

ATTACHMENT D

Extended RPI Deviation Limit and On-Line Calibration
of RPI Channels for Indian Point Unit 2
(Non-Proprietary Version)

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
INDIAN POINT UNIT NO. 2
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and
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of
New York

Extended RPI Deviation Limits and On-Line Calibration of the RPI Channels for Indian Point Unit No. 2

The rod position indicator (RPI) system at Indian Point Unit No. 2 (IP2) provides the reactor operator with knowledge of the actual position (axial elevation) of each rod cluster control assembly (RCCA) relative to the bank demand position. The current Plant Technical Specification⁽¹⁾ (TS) for IP2 permits deviations of ± 12 steps (± 7.5 inches) between the RPI channel output and the bank demand position over the range from fully inserted to fully withdrawn.

During plant startup, particularly from the cold condition, the RPI channels may be subject to instabilities and drift until the control rod drive assemblies come to thermal equilibrium at operating temperature. One consequence of these thermal instabilities can be spurious indications that RCCAs are misaligned from the bank demand position. Such deviations are termed spurious as there is no actual deviation between the actual RCCA position and the bank demand position.

When such spurious deviations indicate that there is more than a ± 12 step misalignment between the indicated RCCA position and the bank demand position in more than one channel per RCCA group or two channels per RCCA bank, the current TS requires that the reactor be brought subcritical and the deviating RPI channels recalibrated. This process involves fully inserting RCCAs followed by withdrawal of the RCCAs with deviating RPIs. During withdrawal, the RPI signal (voltage) is measured and recorded as a function of RCCA position. This process can substantially delay the return to power operation and can impact the availability of the station. The costs, in terms of lost generating capacity, are significant due to the current requirements for RPI calibration.

To mitigate this problem, a procedure has been developed to allow the on-line (at power levels below rated power) calibration of deviating RPI channels. A United States

Patent has been granted to Dr. A. Ginsberg and Mr. J. Mooney, employees of Consolidated Edison^[2], which describes a procedure allowing the on-line calibration of the RPI channels. The patent further establishes a basis for extending the allowable deviation band of ± 12 steps.

Analyses and evaluations have been conducted to demonstrate the application of an extended RPI deviation band and on-line calibration of the RPI channels. These analyses and evaluations, conducted in support of the license amendment request to permit the extended RPI deviation band, and on-line RPI channel calibration at IP2, demonstrate that the extended RPI deviation band and on-line RPI channel calibration will not result in any unreviewed safety questions.

REFERENCES

1. Indian Point Unit 2 Plant Technical Specification, through Amendment 168.
2. United States Patent No. 5,011,649 "Calibration of Rod Position Indicators",
Granted to A. Ginsberg and J. Mooney, April 30, 1991.