

Indian Point 3  
Nuclear Power Plant  
P.O. Box 215  
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L. M. Hill  
Resident Manager

August 27, 1994  
IPN-94-109

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

SUBJECT: Indian Point 3 Nuclear Power Plant  
Docket No. 50-286  
License No. DPR-64  
Licensee Event Report # 94-008-00  
"31 Boric Acid Storage Tank Recirculation Valve Mis-adjusted  
Resulting In Potential Inability to Maintain a Technical  
Specification Required Boric Acid Inservice Flow Path"

Dear Sir:

The attached Licensee Event Report (LER) 94-008-00 is hereby submitted as required by 10CFR50.73. This event is of the type defined in 10CFR50.73(a)(2)(i)(B). Also attached are the commitments made by the Authority in this LER.

Very truly yours,

A handwritten signature in cursive script, appearing to read 'L. M. Hill'.

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

LMH/vjm

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cc: See next page

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cc: Mr. Thomas T. Martin  
Regional Administrator  
Region I  
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U.S. Nuclear Regulatory Commission  
Resident Inspectors' Office  
Indian Point 3 Nuclear Power Plant

Attachment 1  
List of Commitments

Number	Commitment	Due
IPN-94-109-01	The Boron Injection Tank (BIT) (TK) removal modification which includes the installation of permanent flow measurement instrumentation is scheduled to be completed by Construction Services prior to plant startup.	Prior to plant startup
IPN-94-109-02	Surveillance Test 3PT-Q38, "Boric Acid Transfer Pump Function Test," will be revised to trend pump discharge flow with the BAST recirculation valves at their normal operating position of 25 percent full open. This revision will be completed prior to plant startup. This commitment is tied to the completion of the BIT removal modification.	Prior to plant startup
IPN-94-109-03	The Maintenance and the I&C Departments will review this event with respect to their departmental specific training regarding these valves and incorporate changes as appropriate. This task will be completed by December 31, 1994.	December 31, 1994
IPN-94-109-04	An evaluation of the extent of condition of this event will be conducted by the Maintenance Department. This extent of condition will address similar valve configurations in the plant. This evaluation will be completed by December 31, 1994.	December 31, 1994

**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 (MNB 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.

FACILITY NAME (1) <b>Indian Point Unit 3</b>		DOCKET NUMBER (2) <b>05000286</b>	PAGE (3) <b>1 OF 5</b>
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TITLE (4) **31 Boric Acid Storage Tank Recirculation Valve Mis-adjusted Resulting In Potential Inability to Maintain a Technical Specification Required Boric Acid Inservice Flow Path**

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
07	28	94	94	-- 008 --	00	08	27	94	FACILITY NAME	DOCKET NUMBER 05000
									FACILITY NAME	DOCKET NUMBER 05000

OPERATING MODE (9) <b>N</b>	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)									
POWER LEVEL (10) <b>000</b>	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)	<input checked="" type="checkbox"/> 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 <b>David W. O'Brien, Technical Licensing Coordinator</b>	TELEPHONE NUMBER (Include Area Code) <b>(914) 736-8017</b>
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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				02	01	95

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

During the 31 Boric Acid Transfer Pump (BATP) performance evaluation test on May 4, 1994, it was noted that throttling of the 31 Boric Acid Storage Tank (BAST) recirculation valve, CH-HCV-105, did not cause reduction of flow to the BAST. Further investigation revealed that the subject valve was approximately full open while the valve position indicator indicated the valve to be closed. This condition was attributed to an improper adjustment of the CH-HCV-105 valve stem. Improper adjustment of the BAST recirculation valve caused a degradation of the boration capability of the 31 BATP train contrary to Technical Specification section 3.2.B.4 which requires a boration path from the boric acid storage system. Corrective actions include re-adjustment of the subject valve, installation of new flow instrumentation, completion of a heat trace modification and an extent of condition review. Additionally, maintenance specific training improvements will be made. The associated surveillance test for 31 and 32 BATPs will be revised to provide for flow trending.

**LICENSEE EVENT REPORT (LER)**  
**TEXT CONTINUATION**

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

DESCRIPTION OF EVENT

On May 4, 1994, the reactor was in a cold shutdown condition with reactor power at approximately four counts per second (CPS), reactor coolant system (RCS) (AB) temperature at approximately 100 degrees Fahrenheit and vented to the atmosphere. During a performance evaluation of the 31 Boric Acid Transfer Pump (P) (BATP), it was noted that throttling 31 Boric Acid Storage Tank (TK) (BAST) recirculation valve, CH-HCV-105 (HCV) (Copes-Vulcan Model 2-RA42-RD with model D-100-60 operator) (C635) did not cause a corresponding flow reduction. Investigation revealed that the subject valve was approximately full open while the valve position indicator indicated the valve to be closed. This condition was documented in Deviation Event Report (DER) 94-466 which was written on June 3, 1994. At that time, this event was not determined to be reportable pursuant to 10CFR50.72, but further engineering evaluation was determined to be required. The 32 BATP train was evaluated at that time as an extent of condition and determined to be operable. This anomaly was due to a mis-adjusted CH-HCV-105 valve stem. Further investigation of the event revealed that the subject deficient condition potentially caused the Chemical Volume and Control System (CVCS) (CB) to be operated outside of the requirements of Technical Specification section 3.2.B.4 between July 23, 1992 and March 7, 1993. Technical Specification section 3.2.B.4 requires that "System piping and valves shall be operable to the extent of establishing one flow path from the boric acid storage system ..." while above the cold shutdown condition. This would require a boration rate of 132 ppm/hr to the RCS for all operating conditions.

According to a preliminary calculation completed on July 15, 1994 by the Technical Services Department's CVCS system engineer, boration rate requirements of 132 ppm/hr cannot be met for all operating conditions (i.e., when the Volume Control Tank (VCT) (TK) pressure is in excess of approximately 45 psig) using the 31 BATP train with CH-HCV-105 in the full open position.

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A review of plant records, i.e. operator logs, determined that the 31 B ATP flow path was relied upon during this specified period to meet the requirements of Technical Specification section 3.2.B.4 and the Authority believes that VCT pressure exceeded 45 psig during some portion of this time period. DER 94-603 was written on July 28, 1994 to document the engineering judgement which concluded that the probability existed that 31 B ATP train may have been relied upon during the specified time period while above cold shutdown with an improperly adjusted 31 B ATP recirculation valve.

This deficient condition was corrected by re-adjusting the valve stem travel and the valve was declared operable on June 7, 1994. In addition, the 31 B ATP train was tested to be acceptable as compared to the 32 B ATP train with the similar system configuration in June 1994 which included providing the required makeup to the VCT.

CAUSE OF THE EVENT

A review of the maintenance history of the subject valve indicated that maintenance had been performed on the valve in July 1992 during the cycle 8/9 refueling outage by Instrumentation and Control technicians to correct an apparent valve sticking problem. The technicians noted that, although the valve stroked satisfactorily, it did not shut fully. No maintenance history on this valve prior to July 1992 has been found. The retest for this maintenance confirmed the findings of the technicians. Additional maintenance was performed on this valve during the current plant outage up to the discovery of the valve stem misadjustment. It can not be determined by the review of the maintenance history and by interviews with the personnel involved with the maintenance activities associated with this valve what the cause of the event was. Most probably the cause of the event was due to improper maintenance. It was not recognized until May 4, 1994 that the valve stem might have been mis-adjusted.

Additional causes that contributed to the failure to recognize the deficient condition associated with the 31 BAST recirculation valve are as follows:

1. There is no installed flow measurement instrumentation within the BAST recirculation flow path. Therefore, no attempt was made to test the throttling characteristics of CH-HCV-105. Such a test would have shown no change in B ATP flow rate or outlet pressure versus valve stroke.

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2. A design flaw in the Boric Acid Heat Trace (BAHT) (FE) system resulted in frequent blockage "rocking up" of the pressure instrument sensing lines used to measure BATH outlet pressure. This flaw caused difficulties in obtaining reliable data on pump developed head when this instrumentation became rocked up. Thus, a retest using pump developed head to measure the throttling characteristics of CH-HCV-105 would likely have failed to detect a change in outlet pressure even if the valve had functioned properly.

CORRECTIVE ACTIONS

The following corrective actions have been or will be performed to correct the probable cause of the noted deficiencies and to prevent recurrence of this event.

1. 31 BAST recirculation valve stem travel was adjusted and verified to be stroking properly on June 7, 1994.
2. The Boron Injection Tank (BIT) (TK) removal modification which includes the installation of permanent flow measurement instrumentation is scheduled to be completed by Construction Services prior to plant startup.
3. A modification was performed on the BAHT system. While not performed specifically for this event, this modification corrects the design flaw (rocking up phenomenon) which resulted in the failure to heat the BATH pressure instrumentation sensing lines.
4. Surveillance Test 3PT-Q38, "Boric Acid Transfer Pump Function Test," will be revised to trend pump discharge flow with the BAST recirculation valves at their normal operating position of 25 percent full open. This revision will be completed prior to plant startup. This commitment is tied to the completion of the BIT removal modification.
5. The Maintenance and the I&C Departments will review this event with respect to their departmental specific training regarding these valves and incorporate changes as appropriate. This task will be completed by December 31, 1994.

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- An evaluation of the extent of condition of this event will be conducted by the Maintenance Department. This extent of condition will address similar valve configurations in the plant. This evaluation will be completed by December 31, 1994. Significant findings as a result of this evaluation will be reported in a supplement to this LER.

ANALYSIS OF THE EVENT

This event is reportable under 10CFR50.73 (a)(2)(i)(B). The licensee shall report any operation or condition prohibited by the plant's Technical Specifications. During the period between July 23, 1992 to March 7, 1993, the plant may have been operated above the cold shutdown condition with the 31 BATP train not operable to the extent of establishing one flow path from the boric acid storage system as required by Technical Specification section 3.2.B.4. LER 94-007-00 has reported a similar event involving improper adjustment of valve stems.

SAFETY SIGNIFICANCE

This event had no significant effect on the health and safety of the public. The function of the CVCS system is to provide a second independent means of shutting down the reactor in the event that the control rods are unusable or unavailable. The control rods were available between July 23, 1992 and March 7, 1993. Additionally, the plant had not experienced any difficulties associated with boration capability to support plant shutdown during the specified period. Furthermore, additional boration capabilities were available and were provided through the operable 32 BATP train from the boric acid storage system, and the Refueling Water Storage Tank (RWST) (TK) to the suction of the Charging Pumps and to the suction of the Safety Injection Pumps.