Indian Point 3
Nuclear Power Plant
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John H. Garrity
Resident Manager

July 15, 1993
IPN-93-087

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Station PI-137
Washington, D.C. 20555

Subject: Indian Point 3 Nuclear Power Plant
Docket No. 50-286
Licensee Event Report 93-025-00, "Violation of the Cable Channelization Criteria in the Low Pressure Steam Dump Valve Terminal Boxes by Cross Channeling Cables Due to Personnel Error"

Dear Sir:

The attached Licensee Event Report (LER) 93-025-00 is hereby submitted in accordance with the requirements of 10CFR50.73. This event is of the type defined in the requirements pursuant to 10CFR50.73(a)(2)(ii)(B). Also attached are the commitments made by the Authority in this LER.

Very truly yours,

John H Garrity

John H. Garrity
Resident Manager
Indian Point Three Nuclear Power Plant

JHG/JC/vjm

cc: See next page

IE22 1/1

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U.S. Nuclear Regulatory Commission
Resident Inspectors' Office
Indian Point Unit 3

ATTACHMENT
List of Commitments Made in Letter IPN-93-087

Number	Commitment	Due
IPN-93-087-01	The Nuclear Engineering and Design (NED) department will provide a minor modification to reroute the non-vital unscheduled Channel II cables.	Prior to startup from the present outage.
IPN-93-087-02	The Contract Services department will apprise appropriate personnel on the occurrence of this event and the importance of the work practices in place to prevent its recurrence.	July 21, 1993

NRC FORM 366 (5-92) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104
EXPIRES 5/31/95

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Indian Point Unit 3	05000286	1 OF 5

TITLE (4) Violation of the Cable Channelization Criteria in the Low Pressure Steam Dump Valve Terminal Boxes by Cross Channeling Cables Due to 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 NAME	DOCKET NUMBER
06	15	93	93	-- 025 --	00	07	15	93		05000
									FACILITY NAME	DOCKET NUMBER 05000

OPERATING MODE (9)	N
POWER LEVEL (10)	000

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

	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
	20.405(a)(1)(iii)		50.73(a)(2)(i)		50.73(a)(2)(viii)(A)		(Specify in Abstract below and in Text, NRC Form 366A)
	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)		

Name	TELEPHONE NUMBER (Include Area Code)
John J. Szabados, Assistant Electrical Engineer	(914) 681-6886

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
YES (If yes, complete EXPECTED SUBMISSION DATE).	X	NO				

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On June 15, 1993, with the plant in cold shutdown, Nuclear Engineering and Design (NED) identified that the plant's cable channelization criteria were not met. The channelization deviations involve non-vital Channel II cables, inside the low pressure steam dump valve terminal boxes VU1 through VU6, which go through the barriers to the Channel I side and then are run in conduit with vital Channel I cables for the limit switches and solenoids associated with the safety related low pressure steam dump valves FCV-1206 through FCV-1211. The cause of these channelization deviations is due to personnel error. The non-vital Channel II cables were not wired in accordance with the design wiring diagram. To place the plant in compliance with the cable channelization criteria NED will provide a minor modification to reroute the non-vital Channel II cables prior to start up.

Description of Event

At 1000 hours on June 15, 1993, with the plant in cold shutdown, Nuclear Engineering and Design (NED) personnel determined that the plant was in a condition outside the design basis due to a violation of the cable channelization criteria in the Indian Point 3 (IP3) Electrical Separation Implementation Design Guide, Revision 6.0. During a turbine building walkdown, NED personnel identified cable channelization discrepancies in the low pressure steam dump valve terminal boxes VU1 through VU6. Each terminal box is separated internally into two channels, Channel I and Channel II, by a metal barrier to maintain separation between redundant safety related valves. Using VU1 as an example, on the Channel II side are two terminal blocks, one for non-safety related isolation valve 5EX-MOV-71 and one for FCV-1206-2. The Channel I side of VU1 consists of one terminal block for the redundant valve FCV-1206-1. An unscheduled non-vital Channel II cable goes through the barrier and then runs in conduit with Channel I cables going to the limit switches and solenoid for low pressure steam dump valve 1206-1. This configuration is common among the other five terminal boxes VU2 through VU6. Because the Channel II cables cross channels, a common failure mechanism exists between redundant valve control circuits inside the terminal boxes, which could affect the redundant low pressure steam dump valves (e.g. FCV-1206-1 and FCV-1206-2, etc...) and their ability to perform their safety related design function. This condition was discovered during a turbine building walkdown of vital equipment performed by Nuclear Engineering and Design personnel.

The low pressure steam dump valves are QA Category I valves which provide turbine overspeed protection as described in the Final Safety Analysis Report (FSAR), Chapter 14A, Section 6.0.

A design change in the form of Engineering Change Notice No. 1 (ECN-001) of Modification (MOD) 86-03-067FW (Feedwater Heater Replacements) revised the location of the terminal blocks and the associated wiring inside the low pressure steam dump valve terminal boxes. Due to personnel error, ECN-001 was done outside the original scope of the Non-Category I modification. This ECN as a result took the classification of Modification 86-03-067FW (Non-Category I). ECN-001 should have been a Category I ECN since the low pressure steam dump valves per original specifications are QA Category I equipment providing turbine overspeed protection. Since this was a Non-Category I ECN instead of Category I, no Quality Assurance involvement was required. This situation contributed to the event, however, it was not the cause of the event.

Cause of the Event

The cause of the event was improper installation of the unscheduled Channel II cables due to personnel error. This condition may have existed prior to a design change that rewired the low pressure steam dump valve terminal boxes. Design drawing No. 9321-F-37113, "Wiring Diagram Low Pressure Steam Dump System and Oscillograph Cabinet", which reflects the proper installation was not followed. Per the drawing, the unscheduled non-vital Channel II cables (going to the limit switches for isolation valves 5EX-MOV-71 through 5EX-MOV-76) was shown to be routed from the Channel II side of the terminal boxes (equipment I.D. VU1 through VU6) to the Channel I open limit switches for valves FCV-1206-1 through FCV-1211-1. Field verification showed that the non-vital Channel II cables actually traverse across the barrier to the Channel I side and then run with vital Channel I circuits. The field wiring does not reflect the design wiring diagram.

Corrective Action

The plant will be placed in compliance with the cable channelization criteria by the following:

1. NED will provide a minor modification to reroute the non-vital unscheduled Channel II cables prior to startup from the present outage.

The following corrective actions will prevent recurrence of this event:

1. NED has apprised the individuals involved with the design change of the significance of this event.

2. Currently, work control practices are in place (i.e., Administrative Procedure AP-9, "Work Control") which require that each work package has a step list that details the steps required to implement the package. Additionally, these procedures require appropriate Quality Assurance control points that assure that the package is installed as designed. These work control practices were not in place when this event occurred.

3. The Contract Services department will apprise appropriate personnel on the occurrence of this event and the importance of the work practices in place to prevent its recurrence. This training will be completed by July 21, 1993.

Analysis of Event

These channelization deviations represent a condition which is outside the design basis of the plant. This condition is reportable under 10CFR50.73(a)(2)(ii)(B). The licensee shall report any event or condition that resulted in the nuclear power plant being in a condition that was outside the design basis of the plant. Part of the design basis of the plant is the IP3 Electrical Separation Implementation Design Guide, Rev. 6. This design basis was violated when 1) the non-vital Channel II cables crossed the metal barrier into the Channel I side of the terminal boxes and 2) the non-vital Channel II cables being run in conduit with vital Channel I cables.

Safety Significance

This condition did not affect the public health and safety. The combination of events that could result in any consequences from this condition are unlikely. It would require six simultaneous independent failures of the non-vital Channel II cables and fault currents significant enough to ignite the Channel II cables with a coincident turbine trip of the main generator to result in total loss of steam dump protection and in exceeding the turbine design overspeed value. The plant is designed to withstand the generation of turbine missiles which may be a consequence of a turbine overspeed event. This possible scenario has been evaluated satisfactorily in FSAR Chapter 14A. There are ongoing walkdowns being performed by NED which will evaluate the extent of this condition.

Similar events were reported in LER's 93-006-00, 92-018-00, 91-008-00, and 91-008-01.