123 Main Street
White Plains, New York 10601
914 681.6950
914 287.3309 (Fax)

New York Power Authority

James Knubel
Senior Vice President and
Chief Nuclear Officer

February 27, 1998
IPN-98-023

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

Subject: **Indian Point 3 Nuclear Power Plant**
Docket No. 50-286
Response to Request for Additional Information on Proposed Technical Specification Changes Regarding Overpressure Protection System Limits

References:

1. NRC letter, G. Wunder to J. Knubel, "Request for Additional Information Regarding Proposed Changes to Pressure and Temperature (P/T) Limit Curves (TAC No. M99928)", dated January 14, 1998.

2. NYPA letter, J. Knubel to NRC (IPN-97-149), "Proposed Exemption From Requirements of 10 CFR 50.60 and Proposed Technical Specification Changes Associated With Pressure-Temperature and Overpressure Protection System Limits for Up to 13 Effective Full Power Years," dated November 3, 1997.

3. NYPA letter, J. Knubel to NRC (IPN-98-015), "Response to Request for Additional Information on Proposed Technical Specification Changes Regarding Pressure-Temperature Limits," dated February 6, 1998.

Dear Sir:

This letter provides a partial response to the NRC's request for additional information (Reference 1). The request concerns the Authority's proposed Technical Specification changes to the pressure-temperature and overpressure protection system (OPS) limits (Reference 2). The NRC's questions on the OPS limits (Questions 1 through 7) followed by the Authority's responses are contained in Attachment I. Answers to the NRC's questions pertaining to the pressure-temperature limits (Questions 8 through 10) were submitted in Reference 3.

The technical specifications provided in Reference 2 will be revised and submitted to the NRC under separate cover as a result of the information provided in Attachment I and the decision to leave the pressure-temperature and OPS curves inside the Technical

A001

Specifications, rather than moving them to a separate document. The amended technical specification submittal will contain a revised 'no significant hazards' section.

This submittal contains no new commitments. If you have any questions, please contact Ms. C. D. Faison.

Very truly yours,

J. Knubel
Senior Vice President and
Chief Nuclear Officer

Attachments:

I - Response to Request for Additional Information
II - IP3-CALC-RCS-02444, "Generation of All Curves Associated With the Pressure-Temperature Limits Report (PTLR)," Revision 1, dated February 24, 1998.
III - ABB Combustion Engineering Calculation, "Indian Point Unit 3 Section XI LTOP Enable Temperatures for 13 & 15 EFPY (063-PENG-CALC-061, Revision 0)," dated August 14, 1997.

cc: Regional Administrator
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

Resident Inspector's Office
Indian Point Unit 3
U.S. Nuclear Regulatory Commission
P.O. Box 337
Buchanan, NY 10511

Mr. George F. Wunder, Project Manager
Project Directorate I-1
Division of Reactor Projects I/II
U.S. Nuclear Regulatory Commission
Mail Stop 14B2
Washington, DC 20555

Mr. F. William Valentino, President
New York State Energy, Research,
and Development Authority
Corporate Plaza West
286 Washington Avenue Extension
Albany, NY 12203-6399

ATTACHMENT I TO IPN-98-023

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION ON THE PROPOSED TECHNICAL SPECIFICATION CHANGES REGARDING THE OVERPRESSURE PROTECTION SYSTEM LIMITS

NEW YORK POWER AUTHORITY
INDIAN POINT 3 NUCLEAR POWER PLANT
DOCKET NO. 50-286
DPR-64

Response to Request for Additional Information

LTOP Questions

Question 1:

Please provide the calculation of the enable temperature for the staff to review. The enable temperature should account for the temperature difference from the fluid to the quarter-t location and instrumentation uncertainties. This is in addition to the 50 degrees recommended by ASME Code Case N-514.

Response:

Attachment III provides the calculation for the overpressure protection system (OPS) enable temperature. This calculation accounted for the temperature difference from the fluid to the quarter-t location, in addition to the 50 degrees allowed by ASME Code Case N-514. The uncertainties associated with the LTOP enable temperature are included in the calculation (IP3-CALC-RCS-02444) provided as Attachment II. Specifically, Sections 2.0 and 3.3.3.1 of the calculation state that the uncertainty assumed for the LTOP enable temperature is 30 degrees.

Question 2:

In your evaluation you stated that you accounted for the dynamic head effect of four reactor coolant pumps. Please account for the effect of residual heat removal pumps as well. Also how were instrument uncertainty and overshoot accounted for?

Response:

Section 3.3 of Attachment II describes how the dynamic head effect of the residual heat removal pumps, instrument uncertainty and PORV overshoot were incorporated into the OPS limits.

Question 3:

Provide your analyses/summaries of analyses to support your proposed power-operated relief value (PORV) setpoints for low temperature overpressure protection (LTOP). Discuss the configurations analyzed and how they bound the configurations allowed by the technical specifications.

Response:

Section 3.3 of Attachment II summarizes the analyses used to determine PORV setpoints for low temperature overpressure protection. Specific Technical Specification configurations discussed include (1) OPS operable with secondary side cooler than primary side, (2) OPS operable with secondary side hotter than primary side, and (3) OPS inoperable with secondary side cooler than primary side.

Question 4:

Define "OPS Threshold Temperature" and justify the value chosen for it.

Response:

The OPS threshold temperature is defined as the temperature at which the RCS heatup and cooldown curves permit pressurization to the setting of the pressurizer safety valves when the OPS is inoperable. At this temperature the pressurizer safety valves will preclude violation of the 10 CFR 50, Appendix G curves.

The term 'OPS threshold temperature' was introduced for the first time in Reference 1 as part of the technical specification revisions related to the creation of the Pressure-Temperature Limits Report (PTLR). However, the temperature requirement associated with the term is part of the current technical specifications (Section 3.1.A.8.b.2). Section 3.3.3.3 of Attachment II provides the justification for the revised OPS threshold temperature of 411°F.

A revision to the pressure-temperature and OPS limits Technical Specification amendment (Reference 1) will be submitted under separate cover. This revision removes all reference to the PTLR and leaves the heatup/cooldown and OPS curves in the Technical Specifications. As a result, the term 'OPS threshold temperature' was removed from the proposed Technical Specifications and replaced with the temperature requirement of 411°F.

Question 5:

You stated, "...one PORV, blocked fully open satisfies the vent area requirement of 2.0 square inches. This statement is conservative in comparison to the analysis of record which is based on a minimum vent area of 1.4 square inches." What is the venting area associated with one PORV?

Response:

The venting area associated with the minimum opening of one PORV is 2.25 square inches. Therefore, one PORV, blocked fully open, satisfies proposed TS requirement 3.1.A.8.a.2. The existing analysis of record, referred to in Question 5, states that a minimum vent area of 1.4 square inches is sufficient to protect the vessel from overpressurization. Therefore, the tech spec requirement to vent the RCS with an equivalent opening of at least 2.00 square inches provides margin to the analysis requirement and is conservative.

Question 6:

You stated, "maximum pressurizer level has been revised to 73% (in lieu of 75%). The pressurizer level revision is the result of the switch to 24 month operating cycles." What effect does the 24-month operating cycle have on other LTOP instrumentation (e.g., temperature, pressure, etc.) and how was this accounted for in your analyses?

Response:

Instrument uncertainties for 24 month operating cycles were examined independent of this LTOP analysis. Surveillance extensions for OPS instruments were evaluated through the Technical Specification amendment process. The 24 month instrument uncertainties for temperature and pressure instrumentation are based on formal analyses of plant instruments and are summarized in Section 2.0 of Attachment II. The surveillance interval for pressurizer level is still 18 months and is not being changed by this submittal. The increase in uncertainty from 5% to 7% was included in this amendment in anticipation of a possible future surveillance extension for pressurizer level. This surveillance extension will require a technical specification amendment, and therefore will not be adopted prior to NRC approval. Therefore, the increase in pressurizer level uncertainty from 5% to 7% provides additional margin for instrument uncertainty and is more conservative than the current Technical Specification requirement.

Question 7:

Provide a discussion on boltup temperature and how it was derived. Also, discuss how your LTOPs analyses account for the reactor coolant system configuration at the bolt up temperature assuming a water solid condition. Consider instrument uncertainties in your discussions.

Response:

According to ASME Code, Appendix G, Paragraph G-2222, the reactor vessel may be bolted up and pressurized to 20 percent of the initial hydrostatic test pressure at the initial RT_{NDT} of the material stressed by the boltup. Therefore, since the most limiting initial RT_{NDT} value is 38°F for the vessel flange, the reactor vessel can be bolted up at this temperature. However, based upon historical practices and engineering judgement, the boltup temperature at Indian Point 3 is set to no less than 60°F. Heatup restrictions associated with the boltup temperature are administratively controlled by plant procedures.

The LTOPS analysis, which assumes RCS solid conditions, extends to an actual RCS temperature of 50°F, which is below the boltup temperature. A 50°F penalty is applied to the LTOPS analytical setpoint to allow for temperature lag. At initial heatup conditions, this temperature lag will be close to zero, since the RCS will be near isothermal conditions at time of boltup.

Generic Letter 96-03 required the identification of the boltup temperature in the PTLR. The Authority plans to supplement Reference 1 and delete all reference to the PTLR. Therefore, reference to the boltup temperature requirements will remain in plant procedures. If, in the future, the Authority seeks NRC permission to establish a PTLR, the PTLR will contain the boltup temperature requirements.

Reference

1. NYPA letter, J. Knubel to NRC (IPN-97-149), "Proposed Exemption From Requirements of 10 CFR 50.60 and Proposed Technical Specification Changes Associated With Pressure-Temperature and Overpressure Protection System Limits for Up to 13 Effective Full Power Years," dated November 3, 1997.