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SUBJECT: LER 88-025-00:on 880708,instrumentation channel inoperable due to wiring & personnel error.W/880808 ltr.

W/8 ltr.

DISTRIBUTION CODE: IE22D COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 6
TITLE: 50.73 Licensee Event Report (LER), Incident Rpt, etc.

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NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
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TITLE (4) An Isolation Actuation Instrumentation Channel was Inoperable Between June 27, 1988 and July 8, 1988 Due to a Wiring and Testing Error Caused by Personnel Error

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 7	0 8	8 8	8 8	0 2 5	0 0	0 8	0 8	8 8		0 5 0 0 0
										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)	0 1 9	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
		20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
		20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
		20.405(a)(1)(iii)	X 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
S.I. Washington, Compliance Engineer	5 0 9 3 7 7 - 1 2 0 8 0

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
X YES (If yes, complete EXPECTED SUBMISSION DATE)	NO		1 1	1 5	8 8

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

On July 8, 1988 Plant Instrument Technicians, while troubleshooting a Leak Detection System (LD) differential temperature switch (LD-TS-600C) for Reactor Water Cleanup System (RWCU) pump room B, found the leads for thermocouple LD-TE-1C incorrectly wired. Thermocouple LD-TE-1C, representing RWCU pump B room inlet temperature, is configured with thermocouple LD-TE-2C room outlet temperature so that a differential signal is generated, representative of room differential temperature. The instrumentation provides a containment isolation signal for RWCU-V-4 in the event of a high energy leak in the pump room. RWCU-V-4 is the outboard (RWCU system) containment isolation valve of the Nuclear Steam Supply Shutoff System (NS4), Group 7. The wiring error rendered the trip function for the channel inoperable.

Two causes for this event were determined: During the Spring 1988 outage the leads for thermocouple LD-TE-1C were determinated to facilitate RWCU system modifications and were reterminated incorrectly during system restoration; secondly, the operability check instructions, performed after maintenance and prior to returning the system to operable status, were incorrect and failed to detect the wiring error. A contributing cause was the failure of the shiftly channel check to promptly determine the inoperable status of the channel.

The root cause of both the wiring and operability check errors is personnel error.

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

Abstract (cont'd)

Immediate corrective actions included; initation of a Maintenance Work Request to troubleshoot the channel, entry into the technical specification action statement when the problem was discovered, and restoration of the channel to operable status.

Other corrective actions taken include: The incident was reviewed in a maintenance contractor staff meeting for field engineers and superintendents, and the individual responsible for the incorrect work instructions was counselled on the importance of attention to detail. The RWCU pump room .differential temperature channel check method will be studied and the procedure revised if necessary.

There were no adverse safety significance consequences associated with this event as three redundant Leak Detection channels in pump room B were available to provide an RWCU system isolation trip signal throughout the event.

Plant Conditions

a) Power Level - 99%
b) Plant Mode - 1 (Power Operation)

Event Description

On July 8, 1988 Plant Instrument Technicians, while troubleshooting a Leak Detection System (LD) differential temperature switch (LD-TS-600C) for Reactor Water Cleanup System (RWCU) pump room B, found the leads for thermocouple (LD-TE-1C) incorrectly wired. Thermocouple LD-TE-1C, representing RWCU pump room B inlet temperature, is configured with thermocouple LD-TE-2C room outlet temperature so that a differential signal is generated, representative of room differential temperature. The instrumentation provides an isolation signal for RWCU-V-4 in the event of a high energy leak in the pump room. RWCU-V-4 is the outboard (RWCU system) containment isolation valve of the Nuclear Steam Supply Shutoff System (NS4), Group 7. The wiring error rendered the trip function for that channel inoperable.

The sequence of events leading to the discovery and cause of the reversed leads is as follows:

1) On May 9, 1988 a contract Engineer prepared work instructions for a Maintenance Work Request (MWR) to determinate thermocouple LD-TE-1C to permit conduit removal. The conduit was to be moved to clear unanticipated interference encountered during implementation of modifications to the RWCU system. On May 25, 1988 the thermocouples were retermed and on May 27, 1988, the terminations were verified by a second craftsmen. The termination document indicates the wiring to be reterminated in the incorrect configuration.

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

2) On June 13, 1988, Plant Instrument Technicians performed an operability check in accordance with instructions on the MWR. The operability check instructions, provided by a Plant Maintenance Engineer, directed the technicians to verify a positive voltage output. However, for thermocouple LD-TE-1C the output should be negative. Since the instructions were in error, and a positive output was obtained, the technicians signed the instrument work test sheet as satisfactorily completed.

3) On July 3, 1988, a Licensed Plant Reactor Operator, while performing the "Shift and Daily Instrument (Channel) Checks (Modes 1,2,3)" technical specification surveillance procedure, observed that both differential temperature switches for RWCU pump room B were reading zero. Although this reading was within the acceptance range (channels within 24°F) of the channel check, the indication was not normal and an MWR was initiated to troubleshoot the potential problem.

4) On July 8, 1988 the troubleshooting effort concluded that the thermocouple was wired incorrectly and the wiring was returned to its proper configuration. The Plant Shift Manager initiated a Plant Nonconformance Report (NCR) to document the incident.

Immediate Corrective Action

Plant Operators, on discovering the potential problem, initiated an MWR to troubleshoot the situation. When the problem was discovered the WNP-2 Plant Technical Specification 3.3.2 Action Statement was entered at 1015 hours on July 8, 1988 and exited at 1038 hours the same day after the channel was restored to operable status.

Further Evaluation and Corrective Action

A. Further Evaluation

This event is reportable per 10CFR50.73(a)(2)(i)(B). The Plant was in a condition prohibited by the WNP-2 Plant Technical Specification. The minimum operable channels required by Specification 3.3.2, "Isolation Actuation Instrumentation", was not met for the period between June 27, 1988 and July 8, 1988.

The redundant thermocouple of LD-TE-1C supplies a point to LD temperature recorder LD-TRS-622. This point was also inoperable for this event period. There were no other structures, systems, or components inoperable prior to this event which contributed to the event.

The root cause for reterminating the thermocouple incorrectly is personnel error in that a contractor maintenance engineer provided incorrect field direction during the retermination of the thermocouple. Plant procedures were not the cause of this error.

The root cause for incorrect operability check instructions is personnel error. A Plant maintenance engineer provided the MWR operability check instructions. Plant procedures were not the cause of this error.

A contributing factor associated with this event was the failure of the channel check to promptly identify the inoperable channel. The channel check is performed once per shift and the problem was not recognized until five days after Plant startup from the Spring 1988 outage. The reason the problem was not immediately recognized is that the LD-TE-1C/2C pump room differential temperature is measured across the room forced ventilation inlet and outlet and is compared to a natural draft room inlet and outlet differential temperature. Under summer conditions the natural draft differential temperature is essentially zero while the forced ventilation should have some positive reading. During the event period the forced ventilation differential temperature was zero. The channel acceptance criteria is based on the difference (within 24°F) between the forced ventilation and natural draft ventilation channels and; therefore, it was not immediately recognized that the forced ventilation channel was not functioning properly.

B. Further Corrective Action

1) The incident was reviewed in a maintenance contractor staff meeting of engineers and superintendents.

2) The individuals responsible for the incorrect field direction and the incorrect operability check instructions were counselled on the importance of attention to detail.

3) A study will be conducted to evaluate the necessity of modifying the current procedure for verification of work instructions and retest specifications.

4) The method of verifying the RWCU pump room differential temperature channels will be studied and the Plant procedure revised as necessary.

Safety Significance

There is no adverse safety significance associated with this event. The forced ventilation differential temperature loop rendered inoperable by the wiring error supplies a trip signal to the outboard containment isolation valve (RWCU-V-4) of the Nuclear Steam Supply Shutoff System (NS^4), Group 7. The natural draft pump room differential temperature channel was operational throughout the event and it provides a redundant trip of the NS^4, Group 7, inboard containment isolation valve (RWCU-V-1). In addition, ambient room temperature monitors also provide both inboard and outboard NS^4 Group 7 isolation signals. Therefore, three operational channels provided three redundant NS^4, Group 7, isolation trip signals in the event that a high energy leak in pump room B had occurred during this event period. This event had no effect on the health and safety of the Public or Plant personnel.

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

Simliar Events

None

EIIS Information

Text Reference	EIIS Reference	
	System	Component
Leak Detection System (LD)	IJ	- - - - -
RWCU System Pump Room B	R	- - - - -
LD Differential Temperature Switch (LD-TS-600C)	IJ	PDS
LD Thermocouple (LD-TE-1C and LD-TE-2C)	IJ	TE
Outboard RWCU Containment Isolation Valve (RWCU-V-4)	CE	ISV
Nuclear Steam Supply Shutoff System (NS^4), Group 7	BD	- - - - -
LD Temperature Recorder (LD-TRS-622)	IJ	TDR
Forced Ventilation (RWCU Pump Room B)	VA	- - - - -
Natural Draft Ventilation (RWCU Pump Room B)	VA	- - - - -
Ambient Room Temperature Monitor	LD	45
Inboard RWCU Containment Isolation Valve (RWCU-V-1)	CE	ISV

WASHINGTON PUBLIC POWER SUPPLY SYSTEM

P.O. Box 968 • 3000 George Washington Way • Richland, Washington 99352

Docket No. 50-397

August 8, 1988

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

Subject: NUCLEAR PLANT NO. 2
LICENSEE EVENT REPORT NO. 88-025

Dear Sir:

Transmitted herewith is Licensee Event Report No. 88-025 for the WNP-2 Plant. This report is submitted in response to the report requirements of 10CFR50.73 and discusses the items of reportability, corrective action taken, and action taken to preclude recurrence.

Very truly yours,

JW Baker

C.M. Powers (M/D 927M)
WNP-2 Plant Manager

CMP:lg

Enclosure:
Licensee Event Report No. 88-025

cc: Mr. John B. Martin, NRC - Region V
Mr. C.J. Bosted, NRC Site (M/D 901A)
INPO Records Center - Atlanta, GA
Ms. Dottie Sherman, ANI
Mr. D.L. Williams, BPA (M/D 399)

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