



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

POWER AUTHORITY OF THE STATE OF NEW YORK

DOCKET NO. 50-286

INDIAN POINT STATION UNIT NO. 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 31  
License No. DPR-64

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Power Authority of the State of New York (the licensee) dated January 28, 1980, 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 Operating Licensing No. DPR-64 is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, by changing the paragraph designated 2.J to 2.K, and by changing paragraphs 2.C(2) and 2.J to read as follows:

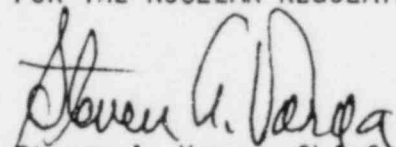
2.C(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 31, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

- 2.J The plant shall be brought to the cold shutdown condition within nine equivalent months of operation from February 10, 1980, but in any event, no later than January 1, 1981. For the purpose of this requirement, equivalent operation is defined as operation with reactor coolant temperature greater than 350°F. An inspection of one steam generator shall be performed and Nuclear Regulatory Commission approval shall be obtained before bringing the reactor critical following this inspection. At the end of Cycle 3 operations, an inspection of all four steam generators shall be performed and Nuclear Regulatory Commission approval shall be obtained before bringing the reactor critical following this inspection.

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

  
Steven A. Varga, Chief  
Operating Reactors Branch #1  
Division of Licensing

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: June 27, 1980

ATTACHMENT TO LICENSE AMENDMENT NO. 31

FACILITY OPERATING LICENSE NO. DPR-64

DOCKET NO. 50-286

Revise Appendix A as follows:

Remove Pages

3.1-21  
3.1-22  
  
3.1-25  
3.1-26  
4.9-4  
4.9-4a  
4.9-5  
4.9-6  
6-18

Insert Pages

3.1-21  
3.1-22  
3.1-22a  
3.1-25  
3.1-26  
4.9-4  
4.9-4a  
4.9-5  
4.9-6  
6-18

F. LEAKAGE OF REACTOR COOLANT

Specification

1. If leakage of reactor coolant is indicated by the means available such as water inventory balance, monitoring equipment or direct observation, a follow-up evaluation of the safety implications shall be initiated as soon as practicable but no later than within 4 hours. Any indicated leak shall be considered to be a real leak until it is determined that the indicated leak cannot be substantiated by direct observation or other indication.
2. If the leakage rate, excluding controlled leakage sources such as the Reactor Coolant Pump Controlled Leakage Seals and Leakage into Closed Systems, exceeds 1 gpm and the source of leakage is not identified within twenty-four hours of detection, the reactor shall be brought to hot shutdown within four hours. If the source of leakage is not identified within an additional twenty-four hours, the reactor shall be brought to a cold shutdown condition within the next twenty-four hours.
3. If the sources of leakage are identified and the results of the evaluation are that continued operation is safe, operation of the reactor with a total leakage, other than from controlled sources or into closed systems, not exceeding 10 gpm shall be permitted except as specified in 3.1.F.4 below.

4. If it is determined that leakage exists through a non-isolable fault which has developed in a Reactor Coolant System Component Body, pipe wall (excluding steam generator tubes), vessel wall or pipe weld, the reactor shall be brought to the cold shutdown condition within twenty-four hours.
5. If the total leakage, other than from controlled sources or into closed systems, exceeds 10 gpm, the reactor shall be placed in the hot shutdown condition within four hours and the cold shutdown condition within an additional twenty-four hours.
6. The reactor shall not be restarted following shutdown as per items 3.1.F.2, 3, 4, or 5, above, until the leak is repaired or until the problem is otherwise corrected.
7. Whenever the reactor is shutdown, or a steam generator removed from service, in order to investigate steam generator tube leakage and/or to plug or otherwise repair a leaking tube, the Authority shall inform the NRC before the reactor is brought critical.
8. Primary to secondary leakage through the steam generator tubes shall be limited to 0.3 gpm (432 gpd) per steam generator and the total leakage through all four steam generators shall be limited to 1.0 gpm (1440 gpd). With any steam generator tube leakage greater than this limit the reactor shall be placed in the hot shutdown condition within four hours and the cold shutdown condition within an additional twenty-four hours.

9. If leakage from two or more tubes in the steam generators in any 20-day period is observed or determined, the reactor shall be brought to the hot shutdown condition within four hours and the cold shutdown condition within an additional twenty-four hours and Nuclear Regulatory Commission approval shall be obtained before resuming reactor operation. If two steam generator tube leaks attributable to the tube denting phenomena are observed after the reactor is in cold shutdown Nuclear Regulatory Commission approval shall be obtained before resuming reactor operation.
  
10. When the reactor is critical and above 2% power, two reactor coolant leak detection systems of different principles capable of detecting leakage into containment shall be in operation, with one of the two systems sensitive to radioactivity. The system sensitive to radioactivity may be out-of-service for 48 hours, provided two other systems are available.

Measurement of the leakage rate to the containment atmosphere is also possible through humidity detection and condensation collection and measurement. However, it is expected that the containment activity method will give the initial indication of coolant leakage. The other methods will be employed primarily to confirm that leakage exists, to indicate the location of the leakage sources, and to measure the leakage rate.

As described above, the four reactor coolant leak detection systems are based on three different principles, i.e., activity, humidity and condensate flow measurements. Two systems of different principles provide, therefore, diversified ways of detecting leakage to the containment.

Total reactor coolant leakage can be determined by means of periodic water inventory balances. If leakage is into another closed system, it will be detected by the plant radiation monitors and/or inventory control.

Twenty-four hours is allowed from the time of leakage detection to identify the leakage source and to measure the leakage rate. This time period is required since identification and quantification of leakage sources of less than ten gallons per minute require a careful gathering and evaluation of data and/or a visual inspection of the reactor coolant system.

The plant is expected to be operated in a manner such that the secondary coolant will be maintained within those limits found to result in negligible corrosion of the steam generator tubes. If stress corrosion cracking occurs, the extent of cracking during plant operation would be limited by the limitation of steam generator leakage between the primary coolant system and the secondary coolant system. Cracks having a primary-to-secondary leakage less than 500 gallons per day during operation will have an



adequate margin of safety against failure due to loads imposed by design basis accidents. The 500 gallon per day per steam generator limit is also consistent with the assumptions used to develop the Technical Specification limit on secondary coolant activity. Operating plants have demonstrated that primary-to-secondary leakage as low as 0.1 gpm will be detected. Leakage in excess of 432 gallons per steam generator or 1 gpm total for all four steam generators will require plant shutdown and an unscheduled eddy current inspection, during which the leaking tubes will be located and plugged.

#### References

FSAR Sections 11.2.3 and 14.2.4



4. Interval of Inspection

- a. The first inservice inspection of steam generators should be performed after six effective full power months but not later than completion of the first refueling outage.
- b. Subsequent inservice inspections should be not less than 12 or more than 24 calendar months after the previous inspection.
- c. If the results of two consecutive inspections, not including the preservice inspection, all fall in the C-1 category, the frequency of inspection may be extended to 40-month intervals. Also, if it can be demonstrated through two consecutive inspections that previously observed degradation has not continued and no additional degradation has occurred, a 40-month inspection interval may be initiated.

B. Corrective Measures

All leaking tubes and defective tubes should be plugged.

C. Reports

1. Following each inservice inspection of steam generator tubes, the number of tubes plugged in each steam generator shall be reported to the Commission within 15 days.
2. The complete results of the steam generator tube inservice inspections shall be reported in writing on an annual basis for the period in which the inspection was completed per Specification 6.9.2.f. This report shall include:
  - a. Number and extent of tubes inspected.
  - b. Location and percent of wall-thickness penetration for each indication of an imperfection.
  - c. Identification of tubes plugged.

3. Results of steam generator tube inspections which fall into Category C-3 of Table 4.9-1 require notification of the Commission within 15 days of this determination\*. The written followup of this report shall provide a description of investigations conducted to determine cause of the tube degradation and corrective measures taken to prevent recurrence.

\*Note - Table 4.9-1 requires NRC approval prior to startup in one case.

#### BASIS

Inservice inspection of steam generators is essential in order to monitor the integrity of the tubing and to maintain surveillance in the event that there is evidence of mechanical damage or progressive

deterioration due to design, manufacturing errors, or chemical imbalance. Inservice inspection of steam generator tubing also provides a means of characterizing the nature and cause of any tube degradation so that corrective measures can be taken.

An essentially 100% tube inspection was performed on each tube in every steam generator by eddy current techniques prior to service in order to establish a baseline condition for the tubing. This inspection was conducted under conditions and with equipment and techniques equivalent to those expected to be employed in the subsequent inservice inspections.

The plant is expected to be operated in a manner such that the secondary coolant will be maintained within those limits found to result in negligible corrosion of the steam generator tubes. If stress corrosion cracking occurs, the extent of cracking during plant operation would be limited by the limitation of steam generator leakage between the primary coolant system and the secondary coolant system. Cracks having a primary-to-secondary leakage less than 500 gallons per day during operation will have an adequate margin of safety against failure due to loads imposed by design basis accidents. Operating plants have demonstrated that primary-to-secondary leakage as low as 0.1 gpm will be detected. Leakage in excess of 432 gallons per day per steam generator or 1 gpm total through all four steam generators will require plant shutdown and an unscheduled eddy current inspection, during which the leaking and defective tubes will be located and plugged. The 500 gallon per day limit is also consistent with the assumptions used to develop the Technical Specification limit for secondary coolant activity.

Wastage-type defects are unlikely with the planned all volatile treatment (AVT) of secondary coolant. However, even if this type of defect occurs, the steam generator tube surveillance specification will identify steam generator tubes with impurifications having a depth greater than 40% of the 0.050 inch tube wall thickness as being unacceptable for continued service. The results of steam generator tube burst and collapse tests have demonstrated that tubes having wall thickness not less than 0.025 inch have adequate margins of safety against failure due to loads imposed by normal plant operation and design basis accidents.

A 10% allowance for tube degradation that may occur between inservice tube examinations added to the 40% tube plugging limit provides an adequate margin to assure that SG tubes acceptable for operation will not have a minimum tube wall thickness less than the acceptable 50% of normal tube wall thickness (i.e., 0.025 in) during the service lifetime of the tubes.

Steam generator tube inspections of operating plants have demonstrated the capability to reliably detect wastage type defects that have penetrated 20% of the original 0.050 inch wall thickness.

- d. Abnormal degradation of systems other than those specified in 6.9.1.7.c above designed to contain radioactive material resulting from the fission process. <sup>7/</sup>

#### SPECIAL REPORTS

6.9.2 Special reports shall be submitted to the Director of the Office of Inspection and Enforcement Regional Office within the time period specified for each report. These reports shall be submitted covering the activities identified below pursuant to the requirements of the applicable reference specification:

- a. Sealed source leakage on excess of limits (Specification 3.9)
- b. Inoperable Seismic Monitoring Instrumentation (Specification 4.10)
- c. Primary coolant activity in excess of limits (Specification 3.1.D)
- d. Seismic event analysis (Specification 4.10)
- e. Inoperable fire protection and detection equipment (Specification 3.14)
- f. The complete results of the steam generator tube inservice inspection (Specification 4.9.C)

#### 6.10 RECORD RETENTION

6.10.1 The following records shall be retained for at least five years:

- a. Records and logs of facility operation covering time interval at each power level.
- b. Records and logs of principal maintenance activities, inspections, repair and replacement of principal items of equipment related to nuclear safety.
- c. ALL REPORTABLE OCCURRENCES submitted to the Commission.
- d. Records of surveillance activities, inspections and calibrations required by these Technical Specifications.
- e. Records of changes made to Operating Procedures.
- f. Records of radioactive shipments.
- g. Records of sealed source and fission detector leak tests and results.
- h. Records of annual physical inventory of all source material of record.
- i. Records of reactor tests and experiments.

<sup>7/</sup> Sealed sources or calibration sources are not included under this item. Leakage of packing, gaskets, mechanical joints and seal welds within the limits for identified leakage set forth in technical specifications need not be reported under this item.