



**POWERING  
MICHIGAN'S PROGRESS**

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April 30, 1990

Nuclear Regulatory Commission  
Document Control Desk  
Washington, DC 20555

DOCKET 50-255 - LICENSE DPR-20 - PALISADES PLANT -  
LICENSEE EVENT REPORT 90-004 - HEATER CABLE FAILURE RESULTS IN  
INOPERABILITY OF A SECONDARY HEATER TRACE CHANNEL FOR A GREATER  
PERIOD THAN ALLOWED BY TECHNICAL SPECIFICATIONS

Licensee Event Report (LER) 90-004; (Heater Cable Failure Results Inoperability  
of a Secondary Heater Trace Channel for a Greater Period Than Allowed by  
Technical Specifications) is attached. This event is reportable to the NRC  
per 10CFR50.73(a)(2)(i).

Brian D Johnson  
Staff Licensing Engineer

CC Administrator, Region III, USNRC  
NRC Resident Inspector - Palisades

Attachment

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FDR ADDCK 05000255  
S PDC

OC0490-0336-NL04

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*11*

LICENSEE EVENT REPORT (LER)

FACILITY NAME (11) Palisades Nuclear Plant	DOCKET NUMBER (2) 0 5 0 0 0 2 5 5	PAGE (3) 1 OF 0 4
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TITLE (4) Failed Heater Cable Results in Inoperability of a Concentrated Boric Acid Heat Trace Channel for a Period Greater Than Allowed by Technical Specifications

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		
0	3	31	9	0	0	0	4	3	N/A		
0	3	19	0	0	4	0	4	3	N/A		
0	3	19	0	0	4	0	4	3	0 5 0 0 0		

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

OPERATING MODE (9) N	20.402(b)	20.408(a)	80.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10) 0,8,0	20.408(a)(1)(i)	80.38(a)(1)	80.73(a)(2)(v)	73.71(e)
	20.408(a)(1)(ii)	80.38(a)(2)	80.73(a)(2)(vi)	OTHER (Specify in Abstract below and in Test, NRC Form 305A)
20.408(a)(1)(iii)	X 80.73(a)(2)(ii)	80.73(a)(2)(vii)(A)		
20.408(a)(1)(iv)	80.73(a)(2)(iii)	80.73(a)(2)(vii)(B)		
20.408(a)(1)(v)	80.73(a)(2)(iii)	80.73(a)(2)(viii)		

LICENSEE CONTACT FOR THIS LER (12)

NAME CSKozup, Technical Engineer, Palisades	TELEPHONE NUMBER
	AREA CODE: 616   764   -   8913

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	F	D	E	H	T	R	N	0	8	0	No

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/>	NO		MONTH	DAY	YEAR
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ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

Abstract

At 1030 hours on March 31, 1990, the plant was operating at approximately 80% reactor power, with the Primary Coolant System at approximately 556°F and 2060 psia. Review of a Work Order that was issued to investigate a boric acid heat trace panel alarm identified that heat trace channel TICA-435B was inoperable due to a failed heater cable. The Limiting Condition for Operation (LCO) was immediately entered and TICA-435B was repaired within the time allowed following LCO entry. It was subsequently determined that TICA-435B was inoperable for a period greater than allowed by Technical Specifications.

This event was caused by a failed heater cable (Nelson Electric Co, A813L-022-25). The cable failure was caused by a clamp used to secure thermal insulation. A contributor to the condition described in this report was inadequate communication between maintenance and operations personnel. As corrective action, a memo will be issued regarding the use of clamps on heat traced lines. Also, procedural guidance and discussions with Senior Reactor Operators (SROs) will be provided on heat trace operability requirements. SROs and Instrument & Control (I&C) technicians will be informed of the circumstances surrounding this event, and discussions will be held with I&C technicians on Work Orders related to Operations concerns and communication of equipment problems.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)  Palisades Nuclear Plant	DOCKET NUMBER (2)  0 5   0   0   0   2   5   5	LER NUMBER (6)			PAGE (3)	
		YEAR 9   0	SEQUENTIAL NUMBER -   0   0   4	REVISION NUMBER -   0   0	0   2	OF 0   4

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

Event Description

At 1030 hours on March 31, 1990 the plant was operating at approximately 80% reactor power, with the Primary Coolant System (AB) at approximately 556°F and 2,060 psia. During review of a Work Order that was issued to investigate an alarm on boric acid heat trace (FD) panel C-30 (PL), it was determined that secondary heat trace channel TICA-435B was inoperable. The applicable Limiting Condition for Operation (LCO) was immediately entered upon recognition TICA-435B was inoperable, and the heater cable (FHTR) was repaired within the time allowed following LCO entry. It was subsequently determined that TICA-435B was inoperable for a period greater than allowed by Technical Specifications.

The line served by heat trace point TICA-435 is a part of the concentrated boric acid subsystem associated with the Chemical and Volume Control System (CVCS) (CB). Heat trace point TICA-435 consists of two redundant heat trace channels, TICA-435A and TICA-435B. TICA-435 provides the primary heat trace function for the concentrated boric acid lines that are associated with heat trace point TICA-435, and channel TICA-435B provides a secondary, or backup, function to the primary channel. Secondary channel TICA-435B has a lower temperature control set point than primary channel TICA-435A, and is only activated when TICA-435A cannot maintain line temperature above 145°F. Primary heat trace channel TICA-435A was functioning and operable throughout the period when TICA-435B was unavailable.

Work Order #24001878 was initially issued on March 28, 1990 to investigate the alarm on local heat trace panel C-30. At the time that this Work Order was written, it was believed that the alarm was the result of a fuse holder problem, and it was not suspected that heat trace channel TICA-435B was inoperable. The Work Order was released for investigation and troubleshooting at approximately 2103 hours on March 29. Instrument & Control (I&C) technicians (nonlicensed, utility) investigated the alarm and determined that the alarm was not caused by a fuse holder (FU) problem at approximately 2300 hours on March 29. The I&C technicians subsequently turned the Work Order over to the Electrical Maintenance Department for further evaluation and repair. Electrical maintenance personnel (nonlicensed, utility) determined that the heater cable associated with channel TICA-435B was failed and needed replacement at approximately 1300 hours on March 30.

The failed heat trace circuit was first recognized as inoperable at 1030 hours on March 31. The condition was recognized by the duty Shift Supervisor (licensed, utility) when he was requested to provide a work document to an Electrical Maintenance Planner (nonlicensed, utility) so that the planner could revise the work package to allow replacement of the failed heater cable. Upon identification of the failed heater cable, the Shift Supervisor immediately declared heat trace channel TICA-435B inoperable. The original Work Order was revised to allow replacement of the failed heater

LER-90004-NL04

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)  Palisades Nuclear Plant	DOCKET NUMBER (2)  0 5   0 0   0 2   5 5	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		9 0	0 0   4	0 0	0 3	OF 0 4

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

cable, and was released to repair at 1117 hours on March 31. Replacement of the heater cable and return of the associated heat trace channel to an operable status was completed at 1944 hours on March 31. TICA-435B was returned to service approximately 8.5 hours after inoperability of the heat trace channel was first recognized.

Cause of Event

This event was caused by failure of a heat trace heater cable (Nelson Electric Co, A813L-022-25). The cable failure resulted from damage that was caused by a clamp used to secure thermal insulation on the concentrated boric acid line. A contributor to the condition described in this report was inadequate communication between maintenance and operations personnel. The inadequate communications prevented recognition that TICA-435B was inoperable, and delayed LCO entry and initiation of actions to restore TICA-435B.

Administrative Procedure 4.02, "Control of Equipment Status," requires that equipment which is incapable of performing its design function be declared inoperable. This procedure also requires that appropriate LCOs are entered, and appropriate actions taken, when Technical Specification-required equipment is inoperable. The missed communication and subsequent lack of recognition that TICA-435B was inoperable delayed LCO entry and initiation of actions to restore TICA-435B, and was not in accordance with Administrative Procedure 4.02. This event was not contributed to by an error in an approved procedure, actions which are not covered by an approved procedure or any unusual conditions of the workplace.

Corrections Actions

As corrective action, the failed heater cable was repaired and a memo will be issued to the insulation crew general foreman regarding the installation of clamps on heat traced lines. Additionally, guidance will be added to Procedure SOP 2A, "Chemical and Volume Control System Charging and Letdown: Concentrated Boric Acid," which will clarify the operability effects of heat trace system alarms. Discussions will be held with Senior Reactor Operators (SROs) on the boric acid heat trace operability requirement in Technical Specifications and Standing Order 62, and SROs and I&C technicians will be informed of the surrounding circumstances and communications aspect of this event. Discussions will also be held with I&C technicians on the proper handling of Work Orders related to Operations concerns and the communication of equipment problems.

Revision of Procedure SOP 2A is currently expected to be completed July 1, 1990, and issuance of the memo to insulation crew leaders is scheduled to be complete by June 1, 1990. Actions directed at Senior Reactor Operators are expected to be completed by May 1, 1990, and actions directed at I&C technicians are expected to be complete by September 1, 1990.

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FACILITY NAME (1)  Palisades Nuclear Plant	DOCKET NUMBER (2)  0 5 0 0 0   2 5 1 5 9 0	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		9 0	- 0   0   4	- 0   0	0   4	OF 0   4

TEXT (If more space is required, use additional NRC Form 368A's) (17)

Analysis of Event

The flow paths associated with concentrated boric acid pumps P-56A and P-56B were both serviced by operable primary heat trace circuits over their entire length. Additionally, the flow path associated with concentrated boric acid pump P-56A was also serviced by an operable secondary heat trace circuit over its entire length. Operability of the heat trace circuits for these flow paths ensured that the concentrated boron in these lines remained in solution by maintaining the temperature of these lines above the boron solubility temperature. As a result, since availability of the concentrated boron flow paths associated with concentrated boric acid pumps P-56A and P-56B was unaffected by inoperability of heat trace channel TICA-435B, this event did not adversely impact the operational safety of the plant, or the safety of plant personnel or the general public.

Additional Information

Previous events involving inoperable boron injection flow paths have been reported in LERs 85-014, 86-025 and 87-004. None of these events involved inoperable heat trace circuits.

LER-90004-NL04