

Indian Point 3
Nuclear Power Plant
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**New York Power
Authority**

William A. Josiger
Resident Manager

November 18, 1988
IP3-88-069
MFP-88-132B

Docket No. 50-286
License No. DPR-64

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Station P1-137
Washington, D.C. 20555

Dear Sir:

The following is a special report of a Pressurizer Power Operated Relief Valve (PORV) actuation at Indian Point 3, prepared in accordance with Technical Specification 6.9.2.f. The event described is covered by Technical Specification 3.1.A.8.c.

At 1117 hours on October 20, 1988, while cooling the plant to the cold shutdown condition for inspection following a steam generator tube leak, the low temperature overpressure protection system (OPS) actuated, functioned as designed and protected the Reactor Coolant System from pressures in excess of the Appendix G limits.

At the time of the event, the Control Room Operators were performing the following evolutions:

- 1) Cooldown of the RCS
- 2) Degassing of the RCS
- 3) Filling of the Pressurizer and Collapsing of the Pressurizer Bubble

As per Plant Operating Procedure POP-3.3, "Plant Cooldown-Hot to Cold Shutdown" and System Operating Procedure SOP-CVCS-6, "Collapsing the Steam Bubble in the Pressurizer", several pertinent operations were being performed:

- 1) RCS letdown was via HCV-133 (RHR to CVCS letdown) and PCV-135 (letdown backpressure controller).

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- 2) All three letdown orifices (200A, B, & C) were open.
- 3) Two charging pumps were in service.
- 4) Pressurizer level was being gradually increased.

Upon OPS actuation one of the two operating charging pumps was tripped and RCS pressure was rapidly reduced to below the OPS relieving setpoint.

The root cause of this transient is as follows:

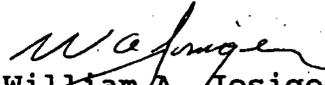
- 1) For the pressurizer temperature being considered (400 - 450°F), which is the normal range at which the pressurizer is filled during cooldown, the temperature lines on Graph RCS-3B are combination temperature lines (e.g., 350/400 and 450/500). This makes interpolation from the graph difficult. For the area of concern there should be a line for every 10°F of temperature (i.e., 400, 410, 420, etc.).
- 2) SOP-CVCS-6, "Collapsing the Steam Bubble in the Pressurizer", states, "It will take approximately 675 additional gallons of water to collapse the bubble, after level indication is lost." This statement is incorrect and misleading. Calculations indicate that there is approximately 330 additional gallons of water needed to fill the pressurizer, above the upper level tap (100% actual level). It appears that the original calculation (performed in 1978), which is basically the volume of hemisphere, determined the volume of a sphere but neglected to divide the value in half. Also, the statement should say "after 100% actual level is reached," rather than "after level indication is lost." All indications of level must be converted to an actual level based on temperature.

The following corrective actions are being implemented to prevent reoccurrence:

- 1) SOP-CVCS-6 is being revised to provide more detailed guidance for filling the pressurizer, especially at high pressurizer levels. The appropriate cautions and notes will be added or revised and the value of 675 gallons will be corrected.
- 2) SOP-CVCS-6 and other applicable procedures are being revised so that their interfacing abilities are improved.

- 3) There are several Control Room alarms associated with the OPS. At present, all of them annunciate either at the OPS arming temperature of 330°F (during cooldown) or upon PORV actuation. An evaluation is being performed to determine if certain of these alarm setpoints can be adjusted to provide operators warning of impending PORV actuation.

Very truly yours,


William A. Josiger
Resident Manager
Indian Point Nuclear Power Plant

WAJ:lh

cc: Mr. William Russell
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Indian Point 3 Resident Inspector's Office