

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Turkey Point Unit 4	DOCKET NUMBER (2) 0 5 0 0 0 2 5 1 1	PAGE (3) 1 OF 0 3
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TITLE (4)
Reactor Trip Due to 4C Steam Generator Feedwater Isolation Circuit Failure

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)																																																																																													
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LICENSEE CONTACT FOR THIS LER (12)

NAME Randall D. Hart, Licensing Engineer	TELEPHONE NUMBER 3 0 5 2 4 6 - 1 3 0 0
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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
B	J	B	I L D 1 4 9	Y					
B	J	C	C L A 6 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)

Event:
On September 6, 1986, while Unit 4 was at 38% power, a reactor trip occurred. A licensed operator was checking for burned out light bulbs on the safeguards train B cabinet. While checking the loop C feedwater isolation light, a short developed across the field contacts which actuated one train of the 4C steam generator (S/G) feedwater isolation signal. This tripped the 4A S/G feedwater pump that was in operation. This resulted in S/G levels decreasing until the low S/G level reactor trip setpoint (15%) was reached for the 4B S/G on 2 out of 3 channels and subsequent reactor trip. The auxiliary feedwater (AFW) pumps started and recovered levels in the 4A, 4B and 4C S/Gs. The unit was subsequently stabilized at hot standby.

Cause of event:
The cause of the reactor trip was due to a short in the light socket for the 4C feedwater isolation circuit in safeguards rack 44.

Corrective actions:

- 1) The light socket was replaced and satisfactorily tested to ensure that the sequence of events for the reactor trip could not be repeated. The other light sockets for Unit 4 were inspected and no problems were found.
- 2) A post-trip review was completed which verified that the plant response to this event was as expected for a reactor trip of this kind. Following completion of the reviews of this event and performance of necessary maintenance and testing, the unit was returned to service at 1108 on September 7, 1986.
- 3) An evaluation of this event will be performed to determine possible long term corrective actions if necessary.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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

Event:

On September 6, 1986, while Unit 4 was at 38% power, a reactor trip occurred. A licensed operator had noticed that a power supply light to safeguards train "B" cabinet was out. The bulb was replaced and the other lights on the panel were checked for burned out bulbs. While checking the loop C feedwater isolation light, a short developed across the field contacts which actuated the relays for one train of the 4C steam generator (S/G) feedwater isolation signal at 0914. This tripped the 4A S/G feedwater pump that was in operation. The 4B S/G feedwater pump was not operating at the time because of the reduced power level. This resulted in S/G levels decreasing towards the low S/G level reactor trip setpoint of 15%. A manual reactor trip was initiated at 0916, however, subsequent review of the sequence of events printout revealed that an automatic reactor trip occurred approximately 140 msec earlier due to a low low S/G level on 2 out of 3 channels for the 4B S/G.

The auxiliary feedwater (AFW) pumps started automatically upon the tripping of the 4A S/G feedwater pump and began to recover levels in the 4A, 4B and 4C S/Gs. At 0938, the A & C AFW pumps were secured and the main steam isolation valves were closed to terminate the cooldown of the reactor coolant system (RCS). The unit was subsequently stabilized to hot standby.

A review of this event indicated that upon receipt of the 4C S/G feedwater isolation signal, a turbine trip should have occurred but did not. This turbine trip would have then resulted in a reactor trip. Investigations into this revealed that the 20 ASB solenoid coil in the second train of turbine/reactor trip had failed. Since the 4C S/G feedwater isolation signal came from only one train, only one train of turbine/reactor trip circuitry was actuated and that train contained the failed solenoid coil. After the reactor trip occurred, the other train of turbine trip circuitry tripped the turbine as required. The Final Safety Analysis Report, Chapter 14, Accident Analyses for a Loss of External Load, Loss of Normal Feedwater and Loss of Non-Emergency AC Power to the Plant Auxiliaries, does not take credit for a turbine trip causing a reactor trip.

Cause of event:

The cause of the reactor trip was due to a short in the light socket for the 4C feedwater isolation circuit in safeguards rack 44.

Analysis of event:

At the time of the event, Unit 4 was at 38% power and increasing power to 50% at a 3% per hour ramp rate (Unit 4 had just completed a refueling/maintenance outage). A post-trip review was performed to assess the proper operation of safety related equipment. With the exception of the equipment failures previously described, the other safety related equipment were verified to function as designed upon actuation of the reactor protection system. The post-trip review established that the transient behavior of pertinent plant parameters for the RCS and S/Gs responded as expected for a reactor trip of this kind. Specifically, the RCS pressures and temperatures were determined to have followed an expected pattern based on the conditions leading up to the transient. Based on the above, the health and safety of the public was not affected.

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

Corrective actions:

- 1) The light socket was replaced and satisfactorily tested to ensure that the sequence of events for the reactor trip could not be repeated. The other light sockets for Unit 4 were inspected and no problems were found.
- 2) The 20-ASB solenoid coil was replaced. A one time On-The-Spot-Change (OTSC) was written to 4-OSP-089, Main Turbine Valves Operability Test, to independently test the turbine trip solenoids. This test was satisfactorily completed at 0258 on September 7, 1986.
- 3) 4-OSP-089 will be revised to independently test the turbine test solenoids.
- 4) A post-trip review was completed which verified that the plant response to this event was as expected for a reactor trip of this kind. Following completion of the reviews of this event and performance of necessary maintenance and testing, the unit was returned to service at 1108 on September 7, 1986.
- 5) An evaluation of this event will be performed to determine possible long term corrective actions if necessary.

Additional details: The solenoid coil was manufactured by the Automatic Switch Company, part number HT-38-793-1-D. The light socket was manufactured by Dialight Company, type 820-2701-01-502. Similar Occurrences: None



OCTOBER 06 1986

L-86-402

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

Gentlemen:

Re: Reportable Event 86-19
Turkey Point Unit 4
Date of Event: September 6, 1986
Reactor Trip Due to 4C Steam Generator
Feedwater Isolation Circuit Failure

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

Very truly yours,

A handwritten signature in dark ink, appearing to read "C. O. Woody", is written over the typed name.

C. O. Woody
Group Vice President
Nuclear Energy

COW/RG/gp

Attachment

cc: Dr. J. Nelson Grace, Region II, USNRC
Harold F. Reis, Esquire

IE22
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