

John D. O'Toole
Vice President

Consolidated Edison Company of New York, Inc.
4 Irving Place, New York, NY 10003
Telephone (212) 460-2533

November 19, 1981

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

Director of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

ATTN: Mr. Darrell G. Eisenhut, Director
Division of Licensing



Dear Mr. Eisenhut:

Attachment A to this letter contains our response to the issues identified in NRC Generic Letter No. 81-21 dated May 5, 1981 concerning Natural Circulation Cooldown. The information contained in Attachment A is being provided pursuant to 10CFR50.54(f) as requested and completes our response to Generic Letter No. 81-21.

Should you or your staff have any additional questions, please contact us.

Very truly yours,

Subscribed and sworn to
before me this 19 day
of November, 1981.

Notary Public

DAVID WATSON
Notary Public State of New York
No. 03-4604876
Qualified in Bronx County
Commission Expires March 30, 1983

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Attachment A

Response to Generic Letter 81-21
Natural Circulation Cooldown

Consolidated Edison Company of New York, Inc.
Indian Point Unit No. 2
Docket No. 50-247
November, 1981

Response to Generic Letter 81-21 Concerning
Natural Circulation Cooldown

1. Provide a demonstration (e.g. analysis and/or test) that controlled natural circulation cooldown from operating conditions to cold shutdown conditions, conducted in accordance with your procedure, should not result in reactor vessel voiding;

Response: A study has been performed by the Westinghouse Owners Group with Westinghouse to evaluate the potential for void formation in Westinghouse designed NSSS's during natural circulation cooldown/depressurization transients, and to develop appropriate modifications to operating instruction guidelines. The results of this study were transmitted to NRC by Westinghouse Owners Group letter No. OG-57 dated April 20, 1981. The results of the analysis indicate that natural circulation cooldown to residual heat removal entry conditions may be accomplished without void formation by maintaining recommended margins to subcooling in the hot leg while cooling down at recommended cooldown rates coupled with appropriate "holding times" (depending upon equipment availability). The natural circulation cooldown rates and primary subcooling requirements recommended in the Owners Group study are currently being incorporated into the Indian Point Unit No. 2 natural circulation cooldown procedures.

2. Provide verification that supplies of condensate-grade auxiliary feedwater are sufficient to support your cooldown method;

Response: The results of our review indicate that a sufficient reserve of condensate-grade auxiliary feedwater is maintained in the condensate storage tank to permit natural circulation cooldown to RHR entry conditions using the cooldown rates and subcooling margins recommended in the Owners Group Study.

3. Provide a description of your training program and the provisions of your procedures (e.g. limited cooldown rate, response to rapid change in pressurizer level) that deal with prevention or mitigation of reactor vessel voiding.

Response: Current emergency operating procedures reflect the guidance contained in IE Circular No. 80-15 "Loss of Reactor Coolant Pump Cooling and Natural Circulation Cooldown". Specifically emergency procedure E-4A "Decay Heat Removal Using Natural Circulation" cautions the operator that increases in pressurizer level during natural circulation cooldown is indicative of voiding, that an excessive cooldown rate could possibly cause voiding in the vessel head due to a temperature lag caused by insufficient circulation in the head area and further, that such voiding can be corrected by reducing the

cooldown rate. Core exit thermocouples are monitored to determine effectiveness of cooldown.

With regard to training, operators practice natural circulation cooldown during plant simulator training and retraining. The St. Lucie event as well as more recent events described in IE Circular No. 81-10 "Steam Voiding in the Reactor Coolant System During Decay Heat Removal Cooldown" have been the subject of a training memorandum to all licensed operators and are discussed during the training and retraining classes.