REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 8802250491 DOC. DATE: 88/02/23 NOTARIZED: NO DOCKET #
FACIL: 50-388 Susquehanna Steam Electric Station, Unit 2, Pennsylva 05000388
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RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 88-001-00: on 880127, HPCI declared inoperable due to high moisture in lube oil sample. Caused by leaking steam supply valve. Seating surfaces of valve body & disk reworked. Lube oil replaced & sys returned to operable status. W/880223 ltr.

DISTRIBUTION CODE: IE22D COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 4
TITLE: 50.73 Licensee Event Report (LER), Incident Rpt, etc.

NOTES: 1cy NMSS/FCAF/PM. LPDR 2cys Transcripts. 05000388

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	THADANI, M	1	1			
INTERNAL:	ACRS MICHELSON	1	1	AC MOELLER	2	2
	AEOD/DOA	1	1	AE /DSP/NAS	1	1
	AEOD/DSP/ROAB	2	2	AE /DSP/TPAB	1	1
	ARM/DCTS/DAB	1	1	DE 0	1	1
	NRR/DEST/ADS7E4	1	0	NR DEST/CEB8H7	1	1
	NRR/DEST/ESB 8D	1	1	NR DEST/ICSB7A	1	1
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	NRR/DLPQ/QAB10A	1	1	NR DOEA/EAB11E	1	1
	NRR/DREP/RAB10A	1	1	NR DREP/RPB10A	2	2
	NRR/DRIS/SIB9A1	1	1	NR PMAS/ILRB12	1	1
	REG FILE 02	1	1	RE TELFORD, J	1	1
	RES/DE/EIB	1	1	RE DRPS DIR	1	1
	RGN1 FILE 01	1	1			
EXTERNAL:	EG&G GROH, M	5	5	FO BLDG HOY, A	1	1
	H ST LOBBY WARD	1	1	LP	2	2
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	NSIC MAYS, G	1	1			
NOTES:		3	3			

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NRC Form 366 (9-83)

LICENSEE EVENT REPORT (LER)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/85

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

TITLE (4)
HPCI declared inoperable due to high moisture in lube oil sample

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)
										0 5 0 0 0
0 1	2 7	8 8	8 8	— 0 0 1	— 0 0	0 2	2 3	8 8		0 5 0 0 0

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
POWER LEVEL (10)	1 0 0	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
		20.405(a)(1)(i)	50.36(c)(1)	X 50.73(a)(2)(v)	73.71(c)
		20.405(a)(1)(ii)	50.36(c)(2)	X 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
Robert G. Sheranko, Senior Results Engineer-Compliance	7 1 7 5 4 2 - 3 8 5 6

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)

From 1530 on 1/27/88 to 1710 on 1/28/88 and from 1540 on 2/3/88 to 1745 on 2/7/88 with the Unit operating at 100% normal power operation the High Pressure Coolant Injection (HPCI) System was declared inoperable. This action was taken based on chemical analysis results of the lube oil which showed the sample to contain excessive moisture: a condition which was determined to affect system operability.

Root cause of water intrusion into the lube oil was a leaking steam supply valve (F001). Steam leaking past the valve pressurized the turbine seal area. Since the seal was not designed to seal completely during static conditions, steam leaked through the seal and onto an adjacent bearing housing. The condensing steam was then introduced into the lube oil through the bearing.

Seating surfaces of the valve's body and disk were reworked to obtain proper seating. Lube oil was replaced and the system returned to operable status. Subsequent oil samples taken confirm resolution of the problem. Seating surface erosion was due to normal wear.

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Susquehanna Steam Electric Station Unit 2	0 5 0 0 0 3 8 8	8 8	— 0 0 1	— 0 0	0 2 OF 0 3

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

DESCRIPTION OF EVENT

At 1530 on 1/27/88, with the unit operating at 100% normal power operations, the High Pressure Coolant Injection (HPCI) system (EIIS:BJ) was declared inoperable. This determination was based on the chemical analysis results of a quarterly lube oil sample. The analysis showed the sample to contain visible moisture; a condition which alone could have prevented HPCI from performing its safety function.

Engineering review concluded that the only water to oil interfaces in the HPCI system are at the lube oil cooler and at the turbine and pump seals. If the cooler was leaking, the leak would be most severe while HPCI was running and would essentially stop while HPCI was in the Standby mode. With the system in Standby, there should be no differential pressures across any of the oil to water interfaces. Based on this, the fact that HPCI was not scheduled to be run prior to the upcoming Refueling and Inspection Outage, and the engineering judgement that the oil, once replaced, would remain in a condition that would allow HPCI to perform its safety function, the lube oil was changed out and an accelerated sampling frequency initiated. HPCI was returned to operable status on 1/28/88 at 1710.

Results of an oil sample taken on 2/1/88 indicated that water was continuing to be introduced into the lube oil. An inspection of the HPCI turbine on 2/3/88 revealed steam to be blowing out from around the turbine seal area onto an adjacent outboard bearing cover. This indicated a leak in the HPCI Turbine Steam Supply Valve (F001) since the seal area is normally not pressurized when HPCI is in the Standby condition. Results of a subsequent oil sample received on 2/3/88 indicated moisture content of the lube oil was high enough to affect system operability. Thus, HPCI was declared inoperable at 1540 on 2/3/88.

Steam supply to HPCI was isolated and work on the F001 valve commenced on 2/4/88. Oil samples taken before and after system isolation confirmed that water intrusion had stopped with closure of the isolation valves. Following rework of the valve seating surfaces and changeout of lube oil, HPCI was returned to operable status in the Standby mode at 1745 on 2/7/88.

Oil samples taken on 2/8/88 and 2/11/88 indicate that the problem has been resolved.

CAUSE OF THE EVENT

Root cause of water intrusion into the lube oil was a leaking steam supply valve (F001). Steam leaking past the valve pressurized the turbine seal area. Since the seal was not designed to seal completely during static conditions, steam leaked through the seal and onto an adjacent bearing housing. The condensing steam introduced water into the lube oil through the bearing.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Susquehanna Steam Electric Station Unit 2	0 5 0 0 0 3 8 8	8 8	— 0 0 1	— 8 8	0 3 OF 0 3

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

ANALYSIS OF EVENT

This event was deemed reportable per 10CFR50.73(a)(2)(v) and (vii) since the excessive water in the lube oil could have prevented the HPCI system, a single-train system, from fulfilling its safety function.

There were no safety implications to the public during the occurrence nor would there have been if the occurrence took place at any other initial condition due to the availability of the Reactor Core Isolation Cooling system (EIIS:BN) and remaining high and low pressure Emergency Core Cooling Systems.

HPCI was out of service for a total of 123.75 hours: from 1530 on 1/27/88 to 1710 on 1/28/88, and from 1540 on 2/3/88 to 1745 on 2/7/88.

CORRECTIVE ACTION

Seating surfaces of the valve's body and disk were reworked to obtain proper seating. Lube oil was replaced and the system returned to operable status. Subsequent oil samples taken confirm resolution of the problem. Seating surface erosion was due to normal wear.

ADDITIONAL INFORMATION

There were no failed components nor previous similar events.

Pennsylvania Power & Light Company
Two North Ninth Street • Allentown, PA 18101 • 215/770-5151

February 23, 1988

U. S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

SUSQUEHANNA STEAM ELECTRIC STATION
LICENSEE EVENT REPORT 88-001-00
FILE R41-2
PLAS - 0303

Docket No. 50-388
License No. NPF-22

Attached is Licensee Event Report 88-001-00. This event was determined reportable per 10CFR50.73(a)(2)(v) and (vii) in that the High Pressure Coolant Injection System, a single train safety system, was declared inoperable due to excessive moisture in the lube oil.

R. G. Byram
Superintendent of Plant - Susquehanna

RGS/mjm

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