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January 4, 1990

Re: Indian Point Unit No. 2
Docket No. 50-247

Document Control Desk
US Nuclear Regulatory Commission
Mail Station P1-137
Washington, DC 20555

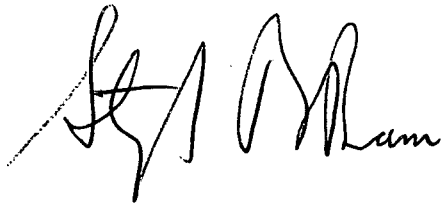
SUBJECT: Application for License Amendment to Increase Authorized Power Level (TAC No. 69542)

This letter is in response to verbally communicated comments from the NRC staff regarding our September 30, 1988 application for a license amendment to increase authorized power level. The September 30, 1988 application, as supplemented by letters dated January 10, 1989, March 30, 1989, and April 14, 1989, requests an amendment to the Indian Point Unit No. 2 license and technical specifications to authorize operation of the unit at a core power level up to 3071.4 MWt (Megawatt thermal), corresponding to the original NSSS power of 3083.4 MWt as originally guaranteed by Westinghouse, the NSSS vendor.

Attachment I to this letter contains our response to the most recent comments of the staff regarding our January 10, 1989 and March 30, 1989 submittals. Since the March 30, 1989 submittal includes the January 10, 1989 submittal as Appendices A1.3 through A1.6 in WCAP-11972, Revision 1 (Enclosure 1 to Attachment B), we have combined our responses to some of the comments that are common to both submittals. In addition, with the help of Westinghouse we have reviewed all our submittals regarding the subject application as a result of some typographical errors uncovered during the staff's review. The errata are included in Attachment II.

Should you or your staff have any questions regarding this matter, please contact Mr. Charles W. Jackson, Manager, Nuclear Safety and Licensing.

Very truly yours,



Attachment

A001
1/1

cc: Mr. William Russell
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ATTACHMENT I

RESPONSE TO COMMENTS MADE BY NRC STAFF

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
INDIAN POINT UNIT NO. 2
DOCKET NO. 50-247
JANUARY, 1990

COMMENT 1:

a- Page 6 of Attachment 1 to the January 10, 1989 submittal Paragraph 3 appears to contradict itself. It is not clear why the "motoring" feature is required since the RCPs will be maintained running at full flow on offsite power. The last sentence does not make sense since the turbine would have already tripped.

b- Page 51 of WCAP-11972, Revision 1 Paragraph 3, the loss of load events, states that:

> "Following any turbine trip where there are no electrical faults which require tripping the generator from the network, the generator remains connected to the network for approximately 30 seconds (turbine-generator motoring). The turbine-generator motoring feature is required so that full reactor coolant flow is maintained to remove reactor core heat during Condition II overpower transients. The Reactor Protection System initiates a reactor trip as protection for an overpower event, and then the reactor trip signal initiates a turbine trip."

The staff does not believe this to be a correct statement. What should be stated is:

> "Following a turbine trip where there are no electrical faults which require tripping the generator from the network and offsite power is available, the turbine generator remains connected to the network for approximately 30 seconds to supply power to the reactor coolant pumps to maintain full reactor coolant flow and delay RCP coast down to help remove reactor core heat during condition II over power transient events."

c- The staff believes that "turbine-generator motoring" mentioned on Pages 7 and 8 of Attachment 1 to the January 10, 1989 submittal (on Page 52 of WCAP-11972, Revision 1) does not occur; what does occur is that the turbine generator coasts down against the house electrical load.

RESPONSE:

Since the three comments are related a combined response is provided below.

The last three paragraphs on Page 6 and the four following paragraphs on Page 7 of Attachment 1 to the January 10, 1989 submittal (the last four paragraphs on Page 51 and the three following paragraphs on Page 52 of WCAP-11972, Revision 1) are all provided as supplemental information included for completeness, and are provided to specifically support the evaluations of the loss of load event below 35% power when no reactor trip on turbine trip occurs. The last sentence of this paragraph is provided to emphasize that this sequence occurs following all turbine trips regardless of whether turbine trip is the initiating event (i.e., including turbine trip on a reactor trip signal).

Nevertheless, prior to the initiation of any loss of load event, it is assumed that the RCPs are being powered by the turbine generator. When a turbine trip occurs, initiating the subject event, without turbine generator motoring (i.e., without the generator still being connected to 345 kV power) the RCP's would automatically be fed from the 138 kV offsite source. If neither the 345 kV nor the 138 kV sources of power were available, the RCPs would begin a coast-down at the same time as the initiation of the event.

To assure that forced RCS flow is maintained during the initial part of this event when the minimum departure from nucleate boiling ratio (DNBR) is reached, the generator would be maintained on the network such that generator motoring occurs (i.e., the generator would be still connected to the 345 kV to power the RCPs until the fast bus transfer has been successfully performed, within approximately 30 seconds). Once the fast bus transfer occurs, full flow would be maintained via the 138 kV offsite power. If the fast bus transfer were to fail or offsite power is not available, after the generator motoring period a RCS flow coast-down would occur due to the loss of power to the RCPs. However, with the exception of the loss of load event initiated from part power (i.e., 50% power) and assuming pressurizer pressure control, at this point the limiting portion of the event would have already occurred and the accident would be over with respect to the safety analysis limits. As described on Page 53 of the WCAP, the full power loss of flow events bound the loss of load event from part power with respect to minimum DNBR while the full power loss of load cases bound the partial power loss of load cases with respect to peak pressure.

The proposed text change provided by the staff in lieu of the paragraph on Page 51 of the WCAP is in agreement with the above clarification regarding turbine-generator motoring. However, the staff's suggestion of occurrence of a turbine generator coast-down against the house electrical load instead of turbine-generator motoring as mentioned on Page 52 of the WCAP is inaccurate. The turbine generator motoring mentioned on Page 52 of the WCAP explains load reduction while the turbine generator is still connected to the 345 kV system; turbine generator coast-down does not occur during this period.

COMMENT 2:

Page 23 of Attachment 1 to the January 10, 1989 submittal, Paragraph 3 (the fourth Paragraph on Page 67 of WCAP-11972, Revision 1) refers to a case where steam is released from all steam generators through one safety valve. Information on this case was not provided, therefore the comparison drawn is invalid because it cannot be verified.

RESPONSE:

In the analysis performed to support steam release equivalent to one steam generator safety valve, two cases were considered. One case assumes all the steam release occurs from one steam generator (i.e., non-uniform cooldown) through a safety valve, while the other case assumes that one-fourth of the total equivalent steam release is released from each steam generator (i.e., uniform cooldown like that

which would occur from steam release through a small header break). Of the two cases, only the limiting case is presented. For the Indian Point Unit 2 stretch rating analysis, this is presented as Case E. That this is in fact the most limiting of the two cases is supported by the statement that the cooldown for Case E (as shown in Figures A-34 (Figures A1-54 in WCAP-11972, Revision 1)) is more rapid than that from the case of equivalent steam release from all steam generators.

COMMENT 3:

WCAP-11972, Page 42, for the loss of normal FW event, states that Figures A1-1 and A1-6 do not show any water relief from the pressurizer, however Figure A1-5 shows pressurizer relief beginning at about 30 seconds (2 cu. ft./sec.), which peaks at about 8 cu. ft./sec. at about 70 seconds. A small dip in pressurizer pressure and water volume can be seen at 70 seconds. The discussion should be clarified to correspond to the Figures. The same comment also applies for the loss of AC power to Station Auxiliary events.

RESPONSE:

The pressurizer relief shown in Figures A1-5 (and A1-15 & A1-20 for loss of AC power to the Station Auxiliaries) is steam relief out the PORVs (occurring at the assumed PORV set pressure as indicated in the figures corresponding to pressurizer pressure), and is not water relief. As described in the text, and as is evidenced by a lack of pressurizer relief (Figures A1-5, A1-10, A1-15 and A1-20) at the time of maximum pressurizer volume (Figures A1-1, A1-6, A1-11 and A1-16, respectively), the pressurizer does not fill and water relief does not occur for either the loss of normal feedwater event or the loss of AC power to the station auxiliaries event.

COMMENT 4:

WCAP-11972, Revision 1 on Page 80, states that the locked rotor analysis was performed without offsite power available. This assumption does not agree with the UFSAR analysis for the locked rotor event described in Section 14.1.6.5 which apparently does not assume loss of offsite power and states that RCS flow is reduced to approximately 70% of its nominal value.

RESPONSE:

The analysis performed for the locked rotor conservatively assumes the loss of offsite power such that a RCS flow coast-down of the intact loops occurs following the locked rotor event in the faulted loop. The associated reduced flow minimizes the resulting DNBR and maximizes fuel temperatures and RCS pressure. The flow coast-down results in a flow equal to approximately 40% of full flow at 10 seconds, as indicated by Figure A1-71. This is significantly less than the approximate 70% flow value assumed in the UFSAR analysis (which did not assume a loss of offsite power) and is therefore more conservative. It should be noted that the assumption of a loss of offsite power resulting in a RCS flow coastdown in the intact loops is consistent with that assumed in the OFA Licensing Submittal and approved in the SER dated May 18, 1989.

ATTACHMENT II

ERRATA

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
INDIAN POINT UNIT NO. 2
DOCKET NO. 50-247
JANUARY, 1990

ERRATA

1 - On Page 10 of WCAP-11972, Revision 1, delete "fourteen" from the first paragraph. The list that follows includes 15 events and deletion of this number value does not change the context of the paragraph.

2 - On Page 7 of Attachment 1 to the January 10, 1989 submittal, Paragraph 4 (on Page 52 of WCAP-11972, Revision 1, Paragraph 3), the word "scenario" is misspelled.

3 - On Page 20 of Attachment 1 to the January 10, 1989 submittal, Paragraph 1 (on Page 64 of WCAP-11972, Revision 1, Paragraph 3), add the word "are" in front of the word "purged".

4 - On Page 83 of WCAP-11972, Revision 1, the word "Incorporate" is incorrectly spelled in Reference A1-5.

5 - On Page 84, of WCAP-11972, Revision 1, the time that the core decay heat decreases to auxiliary feedwater heat removal capacity for the High Tavg case w/o Offsite Power should be -1700 seconds (not -1200 seconds). The value of -1700 seconds is also consistent with the results provided in Figure A1-13.

6 - On Page 85, of WCAP-11972, Revision 1, the time that the Rods begin to fall for the EOL w/o Pressurizer Control case should be 7.5 seconds (not 7.4 seconds).

7 - The labels (captions) on the following figures are in error. They should read as follows:

A - Figures A-21 through A-23 (January 10, 1989 submittal)
Figures A1-41 through A1-43 (WCAP-11972, Revision 1)

Steam Line Rupture outside containment and offsite power available (Downstream of Flow Measuring Nozzle)

B - Figures A-24 through A-26 (January 10, 1989 submittal)
Figures A1-44 through A1-46 (WCAP-11972, Revision 1)

Steam Line Rupture outside containment and Loss of offsite power (Downstream of Flow Measuring Nozzle)

C - Figures A-27 through A-29 (January 10, 1989 submittal)
Figures A1-47 through A1-49 (WCAP-11972, Revision 1)

Steam Line Rupture inside containment and offsite power available (Upstream of Flow Measuring Nozzle)

D - Figures A-30 through A-32 (January 10, 1989 submittal)
Figures A1-50 through A1-52 (WCAP-11972, Revision 1)

Steam Line Rupture inside containment and Loss of offsite power (Upstream of Flow Measuring Nozzle)