the previous ten years and subsequent calculations indicate that the spray pond can provide adequate cooling for one unit in Operational Condition 4 or 5 (Cold Shutdown or Refuel, respectively) without the spray networks. The operability of other systems was not affected by the inoperability of the sprays.

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

This occurrence is reported under 10CFR50.73(a)(2)(v) because the excessive ice formation caused some spray distribution arms to break off their riser assemblies, thus preventing the arms from performing their function of heat removal from cooling water used in the ESW and Residual Heat Removal Service Water Systems. While minimal thread engagement between nipples and distribution arm couplings was possible on the 'A' spray network, its inlet isolation valves seated properly and the network was not exposed to the condition which led to the ice formation on the 'B' network. The station's FSAR (Section 9.2.7) contains an analysis of spray pond capabilities under a LOCA/Forced Shutdown combination with only one spray network available, and concludes that the spray pond would still meet the performance requirements of an ultimate heat sink.



Pennsylvania Power & Light Company

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February 28, 1984

U.S. Nuclear Regulatory Commission
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SUSQUEHANNA STEAM ELECTRIC STATION
LICENSEE EVENT REPORT 84-002-01
ER 100450 FILE 841-23
PLA-2106

Docket No. 50.387
License No. NPF-14

1 | Attached is Licensee Event Report No. 84-002-01. This event was determined reportable per 10CFR50.73(a)(2)(v) in that, during operation at extreme low temperatures, the spray pond risers experienced some damage. Repairs have been completed. Procedural changes and a preventive maintenance activity will be implemented to prevent recurrence of this event.

H.W. Keiser
Superintendent of Plant-Susquehanna

LAK/pjg

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