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Palisades Nuclear Plant: 27780 Blue Star Memorial Highway, Covert, MI 49043

February 14, 1992

G B Slade
General Manager

Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

DOCKET 50-255 - LICENSE DPR-20 - PALISADES PLANT -
LICENSEE EVENT REPORT 92-005-CLASS 1E PRESSURIZER LEVEL INDICATOR CABLE
CONNECTED TO THE NON-CLASS 1E CRITICAL FUNCTIONS MONITORING SYSTEM COMPUTER
WITHOUT ADEQUATE ELECTRICAL ISOLATION

Licensee Event Report (LER) 92-005 is attached. This event is reportable to
the NRC per 10CFR50.73(a)(2)(ii)(B) as a condition that is outside the design
basis of the plant.

Gerald B Slade
General Manager

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

Attachment

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LICENSEE EVENT REPORT (LER)

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TITLE (4) **CLASS 1E PRESSURIZER LEVEL INDICATOR CABLE CONNECTED TO THE NON-CLASS 1E CRITICAL FUNCTIONS MONITORING SYSTEM COMPUTER WITHOUT ADEQUATE ELECTRICAL ISOLATION**

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		
									N/A		
0	1	7 9 2	9 2	0 0 5	0 0	0 2	1 4	9 2	N/A		
									DOCKET NUMBER(S) 0 5 0 0 0		

OPERATING MODE (9) N	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	<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.405(a)(1)(i)	<input type="checkbox"/> 20.405(a)(1)(ii)	<input type="checkbox"/> 20.405(a)(1)(iii)	<input type="checkbox"/> 20.405(a)(1)(iv)	<input type="checkbox"/> 20.405(a)(1)(v)	<input type="checkbox"/> 20.406(c)	<input type="checkbox"/> 60.73(a)(1)	<input type="checkbox"/> 60.73(a)(2)	<input type="checkbox"/> 60.73(a)(2)(i)	<input checked="" type="checkbox"/> 60.73(a)(2)(ii)	<input type="checkbox"/> 60.73(a)(2)(iii)	<input type="checkbox"/> 60.73(a)(2)(iv)	<input type="checkbox"/> 60.73(a)(2)(v)	<input type="checkbox"/> 60.73(a)(2)(vi)	<input type="checkbox"/> 60.73(a)(2)(vii)(A)	<input type="checkbox"/> 60.73(a)(2)(vii)(B)	<input type="checkbox"/> 60.73(a)(2)(ix)	<input type="checkbox"/> 73.71(b)	<input type="checkbox"/> 73.71(c)	OTHER (Specify in Abstract below and in Text, NRC Form 305A)

LICENSEE CONTACT FOR THIS LER (12)		TELEPHONE NUMBER	
NAME Cris T Hillman, Licensing Engineer		AREA CODE 6 1 6	7 6 4 - 8 9 1 3

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)		
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/> NO		MONTH	DAY	YEAR

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

On January 15, 1992, at approximately 1500 hours, with the plant operating at 100% power, the NRC notified the Palisades Plant staff of an apparent misrouting of the Class 1E Pressurizer Level Instrument Loop (LT-0103). The Plant staff subsequently verified that the instrument loop is connected to the non-Class 1E critical functions monitoring system (CFMS) computer without adequate electrical isolation.

The root cause of this event is attributed to inadequate design control during the time the equipment modification was engineered and installed.

The immediate corrective action for this event was to perform a temporary modification to disconnect the LT-0103 loop from the non-Class 1E CFMS computer, isolating any cable faults from the instrument loop. Additional corrective action includes a 1992 Refueling Outage modification to re-route the cable from the LT-0103 instrument loop to the correct Class 1E CFMS computer input termination cabinet and a review of all the RG 1.97 instrumentation loops to verify adequate electrical isolation.

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TEXT (If more space is required, use additional NRC Form 306A's) (17)

EVENT DESCRIPTION

On January 15, 1992, at approximately 1500 hours, with the plant operating at 100% power, the NRC notified the Palisades Plant staff of an apparent misrouting of the Class 1E Pressurizer Level Instrument Loop (LT-0103) [AB;LT]. The Plant staff subsequently verified that the instrument loop was connected to the non-Class 1E critical functions monitoring system (CFMS) computer [IU] without adequate electrical isolation.

During the week of January 13-17, 1992, the NRC performed an inspection of Palisades' compliance with the requirements of Regulatory Guide (RG) 1.97, "Instrumentation for Light-Water Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident." During the course of this inspection, it was identified that one channel of the RG 1.97, Type B, Category 1, variable pressurizer level instrumentation was apparently connected to the non-Class 1E input to the CFMS computer system without adequate isolation. This is contrary to the requirements of RG 1.97, Table 1, Item 2, which states, "...Redundant or diverse channels should be electrically independent and physically separated from each other and from equipment not classified important to safety..."

In accordance with the RG 1.97 requirements for Category 1 variables, two redundant pressurizer level instrument loops are provided. The first instrument loop, LT-0102, meets all of the requirements of RG 1.97. This loop is connected to the CFMS computer and is correctly connected to the Class 1E input multiplexor located in Cabinet J451. The second instrument loop, LT-0103, has been determined to be connected to the non-Class 1E CFMS computer termination cabinet J452 without adequate electrical isolation.

This event is reportable to the NRC per 10CFR50.73(a)(2)(ii)(B) as a condition that is outside the design basis of the plant.

CAUSE OF THE EVENT

The root cause of this event is attributed to inadequate design control during the time the equipment modification was engineered and installed.

This event did not involve the failure of any equipment important to safety.

ANALYSIS OF THE EVENT

The two RG 1.97 pressurizer level instruments are required to be operable by Technical Specifications Table 3.17.4, Item 8. Initially, the LT-0103 loop was considered to be operable even with the lack of isolation to the non-Class 1E system. Operability was based on the engineering judgement that an open or

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electrical short of the unisolated cable would not effect operation of the 4-20 milli-amp pressurizer level instrument loop. However, it was subsequently determined that application of the maximum credible voltage to the misrouted cable could result in damage to the 250 ohm, 1/4 watt resistor and, thus, degrade operation of the circuit. The affected pressurizer level instrument loop was subsequently declared inoperable on January 28, 1992. A temporary modification (TM-92-007) was then implemented on January 29, 1992, to disconnect the instrument loop from the CFMS computer. This action restored the instrument loop to operable status.

The LT-0103 pressurizer level instrument loop was originally classified as non-Class 1E because it was supplied by a non-Class 1E power source. At that time, the instrument was wired to the non-Class 1E computer input termination cabinet, which was correct for the classification of the instrument at that time. Subsequently, as part of the environmental qualification (EQ) program, it was decided to upgrade the LT-0103 instrument loop to meet EQ requirements to provide the operator with a qualified indication of pressurizer level. Modification of the instrument loop was performed as part of a facility change (FC-624) installed in the summer of 1986. The modification consisted of replacing the transmitter, indicator, and power supply to Class 1E requirements. As part of this modification, the designers neglected the need to re-route the process computer input from the non-Class 1E input cabinet to the Class 1E input cabinet.

CORRECTIVE ACTION

The immediate corrective action for this event was to place LT-0103 on the non-conforming item list in the shift supervisor's office. A corrective action document was initiated to document the event and to track subsequent corrective action.

A temporary modification (TM-92-007) to disconnect the LT-0103 loop from the non-Class 1E CFMS computer was performed as a result of the evaluation of this event. The TM resulted in disconnecting the cable to the CFMS computer input in the C-12 cabinet, thereby isolating any cable faults from the instrument loop. This temporary change provided assurance that the pressurizer level instrument loops met all the requirements of RG 1.97.

In addition, all the RG 1.97, Category 1, instrumentation loops will be reviewed to verify that adequate electrical isolation, as defined in RG 1.97 (Rev. 3), Table 1, Item 2, is provided.

Finally, the cable from the LT-0103 instrument loop will be re-routed to the correct Class 1E CFMS computer input termination cabinet. The modification will be completed during the 1992 Refueling Outage and will eliminate the need for the temporary modification.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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

Modification controls AP 9.03, "Facility Changes," have been extensively revised since the mid 1980s to include additional guidance for identifying design requirements applicable to a design change. The "Design Input Checklist," which is required to be completed for a modification, requires that electrical separation and isolation be addressed for modifications affecting instrumentation and controls or electrical circuits. These added controls are considered sufficient to prevent the lack of isolation between Class 1E and non-Class 1E circuits from occurring in future modifications. Therefore, no additional corrective action to prevent recurrence is proposed.

ADDITIONAL INFORMATION

None