

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) <b>Turkey Point Unit 4</b>	DOCKET NUMBER (2) <b>0 5 0 0 0 2 5 1</b>	PAGE (3) <b>1 OF 0 4</b>
---	---	-----------------------------

TITLE (4)  
**Technical Specification - Containment Spray Pump**

EVENT DATE (6)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED IF		
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	VISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES		DOCK. BER(S)
0 2	1 8	8 5	8 5	0 0 7		0 0	0 3	2 0 8 5	N/A		0 5 0 0 0
0 2	1 8	8 5	8 5	0 0 7		0 0	0 3	2 0 8 5	N/A		0 5 0 0 0

OPERATING MODE (8) **N**

POWER LEVEL (10) **1 0 0**

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)

20.402(b)	20.406(e)	50.73(a)(2)(iv)	73.71(b)
20.406(a)(1)(i)	50.36(e)(1)	50.73(a)(2)(v)	73.71(c)
20.406(a)(1)(ii)	<input checked="" type="checkbox"/> 50.36(e)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
20.406(a)(1)(iii)	<input checked="" type="checkbox"/> 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 <b>R. D. Hart, Licensing Engineer</b>	TELEPHONE NUMBER <b>3 0 5 2 4 5 - 2 9 1 0</b>
---	--

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS

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)**

**Event:** On February 18, 1985, while Unit 4 was at 100% power, the 4A containment spray pump (CSP) power supply breaker was found to be inoperable. The 4A CSP 480 volt power supply breaker closing springs were found discharged and the closing spring charging motor was turned off. Therefore, the pump power supply breaker would not have closed in response to a pump start signal. This rendered the pump inoperable for a period of time that exceeded the Technical Specification limiting condition for operation. At the time of this event, the 4B CSP and the Emergency Containment Cooling (ECC) System were fully operational. The Final Safety Analysis Report states that the ECC and containment spray systems are of different engineering principles and serve as independent back-ups for each other. Significant event notification was made to the NRCOC via ENS pursuant to 10CFR50.36(c)(2). The health and safety of the public were not affected. Similar occurrences: LERs 251-83-017 and 251-83-014.

**Cause of Event:** Investigations have discovered that the last operability test of the 4A CSP occurred on February 6, 1985. It is believed that the closing spring charging motor was off during this test resulting in the closing springs being discharged. One possible reason for the charging motor being off was that after an in-plant clearance order for the power supply breaker was released on February 3, 1985, the switch for the charging motor had been inadvertently left in the "off" position. Another possible reason could be that the switch was accidentally bumped to the "off" position by construction workers sometime before the 4A CSP operability test on February 6, 1985.

**Corrective Actions:** Immediate corrective actions included the following: 1) Charging power was restored to the closing springs and the pump was tested for operability and successfully passed the test. 2) All other 480 volt load center breakers were verified to have proper indication and have their charging motors turned on. 3) Applicable procedures were revised to provide instructions on checking the charging power switch position and condition of the closing springs for 480 volt load center breakers. 4) Discussions were held with the Plant Supervisors-Nuclear and Nuclear Turbine Operators on the seriousness of this event, and corrective actions taken.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)  Turkey Point Unit 4	DOCKET NUMBER (2)  0 5 0 0 0 2 5 1 8 5	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		8 5	0 0 7	0 0	0 2	OF 0 4

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

Event:

On February 18, 1985, at 10: 40 a.m. while Unit 4 was at 100% power, the 4A containment spray pump (CSP) power supply breaker was discovered to be inoperable. The 480 volt breaker which supplies power to the 4A CSP motor was found with its closing springs not charged and the toggle switch which supplies power to the closing spring charging motor was turned off. The last periodic test for operability of the CSPs was performed on February 6, 1985, as per Operating Procedure (OP) 4004.1 "Containment Spray Pumps - Periodic Test". The pumps and respective breakers operated satisfactorily. As a normal result of performing this test, the operation of the power supply breakers resulted in the discharge of the breaker closing springs. The closing springs could not be recharged because there was no power supplied to the closing spring charging motor due to the toggle switch being in the "off" position. This rendered the 4A CSP inoperable because the power supply breaker would not have been able to close in response to a pump start signal. Technical Specification (TS) 3.4.2.b.2 states that one of two CSP's may be out of service for 24 hours. If the CSP is not back in service within 24 hours, the reactor shall be placed in a hot shutdown condition within the next seven (7) hours. Under these circumstances, the power supply breaker and respective CPS are rendered inoperable. Should conditions have warranted the use of the affected pump, it could have been started by placing the toggle switch on the breaker to the "on" position.

OP 0204.2 "Schedule of Periodic Tests, Checks, Calibrations, and Operating Evolutions", required the Nuclear Turbine Operators to check the 480 volt load center breakers and 4160 volt switchgear for safety related equipment for closing springs charged, among other indications, every mid-shift. The checks were signed off as completed every mid-shift from February 6, 1985, through February 18, 1985. There were a number of contributing factors as to why the discharged closing springs on the 4A CSP were not discovered sooner.

1) The 480 volt breakers were designed without adequate consideration of human factors concerns. The closing spring charging motor toggle switch is quite small and non-descript and the "on" and "off" labels for switch positions were small and difficult to read. The color coding and labeling of the spring charged/discharged indicators on the breakers are not consistent. The following combinations of spring charged/discharged indicator colors, labeling, and breaker status occur on 480 volt breakers in the plant load centers:

	<u>Indicator Color</u>	<u>Indicator Label</u>	<u>Breaker Status</u>
1)	Black	"springsuncharged"	closed
2)	White	"springs discharged"	closed
3)	White	"springs charged"	open
4)	Yellow	"springs charged"	open
5)	Yellow	"springs charged"	closed

Schemes 1 and 3 are the most common on the Unit 3 A,B, C, and D load centers.  
Schemes 2 and 4 are the most common on the Unit 4 A,B, C, and D load centers.  
Schemes 4 and 5 are used on the 3E and 4E load centers.

2) The operators who performed the mid-shift breaker check were interviewed. The results of this interview revealed that additional guidance was necessary for the mid-shift breaker check.

3) Neither the containment spray periodic test procedure, the safety system flowpath

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)  Turkey Point Unit 4	DOCKET NUMBER (2)  0 5 0 0 0 2 5 1	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		8 5	0 0 7	0 0	0 3	OF	0 4

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

Event: (continued)

verification procedure, nor the equipment clearance order provided explicit instruction or direction regarding the closing spring charging motor toggle switch or the charged/discharged condition of the closing springs.

- 4) The 4A CSP breaker is located high in the cubicle, making it difficult to check the charge indicator on the breaker.

Evaluation:

The Final Safety Analysis Report (FSAR) states in Section 6.4, Containment Spray System, that adequate containment heat removal capability for the containment is provided by two separate, full capacity, engineered safety feature systems. The Containment Spray System, whose components operate in the sequential modes described in FSAR Section 6.4.2, and the Emergency Containment Cooling and Filtering System which is discussed in FSAR Section 6.3. The design basis for containment heat removal considers simultaneous operation of one spray pump and 2 of 3 emergency containment coolers. This is the basis for containment pressure transient calculations in Section 14. The operation of either of the spray pumps or two of the three emergency containment coolers will provide heat removal capability to maintain the post accident containment pressure below the design value. An analysis has been performed to evaluate the impact of not having containment spray available for containment pressure reduction following a postulated loss-of-coolant accident (LOCA). The results of this analysis show that the impact on the containment pressure transient of not having containment spray available is to slow the rate of pressure decrease. The peak containment pressure occurs before this containment spray could come on, therefore, the peak containment pressure is not affected.

Cause of Event:

The reason for the closing springs being discharged is that the closing spring charging motor toggle switch was in the off position at the time of the last periodic test of February 6, 1985. The reason for the toggle switch being in the "off" position cannot be positively determined. There are two probable causes:

- 1) The last equipment clearance order which affected the 4A CSP breaker was written on February 1, 1985. The clearance required that the breaker be checked to be off, and then racked out and tagged. The clearance was released on February 3, 1985, and the breaker signed off as being racked in. Independent verification was performed that the breaker was racked in. When the breaker was racked in on February 3, 1985, the switch was inadvertently not returned to the "on" position.
- 2) The switch was accidentally bumped to the "off" position by construction workers sometime before the periodic test on February 6, 1985.

Interim Corrective Action:

Interim corrective action taken include the following:

- 1) Charging power was restored to the closing springs by placing the toggle switch on the breaker to the "on" position. The pump was tested for operability as per OP 4004.1 and successfully passed the test.
- 2) All other 480 volt load center breakers were verified to have proper indication and have their charging motors on.
- 3) All 480 volt load center breaker toggle switches' "on" and "off" positions were clearly identified and the tips of the charging motor toggle switches were painted white.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)  Turkey Point Unit 4	DOCKET NUMBER (2)  0 5 0 0 0 2 5 1 8 5	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		8 5	0 0 7	0 0	0 4	OF 0 4

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

**Interim Corrective Action:** (continued)

- 4) OP 0204.2 was revised to provide explicit instructions on checking the charging power toggle switch and the charged condition of the closing springs for the 480 volt load center breakers.
- 5) Administrative Procedure (AP) 0103.19, "Monthly Verification of Safety Related Systems Flowpaths", and OP 4004.1 were revised to include verification of charging power toggle switch position and the charged condition of the closing springs for the 480 volt load center breakers.
- 6) The remaining pump test procedures were reviewed for applicability to this incident and no other procedure changes were necessary.
- 7) Training brief number 45, "480 volt load center breakers" was issued to all operators. The brief informed the operators of the features of the breakers found in the A, B, C, and D 480 volt load centers.
- 8) Individual meetings were held with each Plant Supervisor - Nuclear to emphasize management concern over safety related equipment events and general concerns over safety related maintenance activities.
- 9) Two group meetings were held with all Nuclear Turbine Operators to discuss the seriousness of this event and previous events. Plant Management expectations were also discussed. The need to fully understand position duties and responsibilities and to ask questions if unsure were discussed.
- 10) Relabeling the charging spring indicators to be consistent is being pursued on an expedited basis.

**Long Term Corrective Action:**

- 1) The Procedure Upgrade Program portion of the Performance Enhancement Program is upgrading and reformatting surveillance test procedures to include explicit, specific instructions, for evolutions being performed.
- 2) Inadequate instructions were available to operators on operation of the toggle switch when racking 480 volt breakers in and out. Proper guidance has been developed within the job and task analysis training upgrade and has since been incorporated into Operating Procedures 3-OP-006 (Unit 3) and 4-OP-006 (Unit 4), 480 Volt Switchgear System, which were written by PJP, approved by Plant Management and subsequently issued for plant use on February 15, 1985. These procedures, had they been in effect on February 6, 1985, would have prevented the incident.
- 3) Investigation has been initiated into the feasibility of installing an alarm function on the charging motor toggle switches.
- 4) The training portion of the Performance Enhancement Program is improving operator training through job and task analysis and performance based training.



MAR 20 1985

L-85-120

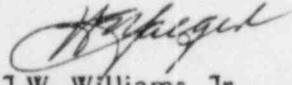
U.S. Nuclear Regulatory Commission  
Document Control Desk  
Washington, D.C. 20555

Gentlemen:

Re: Reportable Event 85-007  
Turkey Point Unit 4  
Date of Event: February 18, 1985  
Technical Specifications - Containment Spray Pump

The attached Licensee Event Report is being submitted pursuant to the requirements of 10CFR to provide notification of the subject event.

Very truly yours,

  
for J.W. Williams, Jr.  
Group Vice President  
Nuclear Energy

JWW/SAV:mvt

Attachment

cc: Dr. J. Nelson Grace, Region II, USNRC  
Harold F. Reis, Esquire  
File 933.1  
PNS-LI-85-113

IE22  
1/1