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)
Indian Point Unit 3	0 5 0 0 0 2 8 6	1 OF 0 7

TITLE (4)
Loss of Reactor Coolant System (RCS) level indication while in a reduced inventory condition.

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 3	1 9	9 3	9 3	— 0 1 1	— 0 0	0 4	1 6	9 3		0 5 0 0 0
										0 5 0 0 0

OPERATING MODE (9): N

POWER LEVEL (10): 0 0 0

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (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 (Specify in Abstract below and in Text, NRC Form 366A)
[ ] 20.405(a)(1)(iii)	[ ] 50.73(a)(2)(i)	[ ] 50.73(a)(2)(viii)(A)	
[ ] 20.405(a)(1)(iv)	[X] 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)
David W. O'Brien, Technical Licensing Coordinator	9 1 4 7 3 6 - 8 0 1 1 7

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)

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

EXPECTED SUBMISSION DATE (15): MONTH | DAY | YEAR

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

On Friday, March 19, 1993, with the plant in a cold shutdown condition, the water level in the Reactor Coolant System (RCS) was drained to a reduced inventory condition to permit the testing of the Ultrasonic Level Monitoring System (ULMS). The ULMS is one of two (2) RCS level indication systems required to be operable during reduced inventory conditions. During the performance of the test, the RCS level gauge being used to monitor RCS level was isolated for a short period of time to permit checking its response. This resulted in the plant having no operable indication of RCS level for that period of time while in a reduced inventory condition. Coincidental to this situation, maintenance work was proceeding on Reactor Coolant Pump (RCP) seal replacement without the plant having the required two (2) independent RCS level indication systems operable. These conditions placed the plant outside its design basis. The root causes were inappropriate actions made by several members of the plant staff coupled with inadequate communications within the plant's organization. Procedural deficiencies and engineering inadequacies were contributing factors. Corrective actions include procedural upgrades, reengineering of the RCS level indicating system, critiques with the individuals involved to provide positive reinforcement of lessons learned and dissemination of the summary of the event to the plant staff to alert the staff to its significance.

9304260156 930416
PDR ADOCK 05000286
S PDR

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6) YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	PAGE (3)
Indian Point unit 3	0 5 0 0 0 2 8 6	9 3	— 0 1 1	— 0 0	0 2 OF 0 7

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

DESCRIPTION OF THE EVENT

On Wednesday, March 17, 1993, at 2140 hours, with the plant in the cold shutdown condition, Reactor Coolant System (RCS) (AB) draindown commenced in order to perform Engineering Acceptance Test, ENG-390G, revision 0, "ULMS System Verification for Replacement Transducer." This test would verify the operability of the repaired Ultrasonic Level Monitoring System (ULMS) (AB) after the replacement of a failed transducer (AB) (TD). ENG-390G was to test the repaired ULMS against the RCS 31 loop intermediate leg level gauge, LG-444 (AB) (LG) which was operable and in service in accordance with Plant Operating Procedure, POP-4.2, revision 6, "Operation with the RCS Drained or at Midloop." System Operating Procedure, SOP-RCS-10, revision 12, "Draining the Reactor Coolant System," was used to drain the RCS. On Thursday, March 18, 1993, at 0325 hours, POP-4.2, revision 6, became controlling when the plant entered into a reduced inventory condition as RCS water level reached 66.0 feet (66'-0"). RCS draindown continued until 0120 hours on Friday, March 19, 1993, when the RCS water level reached 63.0 feet (63'-0").

At approximately 0900 hours on Friday, March 19, 1993, the testing of the ULMS commenced in accordance with ENG-390G. The data obtained at the first data point of step 4.8.7 of ENG-390G satisfied the testing criteria. At 1008 hours the Senior Reactor Operator (SRO) on watch in the Control Room was requested by the Site Engineering Test Coordinator to drain the RCS to the second data point of step 4.8.7. At the completion of this portion of the draindown, a divergence developed between the RCS levels indicated by the ULMS being tested and LG-444. After waiting one hour and forty-five minutes for the water level in LG-444 to stabilize, the SRO concluded that LG-444's level indication was suspect and he decided to check this level gauge's responsiveness.

At 1205 hours, the SRO directed the Nuclear Plant Operator (NPO) on watch on the primary side of the plant to isolate LG-444, drain several inches of water from the level gauge, shut the drain valve and then unisolate LG-444. This operation required less than five (5) minutes to complete.

During the period of time that LG-444 was isolated, there was no operable indicator of RCS water level. This condition placed the plant outside its design basis as described in section 4.3.7 of the Final Safety Analysis Report (FSAR). Also, the SRO failed to contact the Operations Manager when it became apparent that the level indication provided by LG-444 was not responding as expected as required by step 4.25 of SOP-RCS-10, revision 12 and step 4.5(2) of POP-4.2, revision 6.

During the time that the level of the RCS was being changed to perform ENG-390G, maintenance work to replace the seals (AB) (SEAL) for 32 and 33 Reactor Coolant Pumps (RCP) (AB) (P) was being performed in the Vapor Containment (VC) building. The scope of this work was limited to only the uncoupling and removal of the RCP motors (AB) (MO). This decision was discussed and agreed to the evening before by the Resident Manager, General Manager - Maintenance, and Operations Department Manager. The Planning and Scheduling Department was not informed of the decision to change the outage schedule. As a result, no risk assessment of the change to the outage schedule was conducted as required by Administration Procedures AP-50, revision 0, "Outage Management," section VI.B.4.C and AP-9.2, revision 0, "Outage Risk Assesment," section V.C.

This activity had the potential for perturbing the RCS by creating additional openings in the RCS while in a reduced inventory condition prior to establishing two (2) independent RCS level indication systems as required by section 4.3.7 of the FSAR.

When the plant staff became aware that the level indication requirements for the reduced inventory condition were not satisfied, all RCP seal replacement activities were halted and the performance of ENG-390G was terminated as a failed test. From 0105 hours to 0220 hours on Saturday, March 20, 1993, the RCS was filled to a level of 67.3 feet (67'-4") which took the plant out of the reduced inventory condition.

CAUSE OF THE EVENT

Two separate activities occurring simultaneously placed the plant outside its design basis. The root causes for both activities which led to this event were inappropriate actions by several members of the plant staff coupled with an organizational breakdown through inadequate communications within the organization.

For the activity involving the performance of ENG-390G for the ULMS, the SRO on watch in the Control Room took an inappropriate action when he directed that LG-444 be isolated. He failed to understand the consequences of isolating LG-444; namely, having no operable RCS level indication while the plant was in a reduced inventory condition.

Contributing to this root cause was the installation of the permanent RCS level gauge modification, MOD 89-3-074 RCS, and subsequent temporary modifications, that were made to its vent line to the Pressurizer (PZR). These engineering design changes were inadequate in removing low points where condensation could collect causing LG-444 indication inaccuracies and poor response to RCS level changes. Uncertainty about the responsiveness of LG-444 led the SRO to isolate LG-444 to test it. Also contributing to this action were procedural deficiencies which did not provide the SRO with clear, concise direction in the event of level gauge unresponsiveness. The action that the SRO took in isolating LG-444 was not specifically permitted or prohibited by any procedure in effect.

The SRO failed to inform the Operations Manager of the loss of the permanent RCS level indicator because he failed to understand that the need to take this action, detailed in the procedure, had been triggered by his decision to isolate the level gauge. Contributing to this failure were procedural deficiencies. These procedural deficiencies consited of an incomplete description of the plant conditions that existed for the performance of ENG-390G and a lack of specific requirements for RCS level indication when in a reduced inventory condition.

Another contributing factor to the inappropriate actions made by the SRO was that the Shift Supervisor did not provide adequate direction and leadership during the performance of a critically important test. A greater physical presence of the Shift Supervisor in the Control Room would have better served the SRO when uncertainty developed regarding how to proceed with the test.

The decision by senior plant management to change the outage schedule by moving up the start of the RCP seal replacement project was an inappropriate action. This inappropriate action was based on a lack of knowledge regarding the requirement for two (2) independent, operable level indication systems prior to commencing RCS work when in a reduced inventory condition. Furthermore, the decision was not adequately communicated. This communication failure caused this evolution to proceed without the review and risk assessment required by plant procedures.

CORRECTIVE ACTIONS

The following immediate corrective actions were taken.

- The RCP seal replacement project was halted.
- The performance of ENG-390G was halted and declared a test failure.
- RCS level was raised to 67.0 feet (67'-0") by the RCS 34 hot leg level indication system in order to place the plant above a reduced inventory condition.

The following corrective actions will prevent recurrence of this event.

- The RCS level gauge system will be totally reengineered to provide a reliable indication of RCS level when in a cold shutdown condition with PZR level less than ten (10) percent. The installation of this modification will be completed prior to plant startup from the 1993 maintenance outage.
- A temporary modification to the existing RCS level gauge system has been made to provide reliable RCS level indication prior to commencing testing of the ULMS.
- A nuclear safety evaluation (NSE) evaluating the safety significance of plant operations in a reduced inventory condition for the configuration that existed during ULMS testing has been prepared. The procedures associated with testing the ULMS and draining the RCS to the midloop condition have been reviewed and revised as necessary in accordance with this NSE.
- A temporary operating procedure has been written to provide the required procedural direction for operating the plant during the ULMS testing.
- A critique was held with senior plant management and the individuals involved in this event to determine the facts of the event. The findings have been reviewed with these individuals in order to provide a positive reinforcement of procedural adherence, attention to detail, safety significance and the need to ask for assistance when uncertainty exists.

- Presentations have been made to department managers regarding the lessons learned from this event.

- A summary of this event will be disseminated to the plant staff through briefings by department managers. This will be completed by April 22, 1993.

ANALYSIS OF THE EVENT

This event is reportable under 10CFR50.73 (a)(2)(ii)(B). This section states, "The licensee shall report any event or condition that resulted in the condition of the nuclear power plant, including its principal safety barriers, being seriously degraded, or that resulted in the nuclear power plant being in a condition that was outside the design basis of the plant." The isolation of LG-444 and the operation to replace the 32 and 33 RCP seals in a reduced inventory condition without two (2) independent, operable RCS level indication systems placed the plant outside its design basis as described in section 4.3.7 of the FSAR.

SAFETY SIGNIFICANCE

The event did not affect the public health and safety. There was no safety significance to this event.

The performance for ENG-390G was a controlled evolution in which changes in RCS water level were made in very small increments. The operators were monitoring indications in the Control Room and locally at the Residual Heal Removal (RHR) pumps as required by procedures for loss of decay heat removal. LG-444 was isolated for less than five (5) minutes. No RCS water level adjustments were made during that period. An entry into a loss of decay heat removal condition would have been detected and would have quickly resulted in a restoration of RCS inventory and recovery of decay heat removal capacity. If RCS water level had been raised to the level above the RCP seal packages, any leakage would have been minimal due to the construction of the RCP. Personnel contamination could have potentially occurred, but the presence of health physics personnel monitoring radiological conditions at the RCP seals would have minimized the extent of personnel contamination.

No similar LERs have been reported.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6) YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	PAGE (3)
Indian Point Unit 3	0 5 0 0 0 2 8 6	9 3	— 0 1 1	— 0 0	0 7 OF 0 7

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

SECURING FROM THE EVENT

The isolation of LG-444 was restored within five (5) minutes. The performance of ENG-390G was terminated and the test was declared a failure. All work involving the RCP seal replacement was halted. RCS level was raised to 67.0 feet (67'-0") by the RCS 34 hot leg level indication system which placed the plant above a reduced inventory condition. Additionally, all work in the plant was terminated until such time that a satisfactory review of clearance requirements was completed for each task. The Resident Manager's approval to start any new work was required until such time that he felt confident that the work could be performed safely, under controlled conditions. This restriction was rescinded on Friday, April 2, 1993.