May 3, 1988

Docket No. 50-247

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Mr. Stephen B. Bram
Vice President, Nuclear Power
Consolidated Edison Company
of New York, Inc.
Broadway and Bleakley Avenue
Buchanan, New York 10511

Dear Mr. Bram:

The Commission has issued the enclosed Amendment No. 130 to Facility Operating License No. DPR-26 for the Indian Point Nuclear Generating Unit No. 2. The amendment consists of changes to the Technical Specifications in response to your application transmitted by letter dated February 14, 1983, as supplemented October 29, 1984, August 14, 1985 and January 3, 1986. (TAC 51922)

The amendment revises the Technical Specifications concerning refueling. The change consists of distributing the original specifications into three groups which apply to plant conditions significant to movement of heavy loads. In addition, requirements are added concerning the availability of the RHR pumps and heat exchangers when fuel is in the reactor vessel and the reactor head bolts are less than fully tensioned.

A copy of the related Safety Evaluation is enclosed. A Notice of Issuance will be included in the Commission's next regular bi-weekly Federal Register notice.

Sincerely,

Original signed by:

Marylee M. Slosson, Project Manager
Project Directorate I-1
Division of Reactor Projects, I/II

Enclosures:
1. Amendment No. 130 to DPR-26
2. Safety Evaluation

cc: w/enclosures
See next page

* SEE PREVIOUS CONCURRENCE

PDI-1	PDI-1	OGC	PDI-1
CVogan*	MSlosson MS	SLewis*	RCapra RAC
10/13/87	4/22/88	11/30/87	05/03/88

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ACRS(10)
GPA/PA
PSwetland

Mr. Murray Selman
Vice President, Nuclear Power
Consolidated Edison Company
of New York, Inc.
Broadway and Bleakley Avenue
Buchanan, New York 10511

Dear Mr. Selman:

The Commission has issued the enclosed Amendment No. to Facility Operating License No. DPR-26 for the Indian Point Nuclear Generating Unit No. 2. The amendment consists of changes to the Technical Specifications in response to your application transmitted by letter dated February 14, 1983, as supplemented October 29, 1984, August 14, 1985 and January 3, 1986. (TAC 51922)

The amendment revises the Technical Specifications concerning refueling. The change consists of distributing the original specifications into three groups which apply to plant conditions significant to movement. In addition, requirements are added concerning the availability of the RHR pumps and heat exchangers when fuel is in the reactor vessel and the reactor head bolts are less than fully tensioned.

A copy of the related Safety Evaluation is enclosed. A Notice of Issuance will be included in the Commission's next regular bi-weekly Federal Register notice.

Sincerely,

Marylee M. Slosson, Project Manager
Project Directorate I-1
Division of Reactor Projects, I/II

Enclosures:
1. Amendment No. to DPR-26
2. Safety Evaluation

cc: w/enclosures
See next page

Concurred subject to revised language on p. 2 of SE as discussed with Marylee Slosson.

PDI-1	PDI-1	OGC	PDI-1
CVogan	MSlosson	S H Lewis	RCapra
10/13/87	10/14/87	10/30/87	1?/ /87

language revised MS 12/3/87

Mr. Stephen B. Bram
Consolidated Edison Company
of New York, Inc.

Indian Point Nuclear Generating
Station 1/2

cc:

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Buchanan, New York 10511

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Senior Resident Inspector
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Regional Administrator, Region I
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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

CONSOLIDATED EDISION COMPANY OF NEW YORK, INC.

DOCKET NO. 50-247

INDIAN POINT NUCLEAR GENERATING UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 130
License No. DPR-26

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Consolidated Edison Company of New York, Inc. (the licensee) dated February 14, 1983, as supplemented October 29, 1984, August 14, 1985 and January 3, 1986, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. DPR-26 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 130, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance to be implemented within 60 days.

FOR THE NUCLEAR REGULATORY COMMISSION

Robert A. Capra

Robert A. Capra, Director
Project Directorate I-1
Division of Reactor Projects, I/II

Attachment:
Changes to the Technical
Specifications

Date of Issuance: May 3, 1988

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

ATTACHMENT TO LICENSE AMENDMENT

AMENDMENT NO. 130 TO FACILITY OPERATING LICENSE NO. DPR-26

DOCKET NO. 50-247

Revise Appendix A as follows:

Remove Pages	Insert Pages
3.8-1	3.8-1
3.8-2	3.8-2
3.8-3	3.8-3
3.8-4	3.8-4
3.8-5	3.8-5
3.8-6	3.8-6
3.8-7	--

3.8 REFUELING, FUEL STORAGE AND OPERATIONS WITH THE REACTOR VESSEL HEAD BOLTS LESS THAN FULLY TENSIONED

Specifications

A. The following conditions shall be satisfied when fuel is in the reactor vessel and the reactor vessel head bolts are less than fully tensioned:

1. Prior to initial movement of the reactor vessel head, the containment purge supply, exhaust and pressure relief isolation valves, including the radiation monitors which initiate isolation, shall be tested and verified to be operable or the inoperable isolation valves locked closed in accordance with Specification 3.8.B.8.

2. The core subcritical neutron flux shall be continuously monitored by two source range monitors, each with continuous visual indication in the control room and one with audible indication in the containment available whenever core geometry is being changed (excluding the movement of neutron source bearing assemblies). When core geometry is not being changed, at least one source range neutron flux monitor shall be in service. With both of the required monitors inoperable or not operating, boron concentration of the reactor coolant system shall be determined at least once per 12 hours.

3. At least one residual heat removal (RHR) pump and heat exchanger shall be operable and in operation when water level is greater than or equal to 23 feet (El. 92'0") above the top of the reactor vessel flange.

4. When water level is less than 23 feet above the top of the reactor vessel flange, both RHR pumps and RHR heat exchangers shall be operable with at least one of each in operation.

5. If the requirements of Specification 3.8.A.3 or 3.8.A.4 cannot be satisfied, suspend all operations involving a reduction in boron concentration of the Reactor Coolant System and immediately initiate corrective action to return the required RHR pump(s) and heat exchanger(s) to operable status.

6. The requirements for RHR pump and heat exchanger operability/operation in Specifications 3.8.A.3 and 3.8.A.4 may be suspended during maintenance, modification, testing, inspection, repair or the performance of core component movement in the vicinity of the reactor pressure vessel hot legs. During operation under the provisions of this specification, an alternate means of decay heat removal shall be available when the required number of RHR pump(s) and heat exchanger(s) are not operable. With no RHR pump(s) and heat exchanger(s) operating, the RCS temperature and the source range detectors shell be monitored hourly.

7. The reactor Tavg shall be less than or equal to 140°F.

8. Specification 3.6.A.1 shall be adhered to for reactor subcriticality and containment integrity.

B. With fuel in the reactor vessel and when:

i) the reactor vessel head is being moved, or
ii) the upper internals are being moved, or
iii) loading and unloading fuel from the reactor, or
iv) heavy loads greater than 2300 lbs (except for installed crane systems) are being moved over the reactor with the reactor vessel head removed,

the following specifications (1) through (12) shall be satisfied:

1. Specification 3.8.A above shall be met.

2. The minimum boron concentration shall be sufficient to maintain the reactor subcritical by at least 10% Δ k/k. The required boron concentration shall be verified by chemical analysis daily.

3. Direct communication between the control room and the refueling cavity manipulator crane shall be available whenever changes in core geometry are taking place.

4. No movement of fuel in the reactor shall be made until the reactor has been subcritical for at least 131 hours.

5. A dead-load test shall be successfully performed on the spent fuel pit bridge refueling crane before fuel movement begins. The load assumed by the refueling crane for this event must be equal to or greater than the maximum load to be assumed by the refueling crane during the refueling operation. A thorough visual inspection of the refueling crane shall be made after the dead-load test and prior to fuel handling.

6. The fuel storage building charcoal filtration system must be operating whenever spent fuel movement is taking place within the spent fuel storage areas unless the spent fuel has had a continuous 35-day decay period.

7. Radiation levels in the spent fuel storage area shall be monitored continuously whenever spent fuel movement is taking place in that area.

8. The equipment door, or a closure plate that restricts direct air flow from the containment, and at least one personnel door in the equipment door or closure plate and in the personnel air lock shall be properly closed. In addition, at least one isolation valve shall be operable or locked closed in each line penetrating the containment and which provides a direct path from containment atmosphere to the outside.

9. Radiation levels in containment shall be monitored continuously.

10. A licensed senior reactor operator shall be at the site and designated in charge of the operation whenever changes in core geometry are taking place.

11. The minimum water level above the top of the reactor pressure vessel flange shall be at least 23 feet (El. 92'0") whenever movement of spent fuel is taking place inside the containment.

12. If any of the conditions specified above cannot be met, suspend all operations under this specification (3.8.B). Suspension of operations shall not preclude completion of movement of the above components to a safe conservative position.

C. The following conditions are applicable to the spent fuel pit any time it contains irradiated fuel:

1. The spent fuel cask shall not be moved over <u>any</u> region of the spent fuel pit until the cask handling system has been reviewed by the Nuclear Regulatory Commission and found to be acceptable. Furthermore, any load in excess of the nominal weight of a spent fuel storage rack and associated handling tool shall not be moved on or above El. 95' in the Fuel Storage Building. Additionally, loads in excess of the nominal weight of a fuel and control rod assembly and associated handling tool shall not be moved over spent fuel in the spent fuel pit. The weight of installed crane systems shall not be considered part of these loads.

D. The following conditions are applicable to the spent fuel pit anytime it contains fuel:

1. Fuel assemblies to be stored in the spent fuel pit are categorized as either Category A, B or C based on burnup and enrichment limits as specified in Figure 3.8-1. The storage of Category A fuel assemblies within the pit is unrestricted. Category B fuel assemblies shall only be loaded into a spent fuel rack cell whose adjacent cells on all four sides either contain non-fuel materials or Category A fuel assemblies. The storage of Category C fuel assemblies within the pit is unrestricted except that they cannot be loaded adjacent to Category B fuel assemblies.

<u>Basis</u>

The equipment and general procedures to be utilized during refueling are discussed in the FSAR. Detailed instructions, the above-specified precautions, and the design of the fuel-handling equipment incorporating built-in interlocks and safety features, provide assurance that no incident could occur during the refueling operations that would result in a hazard to public health and safety[(1)]. Whenever changes are not being made in core geometry, one flux monitor is sufficient. This permits maintenance of the instrumentation. Continuous monitoring of radiation levels and neutron flux provides immediate indication of an unsafe condition. The residual heat removal pump is used to maintain a uniform boron concentration.

The shutdown margin requirements will keep the core subcritical, even if all control rods were withdrawn from the core. During refueling, the reactor refueling cavity is filled with borated water. The minimum boron concentration of this water will be sufficient to maintain the reactor subcritical by at least 10% Δ k/k in the cold shutdown condition with all rods inserted, and will also maintain the core subcritical even if no control rods were inserted into the reactor(2). Periodic checks of refueling water boron concentration ensure the proper shutdown margin. The specifications allow the control room operator to inform the manipulator operator of any impending unsafe condition detected from the main control board indicators during fuel movement.

In addition to the above safeguards, interlocks are utilized during refueling to ensure safe handling. An excess weight interlock is provided on the lifting hoist to prevent movement of more than one fuel assembly at a time. The spent fuel transfer mechanism can accommodate only one fuel assembly at a time.

The 131-hour decay time following plant shutdown and the 23 feet of water above the top of the reactor vessel flanges are consistent with the assumptions used in the dose calculations for fuel-handling accidents both inside and outside of the containment. The analysis of the fuel handling accident inside of the containment is based on an atmospheric dispersion factor ($^X/Q$) of 5.1×10^{-4} sec/m^3 and takes no credit for removal of radioactive iodine by charcoal filters. The requirement for the fuel storage building charcoal filtration system to be operating when spent fuel movement is being made provides added assurance that the offsite doses will be within acceptable limits in the event of a fuel-handling accident. The additional month of spent fuel decay time will provide the same assurance that the offsite doses are within acceptable limits and therefore the charcoal filtration system would not be required to be operating.

The requirement that at least one RHR pump and heat exchanger be in operation ensures that sufficient cooling capacity is available to maintain reactor coolant temperature below 140°F, and sufficient coolant circulation is maintained through the reactor core to minimize the effect of a boron dilution incident and prevent boron stratification.

The requirement to have two RHR pumps and heat exchangers operable when there is less than 23 feet of water above the vessel flange ensures that a single failure will not result in a complete loss of residual heat removal capability. With the head removed and at least 23 feet of water above the flange, a large heat sink is available for core cooling, thus allowing adequate time to initiate actions to cool the core in the event of a single failure.

The presence of a licensed senior reactor operator at the site and designated in charge provides qualified supervision of the refueling operation during changes in core geometry.

The fuel enrichment and burnup limits in Specification 3.8.C.1 assure the limits assumed in the spent fuel safety analyses will not be exceeded. Within this specification adjacent location means those four locations directly contacting the four sides (faces) of a fuel assembly but excludes those four locations which contact the four corners of a fuel assembly.

References

(1) FSAR Section 9.5.2

(2) Fuel Densification - Indian Point Nuclear Generating Station Unit No. 2, dated January 1973, Table 3.3.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 130 TO FACILITY OPERATING LICENSE NO. DPR-26

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

INDIAN POINT NUCLEAR GENERATING UNIT NO. 2

DOCKET NO. 50-247

INTRODUCTION

By letters dated February 14, 1983, as supplemented October 29, 1984, August 14, 1985 and January 3, 1986, Consolidated Edison Company of New York, (the licensee) proposed the changes to the Technical Specification Section (TS) 3.8 "Refueling, Fuel Storage and Operations with the Reactor Head Bolts Less than Fully Tensioned" for Indian Point Nuclear Generating Unit No. 2. The amendment request changes concern control of heavy loads and RHR pump and heat exchanger operability.

DISCUSSION AND EVALUATION

The amendment application consists of distribution of the original Technical Specification into three groups distinguished by plant conditions significant to heavy load movement. The division consists of the following conditions:

1. Fuel in the reactor vessel, reactor head bolts less than fully tensioned.

2. Fuel in the reactor vessel, reactor vessel head being moved, loading and unloading fuel from the reactor, heavy loads greater than 2300 lbs. being moved over the vessel with the head removed.

3. Spent fuel pit containing fuel.

In addition, the changes add restrictions concerning operability/operation of the Residual Heat Removal (RHR) pumps and heat exchangers during refueling. The revision requires at least one RHR pump and heat exchanger to be operable and in operation when water level is greater than or equal to 23 feet above the top of the reactor vessel flange. When water level is less than 23 feet above the top of the reactor vessel flange, both RHR pumps and heat exchangers shall be operable with at least one each in operation. Restrictions concerning RHR pumps and heat exchanger operability during operations involving a reduction in boron concentration of the Reactor Coolant System are included. In addition, operability/operation restrictions concerning the pumps and heat exchangers during maintenance, modifications, testing, inspection, repair or the performance of core component movement in the vicinity of the reactor pressure vessel hot legs are defined.

The proposed changes to the Technical Specifications are more restrictive than current Specifications. Requirements with respect to heavy load movement are introduced. Operability/operation requirements with respect to RHR pumps and heat exchangers are added. As result the proposed amendment provides additional restrictions/limitations not currently in the Technical Specifications. Therefore, the staff finds the proposed changes acceptable.

ENVIRONMENTAL CONSIDERATION

This amendment involves a change to a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that this amendment involves no significant hazards consideration and there has been no public comment on such finding. Accordingly, this amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement nor environmental assessment need be prepared in connection with the issuance of this amendment.

CONCLUSION

The staff has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner; and (2) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

PRINCIPAL CONTRIBUTOR:

Henri F. van Kessel, Region I

Dated: May 3, 1988