

John D. O'Toole  
Vice President

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

July 29, 1983

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

Mr. Darrell G. Eisenhut, Director  
Division of Licensing  
U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555

Dear Mr. Eisenhut:

This is in response to your letter of June 29, 1983, transmitting the draft SER on Con Edison's Appendix R exemption requests submitted pursuant to 10 CFR 50.48(c) on January 10, 1983. You requested that we review the draft SER for accuracy of technical content and inform you of the follow-up action we plan to take regarding the recommended denials of certain exemption requests.

We have reviewed the draft SER and have had subsequent telephone discussions with your staff concerning their reasoning for recommending denial of these exemption requests. We are in the process of developing supplemental modifications which we feel would provide sufficient justification to the NRC staff such that the same exemptions requested in our January 10, 1983 submittal will be granted. We have scheduled a meeting with your staff on August 10, 1983 at which we fully intend to resolve all technical difficulties. If, after this meeting, the NRC staff is still inclined to recommend denial of any of our exemption requests, we will take an alternate course of action as provided in your June 29, 1983 letter.

In our review of the draft SER, and of our January 10, 1983 submittal, we have discovered a few technical inaccuracies as well as some areas where clarification or comment is warranted. A discussion of one such area is included in Attachment A and several other points are outlined below.

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1. The Indian Point Probabilistic Safety Study indicates that postulated accidents due to fire are small contributors to core melt frequency and public health risk. The SER, in its review of the fire protection provided at Indian Point, should not overlook this comprehensive study.
2. In the text of our submittal, on page 4-24, we committed to sealing the cable penetrations from Zone 6A into Zone 7A. This commitment was inadvertently omitted from the summary of Section 1.4.
3. On page 4-5 of our submittal and on page 4 of the draft SER, Zone 1 is said to have more than one smoke detector. There is only one detector in the zone and it is sufficient due to the limited area being covered.
4. In several places in the draft SER, it is stated that the method does not consider all of the alternatives set forth in Section III.G. In fact, all three were considered and, as stated on page 4-1 of our submittal "the particular requirement of Appendix R for which an exemption is requested for a zone was that alternative which closest fit the present plant configuration". (Refer to Attachment A)
5. On page 10 of the draft SER, reference is made to our "proposed alternate shutdown capability". This system is, in fact, installed and operable. (See p. 1-1 of our submittal)
6. On page 19 of the draft SER, a statement is made that "A ventilation exhaust duct into an adjoining fire zone is provided with a 3-hour rated fire damper". As indicated on page 4-24 of our submittal, this penetration to Zone 7A is not provided with a 3-hour damper.

July 29, 1983

Should you or your staff have any questions concerning this submittal, please contact us.

Very truly yours,

A handwritten signature in cursive script, reading "John D. O'Toole", with a long horizontal line extending to the right.

John D. O'Toole  
Vice President

CC: Mr. Thomas Foley  
Senior Resident Inspector  
U. S. Nuclear Regulatory Commission  
Post Office Box 38  
Buchanan, New York 10511

## Attachment A

### Discussion of Fire Effects Methodology

The draft SER at various locations makes reference to the quantitative thermal analyses performed for various zones at Indian Point 2. In particular on pages 6 and 7 of the draft SER, the staff has provided statements that are intended to summarize the analytical method and provide reasons as to why this analytical method does not demonstrate the equivalence of the protection provided for safe shutdown systems as compared to the alternatives set forth in Section III.G of Appendix R. We believe that there are significant errors in the statements made on these two pages.

The description of the methodology in the draft SER does not correspond to the methodology applied for Indian Point 2 or to the description contained in Section 6 of our January 10, 1983 submittal. The Indian Point 2 methodology did not back-calculate a required minimum quantity of flammable liquid to damage cables and then justify that such an amount could not be present based on administrative controls. We did not believe that such an approach was justifiable and accordingly, did not rely on administrative controls to preclude introduction into areas of threshold quantities of combustible material.

Section 6 of our January 10, 1983 report describes the methodology that was applied for Indian Point 2 and the basis for selection of the exposure fire. For several areas within the plant, we agree that significant combustibles could be brought into the area, including the potential for 55 gallon drums of lube oil or other large quantities of transients. For example, even though certain pump rooms may only require a gallon or two for servicing of lube oil systems, a larger quantity of flammable liquid was used in the analysis based on the maximum quantity that could physically be brought into an area. The component cooling water pump area, for example, would be accessed for maintenance via a stairwell, and thus the quantity of lube oil would have to be limited to amounts that could be carried in by maintenance personnel. For the analysis, this was conservatively assumed to be 10 gallons of lube oil in an open pail, even though each pump only contains two gallons of lube oil.

The draft SER on page 6 indicates that the methodology does not consider heat release rate of a fire occurring against a wall or in a corner. To the contrary, the methodology applied at Indian Point 2 did consider the effects of walls and corners. For certain zones, location of the flammable liquid exposure fire along the wall was the most conservative approach and was applied. For other zones, the most threatening situation was to locate the flammable liquid directly below the cables of concern, thus placing them in the plume of the fire. On page 7, the draft SER also indicates that the method "uses a stratification model which does not include the effects of separation". However, this is incorrect. The method applies what is technically referred to as a "zone model" that characterizes zones in the compartment being evaluated, where

components referred to as "zones" are the fire plume, hot gas layer, lower gas region, the flame, the objects of concern, potential secondary fire sources and compartment wall, ceiling and floor boundaries. The method did include the effects of separation. Input data, assumptions, and analytical techniques were selected in the conservative direction in order to quantitatively bound the potential fire damage.

In several places in the draft SER, it is stated that Con Edison has relied on separation alone to protect redundant safe shutdown components, and that recent tests (results to be published) have demonstrated that spatial separation alone is insufficient to prevent damage to cables. We agree that spatial separation alone is not sufficient to prevent damage to cables for certain room configurations and fire intensities. For given situations formation of a hot gas layer below the ceiling can result in damage to cables that are located a great distance apart. However, the methodology applied for Indian Point 2 takes into account the particular room configuration, fire intensity and the formation of such a hot gas layer. In many of the zones addressed by exemption request, a major mitigating factor is the basic design of Indian Point 2 where doorways are open and ceiling grating is provided. Although these features were provided for ventilation purposes, they also serve to mitigate potential effects of a fire. In these areas, doorways are open to the ceiling, i.e., there are no transoms that could block off the exit of hot gases and potentially result in rapid formation of a stratified gas layer. The grating in various areas and the open doorways, as well as the large size of certain of the zones addressed, mitigate the formation of a hot gas layer that is sufficient to damage the components of interest in each area. The analytical methodology applied has been benchmarked against actual tests. Where cable damage occurred in the tests, the methodology accurately confirmed cable damage for the test conditions evaluated.

The draft SER also indicates that the analysis does not demonstrate the equivalency to Section III.G of Appendix R for the protection provided. We believe that the methodology does demonstrate a level of safety equivalent to that which would be offered by full compliance with Section III.G of Appendix R, for the areas addressed. Whereas the intent of Section III.G is to assure that one train of equipment necessary to achieve hot shutdown is free of fire damages and to assure that the ability is maintained to achieve cold shutdown with minor repairs. The analyses performed for Indian Point 2 have demonstrated that, for the configurations of the areas addressed, a fire would not cause loss of all shutdown capability. For these zones, safe shutdown could be achieved in accordance with the performance requirements of 10 CFR 50, Appendix R.

We would welcome the opportunity to discuss this methodology further with the NRC staff within the context of the modifications that will be discussed for these exemption requests where denial is indicated in the June 29, 1983 draft SER.