

Indian Point 3
Nuclear Power Plant
P.O. Box 215
Buchanan, New York 10511
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**New York Power
Authority**

L. M. Hill
Resident Manager

May 19, 1995
IPN-95-058

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

SUBJECT: Indian Point 3 Nuclear Power Plant
Docket No. 50-286
License No. DPR-64
Licensee Event Report # 95-008-00
"Plant Outside Design Basis Due to Failure to Analyze
Access To Manual Safety Injection System Valve"

Dear Sir:

The attached Licensee Event Report (LER) 95-008-00 is hereby submitted as required by 10CFR50.73. This event is of the type defined in 10CFR50.73(a)(2)(ii)(B). There are no new commitments made by the Authority in this LER.

Very truly yours,

A handwritten signature in dark ink, appearing to read 'L. M. Hill', written over the typed name.

L. M. Hill
Resident Manager
Indian Point 3 Nuclear Power Plant

Attachment
cc: See next page

9505300075 950519
PDR ADOCK 05000286
S PDR

JEH

cc: Mr. Thomas T. Martin
Regional Administrator
Region I
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, Pennsylvania 19406-1415

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

INPO Records Center
700 Galleria Parkway
Atlanta, Georgia 30339-5957

LICENSEE EVENT REPORT (LER)

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

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.

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TITLE (4) Plant Outside Design Basis Due to Failure to Analyze Access To Manual Safety Injection System Valve

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
04	08	95	95	-- 008 --	00	05	19	95	FACILITY NAME	DOCKET NUMBER 05000
									FACILITY NAME	DOCKET NUMBER 05000

OPERATING MODE (9) N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)									
POWER LEVEL (10) 000	<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.405(c)	<input type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)						
	<input type="checkbox"/> 20.405(a)(1)(i)	<input type="checkbox"/> 50.36(c)(1)	<input type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 73.71(c)						
	<input type="checkbox"/> 20.405(a)(1)(ii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> OTHER						
	<input type="checkbox"/> 20.405(a)(1)(iii)	<input type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)	(Specify in Abstract below and in Text, NRC Form 366A)						
	<input type="checkbox"/> 20.405(a)(1)(iv)	<input checked="" type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)							
<input type="checkbox"/> 20.405(a)(1)(v)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(x)								

LICENSEE CONTACT FOR THIS LER (12)	
NAME John Boufford, Technical Services System Engineer	TELEPHONE NUMBER (Include Area Code) (914) 736-8313

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)										
CAUSE	SYS TEM	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).	<input checked="" type="checkbox"/>	NO					

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

On April 8, 1995, with the plant in the cold shutdown condition, Technical Services determined that safety injection system valve 898 was not analyzed for accessibility during post Loss-of-Coolant-Accident high head recirculation. Because accessibility evaluations do not require consideration of leakage outside containment, the event was initially determined to be non-reportable. It was later determined to be reportable since a licensing commitment was made to have an alternate high head recirculation pathway for accident mitigation. The event was due to inadequate plant layout criteria during original plant design. The corrective action was to add a procedural requirement to open valve 898 when entering hot leg recirculation. An assessment of the extent of condition determined no additional corrective action was required. There was no significant effect on the public health and safety.

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TEXT CONTINUATION

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

DESCRIPTION OF EVENT

On April 8, 1995 with the plant in the cold shutdown condition (0 power, RCS temperature 175 degree F, RCS pressure 375 psig), Deviation Event Report (DER) 95-0825 was issued by a Technical Services engineer to report that manual Safety Injection (BQ)(SI) valve (V) SI-898, located in the SI Pump room, was not analyzed for accessibility during high head, post Loss-of-Coolant-Accident (LOCA) recirculation. This valve is operated, per procedure ONOP-ES-3, to establish the alternate low to high head flow path if there is a loss of the normal low to high head flow path during long term recirculation. The alternate path uses the Residual Heat Removal (BP) (RHR) pumps (P) drawing suction from the containment sump and through valves SI-MOV-885A & B, and delivering flow through SI-MOV-883 and SI-898 to the suction of the 32 SI pump. Initially, this event was not declared reportable because the post accident accessibility criteria of NUREG-0737, item II.B.2 did not require consideration of leakage outside containment. After further assessment, the initial determination was reversed on April 20.

The Technical Services evaluation concluded that manually operated valve SI-898 was installed in an area that was potentially inaccessible following a postulated LOCA. The original design required the valve to be manually operated to establish the alternate low to high head flow path. Technical Services concluded that the probable cause for the valve not being accessible was a lack of plant layout criteria. For Indian Point 2, Westinghouse had written a letter to require valve SI-898 to be located outside the SI pump room but no similar criteria has been found for Indian Point 3 (IP3). The development of the procedure for opening valve SI-898, ONOP-ES-3, supports this conclusion. This procedure was written based on the recommended procedure in the Plant Manual provided by Westinghouse. The Plant Manual procedure appeared to assume accessibility since the procedure did not require valve SI-898 to be operated until after a passive failure. Although it was concluded that the lack of written layout criteria for locating the valve was the probable cause, this cannot be verified, due to the passage of time.

NUREG-0737, Item II.B.2 required an analysis of vital areas (i.e., any area which will or may require occupancy to permit an operator to aid in the mitigation of or recovery from an accident) for accessibility.

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Technical Services concluded that not having to consider leakage outside containment was the probable cause for not considering valve SI-898.

Although the plant design considered passive failures, the licensing basis for the plant does not clearly define a passive failure criteria for the SI system. Regulations regarding passive failures were under development when IP3 was designed. In anticipation of a regulation defining a requirement for passive failures, Westinghouse designed certain post accident recirculation / core cooling systems to accommodate passive failures. The anticipated regulations were never issued and the FSAR does not identify explicit passive failure criteria for the SI system. The FSAR indicates, during the recirculation phase, the SI "system is tolerant of a loss of any part of the flow path since backup alternate flow path capability is provided."

Corrective action to assure availability of the alternate flow path has been taken. The procedure for transfer to hot leg recirculation, ES-1.4 has been revised, in Rev. 9, to open valve SI-898 in an early step. Hot leg recirculation occurs between 14 and 23.4 hours after the LOCA. For a large break LOCA, the pump room is accessible to open valve SI-898 because high head recirculation is not initiated until the transfer to hot leg recirculation. For a small break LOCA, radiological engineering performed a dose calculation and determined that valve SI-898 was accessible, because doses were within the TMI Item II.B.2 dose criteria of 5 rem whole body, at any time after five hours following the small break LOCA. The radiological engineering calculation considered the effect of cold leg recirculation for a small break LOCA with 20 percent clad failure based on a conservative plant specific evaluation to address an August 1993 Westinghouse nuclear safety advisory letter.

CAUSE OF THE EVENT

The probable cause of this event was inadequate criteria for locating this valve, for which a direct cause could not be identified. The event was not identified during the subsequent analyses of accessibility required by NUREG-0737, Item II.B.2. The probable cause was not having to consider leakage outside containment when assessing access.

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CORRECTIVE ACTION

The following corrective actions have been performed in order to correct and prevent recurrence of event:

1. Procedure ES-1.4 has been revised to open SI-898 during the transfer to hot leg recirculation.
2. Emergency procedures (i.e., ES-1.3, Revision 8, "Transfer To Cold Leg Recirculation", and ES-1.4, Revision 8, "Transfer To Hot Leg Recirculation") and the ONOP procedures were reviewed to verify that other manual valves required for accident mitigation were accessible.

ANALYSIS OF THE EVENT

This event is reportable under 10 CFR 50.73.(a)(2)(ii)(B). The capability to establish the alternate low to high head recirculation flow path identified in the FSAR was not achievable within the dose criteria established for manual action outside containment.

Similar events, a failure to meet the plant design basis due to original design deficiencies, were identified in LERs 92-6 and 18, 93-2, 26, 35, 44, 45, 47 and 48, 94-5 and 6 and 95-3.

SAFETY SIGNIFICANCE

This event had no significant effect on the public health and safety.

The safety significance was evaluated by looking at the actual and potential implications of the event. There was no actual safety significance because there was no LOCA. The potential safety significance was assessed for design basis conditions and is discussed below.

For a postulated large or small break LOCA, the normal flow path for low to high head recirculation would be a recirculation pump taking suction from the recirculation sump and pumping through a residual heat exchanger to the suction of the 31 and 33 SI pumps. The 32 SI pump would be isolated (valves 887A and B would be shut) when initiating low to high head recirculation. The RHR pumps function as a backup to the recirculation pumps. They take suction from the containment sump and could be aligned to the same supply line to pump through a residual heat exchanger to the SI pumps. The low to high

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head supply line connecting the residual heat exchanger to the SI pump suction would be available following an active failure or a sump blockage. To provide assurance of the capability to mitigate an accident, the Technical Specifications define the times when the systems must be operable and limit the periods of time when systems or components can be inoperable. Therefore, there was reasonable assurance that no effect on the public health and safety would have occurred.

An alternate low to high head recirculation flow path is identified in the FSAR as available if there is a loss of the normal flow path. Assessments have shown that the SI-898 valve, required to align this flow path, would not be accessible under certain post LOCA conditions (extraordinary measures such as mobile shielding which might allow access were not assessed). The alternate flow path would only be required if there was a need to isolate the normal flow path between valves 888A and 888B (parallel isolation valves) and the SI pumps due to a piping failure, valve leakage, or pump leakage. The probability of these events, based on the generic estimates in EGG-SSRE-9639, Table 2, is about 3E-9 per hour per foot for piping leakage, about 3E-8 per hour for pump leakage, and about 1E-8 per hour for valve leakage. Considering the inservice inspections of the RHR and SI system that could detect such failures and the low probability of a LOCA (about 4.77E-4 per year), there is no significant effect on the public health and safety due to the inaccessible valve.

The need for hot leg recirculation as a post-LOCA activity is being evaluated by the Westinghouse Owner's Group (WOG). The WOG will provide the technical bases and procedural changes required to satisfy post-LOCA cooling and subcriticality concerns without having to take recirculation fluid out of Containment. The valve SI-898 will not have to be opened following a large break LOCA if hot leg recirculation is eliminated.

Technical Services reviewed emergency procedures (i.e., ES-1.3, Revision 8, "Transfer To Cold Leg Recirculation", and ES-1.4, Revision 8, "Transfer To Hot Leg Recirculation") and the Off Normal Operating Procedures to evaluate extent of condition. One concern was identified (closure of valve SI-1807B during transfer to cold leg recirculation) due to the August 1993 Westinghouse notification of small break LOCA clad damage. A dose analysis, with 20 percent failed fuel, found the valve accessible.