Stephen B. Bram
Vice President

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August 7, 1991

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: Supplemental Information Regarding NUREG-0737, Supplement 1 (Regulatory Guide 1.97, Revision 2)

REFERENCES:
1) Letter dated August 30, 1985, J.D. O'Toole (Con Edison) to H.L. Thompson, Jr. (NRC)
2) Letter dated September 12, 1986, M. Selman (Con Edison) to H.L. Thompson, Jr. (NRC)
3) Letter dated November 26, 1986, M. Selman (Con Edison) to M. Slosson (NRC)
4) Letter dated October 26, 1988, S.B. Bram (Con Edison) to Document Control Desk (NRC)
5) Letter dated October 27, 1989, S.B. Bram (Con Edison) to Document Control Desk (NRC)
6) Letter dated September 27, 1990, D.S. Brinkman (NRC) to S.B. Bram (Con Edison)

In response to the requirement in NUREG-0737, Supplement 1, Con Edison submitted, in references 1 through 5, our evaluation of the degree of compliance of the design basis of Indian Point Unit No. 2 with the guidance contained in Regulatory Guide 1.97, Revision 2. Where our review determined that instruments meeting the criteria contained in the regulatory guide for the various types and categories of variables were not required, supporting justifications and alternatives were provided. In particular, exceptions were justified for not providing instrumentation for wide range steam generator level, neutron flux, and accumulator level and pressure that meet Category 1 criteria.

On September 26, 1990, as part of a cooperative effort with Duquesne Light and Rochester Gas and Electric, supplemental technical justification for not upgrading neutron flux instrumentation to Category 1 was presented to NRC staff. At that meeting it was suggested that the three utilities docket a submittal on the subject for consideration by the staff.

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Reference 6 transmitted the Safety Evaluation regarding conformance to Regulatory Guide 1.97 and found that the instrumentation provided for Indian Point Unit No. 2 is acceptable except for the variables wide range steam generator level, neutron flux, and accumulator level and pressure. No further action was required on the latter since we were advised that the staff is generically reviewing the need for instrumentation that is environmentally qualified. We were requested, however, to develop and propose an appropriate implementation schedule for the installation of neutron flux and wide range steam generator level instrumentation that meets the Category 1 criteria of Regulatory Guide 1.97, Revision 2 and 10 CFR 50.49.

As a follow-up to the staff request at the September 26, 1990 meeting, this letter provides in Attachment 1 supplemental information to further justify the acceptability of not upgrading the existing neutron flux instrumentation. Our analysis has demonstrated the following:

- There are no accidents that would yield an adverse containment environment while simultaneously requiring neutron flux instrumentation to function as a reactor protection circuit;

- No safety benefits would result from an upgrade of neutron flux instrumentation to Category 1;

- Events leading to adverse containment environments typically involve core voiding and core uncovery, the same events that have been analyzed to show that neutron flux readings can be misunderstood.

After careful review and consideration, we agree that neutron flux instrumentation is needed for evaluation of reactivity control if it provides reliable indication. This would only be the case when normal containment conditions exist. Our attachment shows that neutron monitoring instrumentation under adverse containment conditions would provide unreliable and potentially misleading information regardless of its qualification. Therefore, requiring the upgrade of the neutron flux instrumentation would be contrary to Design and Qualification Criterion 1.5.d of Regulatory Guide 1.97, Revision 2, which states that "the monitoring instrumentation design should minimize the development of conditions that would cause meters, annunciators, recorders, alarms, etc., to give anomalous indications potentially confusing to the operator." Even with upgraded instruments, we would be forced to instruct the reactor operators to ignore neutron flux indications during an event that created an adverse containment environment. To preclude this situation, since fission

produces heat which increases the temperature of the reactor coolant, we have proposed the use of qualified instrumentation (primarily core exit thermocouples) to monitor neutron flux through direct measurement of temperature.

We believe our position to not upgrade the neutron flux instrumentation is consistent with prior positions taken by NRC management, as evidenced by the recent decision of the staff announced in May of this year to not require upgrade of this instrumentation for boiling water reactors. We are confident that the same conclusion will result from a review of the technical merits of our proposal.

Additionally, we would like to docket further justification for not upgrading the wide range steam generator level instrumentation. This information is provided in Attachment 2.

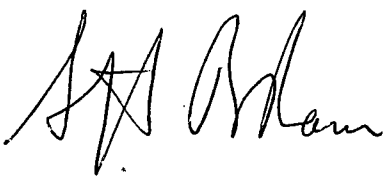
Approval of the exceptions for the neutron flux and the wide range steam generator level instrumentation based on the supplemental justification presented herein would preclude the need to provide an implementation schedule as requested in Reference 6.

Further, included in Attachment 3 are clarifications to the Safety Evaluation Regarding Conformance to Regulatory Guide 1.97, Revision 2 issued in Reference 6. In most cases, these clarifications are consistent with information provided in our submittals, and do not affect the conclusions or intent in the Technical Evaluation Report incorporated in the NRC Safety Evaluation. However, we believe the clarifications are necessary in order to avoid possible misinterpretations, either in future reviews and inspections, or by Con Edison personnel in future references to the Safety Evaluation. Accordingly, we request your concurrence on these clarifications.

Lastly, exceptions to the guidance contained in Regulatory Guide 1.97, Revision 2 were taken in our submittals and the Technical Evaluation Report incorporated in the NRC Safety Evaluation addressed a majority of them. However, several appear not to have been reviewed and these are restated in Attachment 4. We request your concurrence on these exceptions to ensure completeness.

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

Very truly yours,



Attachments

cc: Mr. Thomas T. Martin
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ATTACHMENT 1

NEUTRON FLUX INSTRUMENTATION

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
INDIAN POINT UNIT NO. 2
DOCKET NO. 50-247
AUGUST, 1991

Neutron Flux Instrumentation

On September 26, 1990, as part of a cooperative effort with Duquesne Light and Rochester Gas and Electric, supplemental technical justification for not upgrading our neutron flux instrumentation to Regulatory Guide 1.97, Category 1 criteria was presented to NRC staff. The main point of the presentation was that such an upgrade is not necessary or desirable and the justification presented is summarized as follows:

- In an accident situation, the operators need to know the status of the core. Core status must be determined using reliable, believable instrumentation. Neutron flux instrumentation, whether qualified or not, is susceptible to thermal-hydraulic conditions (voiding, density changes) which cause incorrect indication of core power.

- Since the fission process produces both neutrons and heat, a direct indication of the production of core power is an increase in coolant temperature as a result of the release of heat from fission. Therefore, temperature changes as measured by the core exit thermocouples and the hot and cold leg RTDs can be used as an indication of core power.

- Procedural enhancements to the Emergency Operating Procedures (EOPs) based on new technical guidelines and reliance on existing qualified instrumentation will be sufficient to ensure the operators can detect a return to criticality in an adverse containment condition.

A detailed technical evaluation that supports the above points follows, as part of this attachment, to demonstrate the adequacy of the existing neutron flux instrumentation.