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Nuclear Power Plant
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NewYorkPower Authority

Robert J. Barrett
Site Executive Officer

October 15, 1999
IPN-99-111

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 # 1999-011-00
Pressurizer Safety Valves Inoperable with the Reactor Vessel Head On Without an Equivalent Opening of One Valve Flange Established Due to Inadequate Communications;
A Condition Prohibited by Technical Specifications

Dear Sir:

The attached Licensee Event Report (LER) 1999-011-00 is hereby submitted as required by 10 CFR 50.73. This event is of the type defined in 10 CFR 50.73 (a)(2)(i)(B).

The Authority is making no new commitments in this LER.

Very truly yours,

Robert J. Barrett
Site Executive Officer
Indian Point 3 Nuclear Power Plant

cc: See next page

cc: Mr. Hubert J. Miller
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U.S. Nuclear Regulatory Commission
Resident Inspectors' Office
Indian Point 3 Nuclear Power Plant

NRC FORM 366 (6-1998) U.S. NUCLEAR REGULATORY COMMISSION	APPROVED BY OMB NO. 3150-0104 EXPIRES 06/30/2001
LICENSEE EVENT REPORT (LER) (See reverse for required number of digits/characters for each block)	Estimated burden per response to comply with this mandatory information collection request: 50 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Forward comments regarding burden estimate to the Records Management Branch (T-6 F33), 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. If an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

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TITLE (4)

Pressurizer Safety Valves Inoperable with the Reactor Vessel Head On Without an Equivalent Opening of One Valve Flange Established Due to Inadequate Communications; A Condition Prohibited by Technical Specifications

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 05000
09	16	1999	1999	-- 011 --	00	10	15	1999	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)

	20.2201(b)		20.2203(a)(2)(v)	X	50.73(a)(2)(i)		50.73(a)(2)(viii)
	20.2203(a)(1)		20.2203(a)(3)(i)		50.73(a)(2)(ii)		50.73(a)(2)(x)
	20.2203(a)(2)(i)		20.2203(a)(3)(ii)		50.73(a)(2)(iii)		73.71
	20.2203(a)(2)(ii)		20.2203(a)(4)		50.73(a)(2)(iv)		OTHER
	20.2203(a)(2)(iii)		50.36(c)(1)		50.73(a)(2)(v)		Specify in Abstract below or in NRC Form 366A
	20.2203(a)(2)(iv)		50.36(c)(2)		50.73(a)(2)(vii)		

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
Tom McKee, Operations Engineer	(914) 736-8349

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX

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 September 16, 1999, while in cold shutdown (CSD) during preparations for refueling, the assistant operations manager discovered that the pressurizer safety valves (SV) had all but two of their bolts removed from their associated flanges prior to the reactor vessel head being removed. Technical Specification (TS) 3.1.A.2.a requires that at least one pressurizer code SV be operable or that there be an opening greater than or equal to the size of one code SV flange to allow for pressure relief, whenever the reactor head is on the vessel. The reactor vessel head was fully detensioned, but with some bolts of the pressurizer SVs removed the SVs were considered inoperable and an equivalent opening was not available. The cause of the inoperable SVs was inadequate verbal communication due to misunderstanding. Maintenance requested from work control (WC) and believed they received permission to de-tension the SVs, but WC believed they only authorized removal of their whip restraints. Corrective actions include removal of one SV to establish the required reactor coolant system opening, and counseling appropriate personnel on management's expectations for attention to detail and the need to perform adequate communications. The procedure on Outage Management will be revised to ensure changes in work sequences require assessment for impact of TS requirements. The requirements of TS 3.1.A.2.a are to be relocated to the FSAR when the current TS are revised to the improved TS (ITS) which does not have this requirement in CSD. The event had no effect on public health and safety. This event was not considered a safety system functional failure in accordance with Nuclear Energy Institute guideline NEI 99-02.

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

Note: The Energy Industry identification system Codes are identified within the brackets {}

DESCRIPTION OF EVENT

On September 16, 1999, at approximately 1300 hours, with the plant in cold shutdown (CSD) during preparations for scheduled refueling activities, the assistant operations manager (AOM) discovered at an outage meeting that the pressurizer {PZR} code safety valves (SV) {RV} had all but two of their bolts removed from their associated flanges {PSF} prior to the reactor vessel {RPV} head being removed. The operations shift manager (SM) was notified of the condition at approximately 1400 hours and a confirmation of operability determination (COD) and immediate corrective actions were initiated. Technical Specification (TS) 3.1.A.2.a requires that at least one pressurizer code SV be operable or that there be an opening greater than or equal to the size of one code SV flange {PSF} to allow for pressure relief, whenever the reactor head is on the vessel. Reactor vessel head detensioning was initiated on September 15, at 1530 hours, and fully detensioned at 2230 hours. Both Power Operated Relief Valves (PORVs) were open prior to this event with one PORV blocked open to ensure the required equivalent opening per Overpressure Protection System (OPS) {AB} TS 3.1.A.8. At 1730 hours, a pressurizer code SV was lifted (removed) providing the required TS opening. A deviation event report (DER 99-01912) recorded the condition and investigations initiated. On September 20, 1999, at 1100 hours, System Engineering (SE) completed the COD confirming that the SVs were inoperable. The COD concluded that with some bolts of the pressurizer SVs removed the SVs were inoperable since they could not meet the operability definition of properly installed in the system and capable of performing the intended function in the intended manner. Also, with some bolts remaining intact the SVs could not be credited with providing the required opening for pressure relief in the intended manner.

Further investigation determined that the original outage schedule planned to remove the pressurizer manway prior to removing the pressurizer SVs, thus meeting the TS requirement for a vent opening equivelent to a SV flange. On September 15, a maintenance supervisor determined that work to remove the SVs could be started ahead of schedule because the required tool to remove them became available at the work site ahead of schedule. The maintenance supervisor met with outage management and requested permission to remove the SV ahead of schedule. The removal of the SVs along with other activities were discussed including the removal of the SV whip restraints. The meeting attendees included a licensed operator in work control, a planner and the maintenance job supervisor. The meeting included discussion of removing the pressurizer manway, tools (Hy-Torque), SV restraints and potential interferences. The maintenance supervisor left the meeting believing outage management gave permission to remove the SVs. Outage management believed they had only given permission to remove the SV whip restraints while unbolting the pressurizer manway and that the schedule sequence for removing the manway and then the SVs would be followed. No pre-job brief was performed for the clearance to conduct the revised schedule work and no schedule impact sheet was used. Operations verified the Protective Tagging Order (PTO) and clearance for the work and gave permission to proceed.

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

On September 15, work was started to detension the pressurizer SV flange hold down bolts. Two of the three SVs had all but two of their flange hold down bolts detensioned and removed and the third SV had all but two of its flange hold down bolts detensioned and removed on September 16.

On September 16, at approximately 1300 hours, the mechanical maintenance supervisor provided the status of maintenance work at the daily outage meeting that included the work on the pressurizer SVs. A System Engineering supervisor at the meeting recognized that the condition of the pressurizer SVs were prohibited by the TS and advised the AOM. Subsequently the AOM advised the SM of the condition.

The Reactor Coolant System (RCS) {AB} is overpressure protected by three (3) ASME Code SV (PCV-464, 466, 468) and two PORVs {RV} (PCV-455C and PCV-456) located on top of the pressurizer. The three code SVs protect the reactor coolant pressure boundary from overpressure during abnormal operating pressure and temperature conditions in accordance with the ASME Boiler & Pressure Vessel Code. The pressurizer code SV's are spring loaded, enclosed pop type, self actuated angle relief valves {RV} with backpressure compensation. The code SV do not provide cold overpressurization protection because their lift setpoints are fixed at too high a value to prevent a potential brittle fracture of the reactor vessel. Cold overpressurization protection of the reactor vessel in CSD is provided by the PORVs. The TS basis states that one SV provides adequate protection during CSD for overpressurization if no residual heat were removed by the Residual Heat Removal (RHR) System {BP} because the amount of steam which could be generated at SV relief pressure would be less than half the capacity of a single valve.

An extent of condition review determined that other miscommunications have resulted in errors during the current outage and similar events have occurred previously. Review findings will be assessed and any corrective actions performed as required under the Authority's corrective action program.

CAUSE OF EVENT

The cause of the inoperable pressurizer code SVs that resulted in a TS prohibited condition was misunderstanding due to inadequate verbal communication. Maintenance requested from work control (WC) and believed they received permission to detension the SVs, but WC believed they only authorized removal of their whip restraints. Review of the actions to unbolt the SVs under the outage work control process failed to ensure that work would be performed so that one SV would remain operable or an equivalent opening would be provided in accordance with the TS.

The event would not be a TS prohibited condition under the improved TS (ITS). TS 3.1.A.2.a was an original specification requirement based on consideration of RCS pressurization if no decay heat were removed from the RCS via the RHR system in CSD. A single SV provided the capacity to relieve pressure from such a condition in CSD. The OPS per the current TS 3.1.A.8 [i.e., Low Temperature Overpressure Protection System (LTOPS)], which includes the PORVs, provides cold overpressurization protection and is retained in the ITS.

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

CORRECTIVE ACTIONS

The following corrective actions have been or will be performed under the Authority's corrective action program to address the causes of this event.

- A pressurizer SV was removed to establish the required reactor coolant system opening for conformance with the TS.

- The administrative procedure on Outage Management will be revised to ensure that changes to the sequences of work require assessment of the impact of TS requirements. The procedure is scheduled to be revised by the end of January 2000.

- The appropriate personnel were counseled on management's expectations for attention to detail and the need to perform adequate communications.

- TS 3.1.A.2.a will be deleted and the requirement relocated to the FSAR when the current TS are revised to the improved TS (ITS). Changes to the TS requirements are awaiting NRC approval and implementation of the ITS. ITS Section 3.4.10 maintains the current TS 3.1.A.2 in Modes 1,2, 3, and in Mode 4 when above the LTOP arming temperature. ITS LCO 3.4.10 does not include any requirements for pressurizer code SVs below the LTOP arming temperature.

ANALYSIS OF EVENT

The event is reportable under 10 CFR 50.73 (a) (2) (i) (B). The licensee shall report any operation or condition prohibited by the plant's Technical Specifications.

This event meets the reporting criteria because a pressurizer code SV was not operable and an opening greater than or equal to the size of one code SV flange was not available with the reactor head on the vessel while in CSD. The code SVs are designed to be operable with all bolts properly installed. TS 1.5 defines operable as properly installed in the system and capable of performing the intended functions in the intended manner as verified by testing and tested at the frequency required by the TS. With some of each SV's flange hold down bolts unbolted the SVs became inoperable. TS 3.1.A.2.a specifies that at least one pressurizer code SV shall be operable, or an opening greater than or equal to the size of one code SV flange to allow for pressure relief, whenever the reactor head is on the vessel except for hydrostatically testing the RCS in accordance with Section XI of the ASME B&PV Code. With the code SVs inoperable and the reactor head on the vessel, the plant was in a condition prohibited by TS 3.1.A.2.a. RCS cold overpressure protection was available during the event time by the OPS under TS 3.1.A.8. The PORVs were open which provided an overpressure relief opening.

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TEXT CONTINUATION

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

The condition existed from the time the last code SV was unbolted (September 16, at approximately 1200 hours) to the time a code SV was removed and the TS required equivalent opening provided (September 16, at approximately 1730 hours).

A review of the past two years of Licensee Event Reports (LER) for events that involved TS prohibited conditions due to inoperable TS components as a result of personnel error identified LER 97-017 and LER 97-028. LER 97-017 reported OPS inoperable due to inadequate procedural guidance for verifying operability. Corrective actions (CA) for that event would not have prevented this event because operability verification prior to LCO/PTO closeout was not the cause of this event. LER 97-028 reported alignment of the safety injection (SI) system {BQ} for testing contrary to the TS due to misapplication of the TS as a result of a lack of knowledge by operators. The CAs would not have prevented this event because the cause was different. Operators during this event understood the TS requirement but failed to ensure the proper sequencing of work. An additional review of the previous two years of LERs for events that involved inadequate TS identified LER 98-005-01, LER 98-008, LER 99-004, and LER 97-032-02. These LERs reported inoperable component conditions that had no TS allowed outage time (AOT) specified. CA for these events did not prevent this event because the TS have not been converted to the ITS. Specifying AOTs for those TS systems and components missing them would not have corrected TS 3.1.A.2.a. A CA to change to the ITS would not have prevented this event but would not have resulted in a TS prohibited condition.

SAFETY SIGNIFICANCE

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

Review of this event against the guidelines of draft NEI 99-02 Rev. B, "Regulatory Assessment Performance Indicator Guideline," concluded it was not a safety system functional failure (SSFF) for the functional area of Primary System Safety and Relief. Although the code SV were inoperable and did not meet the TS limiting condition for operation, the safety function of RCS pressure relief could have been performed. The code SV function of RCS pressure relief during CSD would have been performed by the PORVs of the OPS and by limiting the mass and heat input transients capable of overpressurizing the RCS [e.g., isolating the SI pumps preventing the capability of injection into the RCS (TS 3.3.A.8), isolating the accumulators, and disallowing start of a Reactor Coolant Pump (RCP)]. Analysis demonstrate that either one PORV or the depressurized RCS and an RCS vent of two square inches, which is equivalent to one PORV, can maintain RCS pressure below limits when no SI pump is capable of injecting into the RCS. No TS, design or code limit was or could be exceeded. Adequate RCS pressure relief remained functional because a PORV was blocked open providing the required pressure relief opening in accordance with TS 3.1.A.8. Also, in accordance with the NEI guidelines it is not necessary to consider a single random failure, absent an identified potential failure mechanism. No potential failure mechanism was identified for the components in the pressure relieving pathway and the open PORV pathways would be expected to perform their safety function and relieve an overpressure condition.

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There were no actual safety consequences for the event because there were no events requiring pressure relief of the RCS. The RCS had two open PORVs with one blocked open providing the required cold overpressure relief pathway in accordance with TS 3.1.A.8. Redundant decay heat removal was available per TS 3.3.A.7 and an operating RHR loop was connected to the RCS providing core cooling that would prevent RCS heatup and pressurization. Also, the RCS was at reduced inventory providing additional margin to any pressurization events.

There were no potential safety consequences of this event. The required pressure relief opening was available because a PORV was blocked open in accordance with TS 3.1.A.8, and mass and heat input events were disallowed by administrate control [e.g., SI pumps rendered incapable of injection into the RCS per TS 3.3.A.8, accumulators isolated , and RCP operation prevented per TS 3.1.A.h by positioning controls to prevent starting]. The RHR system was operable and in service providing RCS cooling. The RHR system is protected from overpressure by a spring loaded relief valve which has sufficient capacity to accommodate all three charging pumps. Although the TS require one pressurizer SV to be operable in CSD when the reactor vessel head is on, the code SV do not provide cold overpressurization protection because their lift setpoints are fixed at too high a value to prevent a potential brittle fracture of the reactor vessel. The ITS do not have a requirement for the SV to be operable in the CSD condition. The ITS do have a requirement for PORVs to provide protection from cold overpressurization of the reactor vessel when the RCS is in CSD. The OPS, which was operable with the PORVs is designed to prevent overpressurization of the reactor vessel when the RCS is at low temperatures.

FSAR Section 4.2.3 states that the pressurizer PORVs operate from the OPS to prevent RCS pressure from exceeding 10CFR50, Appendix G stress limits given in the TS, and the limits of ASME Section III Code Case N-514. The Indian Point 3 specific analysis for the LTOP system identifies bounding events which were previously identified in a Westinghouse Owners Group (WOG) OPS study based on the mechanisms for increasing the RCS pressure at CSD conditions. The bounding heat addition event identified was the start of one RCP, with the steam generators at an elevated temperature (loop temperature asymmetry). The WOG study concluded that a core decay heat addition (loss of RHR) was not as significant as a loop temperature asymmetry and therefore is bounded by the loop temperature asymmetry event. Therefore, LTOPS will satisfy TS 3.1.A.2.a because the basis of TS 3.1.A.2.a is a loss of RHR event which is bounded by the LTOP analysis for a loop temperature asymmetry event.

In addition, with no SVs operable, an operating RHR loop, connected to the RCS, provides core cooling to prevent RCS heatup and pressurization. During this event both PORVs were open; one was open with nitrogen and one was blocked. Had a single failure occurred to a PORV (nitrogen opened), the redundant PORV would provide the pressure relief capability. In the event a PORV leaks or sticks open after actuation, normally open motor operated stop valves are provided upstream of the PORVs to prevent flow. Also, a redundant train of RHR was operable and available in accordance with TS requirements to maintain core cooling and prevent RCS heatup and pressurization.