

U.S. ATOMIC ENERGY COMMISSION
DIRECTORATE OF REGULATORY OPERATIONS
REGION I

RO Inspection Report No: 50-286/75-03 Docket No: 50-286
Licensee: Consolidated Edison Company License No: CPPR-26
4 Irving Place Priority: _____
New York, New York Category: B1
Location: Indian Point 3, Buchanan, New York Safeguards Group: _____
Type of Licensee: PWR 1050 MWe (W)
Type of Inspection: Routine, Unannounced
Dates of Inspection: January 8-10, 1975
Dates of Previous Inspection: January 5-10, 1975
Reporting Inspector: J. N. Hannon 1-17-75
N. Hannon, Reactor Inspector Date
Accompanying Inspectors: A. B. Davis 1/21/75
A. B. Davis, Senior Reactor Inspector Date
A. N. Fasano 1/21/75
A. N. Fasano, Reactor Inspector Date

Date

Date
Other Accompanying Personnel: T. Rebelowski 1/21/75
T. Rebelowski, Reactor Inspector Date
Reviewed By: A. B. Davis 1/21/75
A. B. Davis, Senior Reactor Inspector Date
Reactor Operations Branch

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SUMMARY OF FINDINGS

Enforcement Action

A. Violations

None

B. Safety Items

None

Licensee Action on Previously Identified Enforcement Items

Not Inspected

Design Changes

Not Inspected

Unusual Occurrences

None Identified

Other Significant Findings

A. Current Findings

1. Non-Deficient Areas

- a. Shift manning during Initial Fuel Loading. (Details, Paragraph 4.b(2))
- b. Calibration and Neutron Response Check of Source Range Detectors. (Details, Paragraph 4.d.(2)(a))
- c. Nuclear Instrumentation Settings for Initial Criticality. (Details, Paragraph 4.f.(5))

2. New Unresolved Items

- a. The following items are unresolved:

- (1) X-Y Xenon Stability Test. (Details, Paragraph 3.b)
- (2) Initial Criticality SUR Limit. (Details, Paragraph 4.f.(3))

3. New Open Items

- a. The following items are open pending completion of licensee commitments:
 - (1) Station Nuclear Safety Committee Procedure Review. (Details, Paragraph 4.b.(1))
 - (2) Containment Integrity during Initial Core Load. (Details, Paragraph 4.b.(3))
 - (3) Provisions for Emergency Boration during Initial Core Load. (Details, Paragraph 4.b.(4))
 - (4) Predicted Boron Concentration and Rod Position at Criticality. (Details, Paragraph 4.f.(1))
 - (5) Boron Dilution Rate during Initial Criticality. (Details, Paragraph 4.f.(4))
 - (6) Manual Scram Test Prior to Initial Criticality. (Details, Paragraph 4.f.(6))
 - (7) Initial Criticality Procedural Details. (Details, Paragraph 4.f.(7))
 - (8) TP-4.12.2 Instrument Air Functional Test. (Details, Paragraph 6)
 - (9) Initial Fuel Loading Inverse Multiplication Plots. (Details, Paragraph 4.b.(5)(b))
 - (10) Initial Criticality Inverse Multiplication Plots. (Details, Paragraph 4.f.(2))
 - (11) Power Coefficient of Reactivity Acceptance Criteria. (Details, Paragraph 4.h.(1))
 - (12) Turbine Overspeed Limit. (Details, Paragraph 4.h.(2))

B. Status of Previous Items

1. Unresolved Items

a. The following item has been resolved:

(1) Instrument Air Functional Test. Reference Report 74-04. (Details, Paragraph 6)

b. The following item remains unresolved pending further evaluation:

(1) Motor Operated Accumulator Isolation Valve Test, Reference Report 74-12. (Details, Paragraph 5)

2. Open Items

a. The following item has been closed out:

(1) Shutdown from outside the Control Room. Reference Report 73-08. (Details, Paragraph 3.a.)

b. The following items remain open pending completion of licensee actions.

(1) Control Rod Drop Test. Reference Report 74-02. (Details, Paragraph 4.d.(1))

(2) Procedure Reorganization. Reference Report 50-247/74-18. (Details, Paragraph 4.d.(2)(b))

Management Interview

At the conclusion of the inspection, a combined exit interview was conducted for inspections 75-02 and 75-03 with the following licensee attendees:

Mr. S. H. Cantone, Operations Engineer, Unit 3

Mr. S. S. Zulla, Engineer, Unit 3

The following summarizes the items discussed:

A. Inspection Purpose

(Details, Paragraph 2)

B. Phase 3 Test Procedure Status

1. Shutdown from outside the Control Room. (Details, Paragraph 3.2)
2. Unit 3 X-Y Xenon Stability Test. (Details, Paragraph 3.b)

C. Phase 3 Test Procedure Review

1. Initial Fuel Loading. (Details, Paragraphs 4.a. and b.)
2. Precritical Tests after Core Load. (Details, Paragraphs 4.c. and d.)
3. Initial Criticality. (Details, Paragraphs 4.e. and f.)
4. Power Ascension Test Phase. (Details, Paragraphs 4.g. and h.)

D. Motor Operated Accumulator Isolation Valve Testing

(Details, Paragraph 5)

E. Instrument Air Functional Test

(Details, Paragraph 6)

DETAILS

1. Persons Contacted

S. H. Cantone, Operations Engineer, Unit 3
W. Josiger, Test Engineer, Unit 3
S. S. Zulla, Engineer, Unit 3

2. Inspection Purpose

The inspector stated that the purpose of the inspection was to conduct the initial procedure review of the licensee's program for Initial Fuel Loading and Power Ascension Testing and to attempt to close out certain items identified during the Pre-Op Review. The licensee acknowledged this information.

3. Phase 3 Test Procedure Status

A licensee representative stated that all Phase 3 test procedures for Unit 3 had been prepared and were in the initial stages of review. The inspector was provided copies of selected test procedures for examination.

a. Shutdown from Outside the Control Room

In the response to question 13.7, FSAR Supplement 27 dated July, 1974, the licensee committed to conduct a shutdown from outside the control room test on Unit 3. This item is closed. (Reference RO:I Report 50-286/73-08 Management Interview Section C, Paragraph 1).

b. Unit 3 X-Y Xenon Stability Test

The inspector was provided a copy of a Con Edison memo from Lee to Cantone dated December 3, 1974, which recommended that the X-Y Xenon stability test on Unit 3 was not necessary based on a comparative study between Units 2 and 3. The inspector advised that this approach would be treated as an unresolved item pending further evaluation. The licensee acknowledged this information.

4. Phase 3 Test Procedure Review

a. The initial Fuel Loading Procedure was reviewed to verify the following:

- (1) Authorized management approval;
- (2) Appropriate Committee review;
- (3) Proper procedural format;
- (4) Necessary prerequisites and initial conditions established;
- (5) Precautions and limitations clearly identified;
- (6) Fuel manipulations properly controlled and recorded;
- (7) Fuel loading increments specified;
- (8) Visual checks performed;
- (9) Proper documentation obtained; and
- (10) Specific commitments in the FSAR (including Proposed Technical Specifications) met.

b. The following are representative of items discussed with the licensee. In each case the licensee acknowledged the information.

(1) Station Nuclear Safety Committee Review

Technical Specification 6.5.1.f.2 (Proposed) requires a SNSC review of test procedures. The inspector noted that the cover sheets on each of the test procedures reviewed made no provisions for documenting the SNSC review. The inspector determined that Administrative Directive No. 3AD-19, Rev. 2 "Procedure/Procedure Change Approval Policy" dated July 5, 1974 did not specifically address the test program. INT-ADMIN-1.0 ADDENDUM 1 "Administrative Guidelines for the Test Program" dated November 7, 1973 was found to only address Joint Test Group approval of test procedures.

The licensee stated that administrative guidelines for SNSC review and provisions for review documentation would be included in a revision to INT-ADMIN-1.0 ADDENDUM 1. The licensee stated that SNSC review and resolution of review comments would be required prior to final JTG approval, and that an attempt would be made to have all phase 3 test procedures approved prior to licensing. The

inspector stated that all phase 3 test procedures should be reviewed and approved prior to issuance of an operating license. This item is open.

(2) Shift Manning

Technical Specification (Proposed) Table 6.2-1 was noted to require 2 Senior Reactor Operators on Shift when core alterations are being made. The procedure INT-TP-5.0 "Initial Core Loading Summary" dated March 26, 1974 apparently only requires 1 SRO on watch during initial fueling. The licensee stated that the provisions of 3AD26 Rev. 0 "Key Personnel Designation and Replacement" dated May 18, 1974, would be followed to insure compliance with TS during initial core loading. The inspector had no further questions on this item at this time.

(3) Containment Integrity

Technical Specifications (Proposed) 1.10 and 3.8.A.1 identify containment integrity requirements during re-fueling. The inspector stated that procedure INT-TP-5.2 "Prerequisite and Periodic Checkoffs for Core Loading" dated April 23, 1974, apparently did not address the details of containment integrity. The licensee stated that checklists would be provided to ensure containment integrity is established prior to initial fuel loading. This item is open.

(4) Emergency Boration

Procedure INT-TP-5.1 "Initial Core Loading" dated December 16, 1974, did not provide criteria for the use of emergency boron addition. The licensee stated that a reference would be made to the appropriate emergency procedure, which would include the steps and conditions for emergency boron addition. This item is open.

(5) Reciprocal Multiplication Plots

- (a) TP-5.1 Paragraph 4.6 does not specifically provide for a minimum of two plots of reciprocal multiplication. The licensee stated that in addition to the

1/m plot maintained by Westinghouse on the core loading platform, an independent 1/m plot would be maintained by Con Ed in the control room. The inspector had no further questions on this item at this time.

- (b) The inspector stated that apparently rules for plotting inverse multiplication including counting times and requirements for interpretation of the plots were not specified by procedure. The licensee stated that the procedure would be revised to include guidance on counting times and requirements for plot interpretation. This item is open.
- c. Selected procedures covering precritical tests after core loading were reviewed to verify the following:
 - (1) Standard procedure review requirements met;
 - (2) Acceptance criteria properly specified;
 - (3) Precautions listed;
 - (4) Initial conditions established; and
 - (5) Adequate test conditions invoked.
- d. The following are representative of items discussed with the licensee. In each case the licensee acknowledged the information.
 - (1) Control Rod Drop Test

INT-TP-4.9.5 "Rod Timing Checks" dated May 16, 1973, made provisions for dropping the fastest and slowest rods in the hot full-flow condition an additional 10 times. The licensee stated that the procedure would be modified to include provisions for dropping the fastest and slowest rods in the cold no-flow condition an additional 10 times. This item is open. (Reference RO:I Report 50-286/74-02 Management Interview, Paragraph E).
 - (2) Calibration and Neutron Response Check of Source Range Detectors
 - (a) INT-TP-8.5 "Nuclear and Temperature Instrument Calibration and Thermal Power Measurement" dated August 8, 1974, apparently does not specify a neutron response check or prescribe a minimum signal-to-noise ratio.

The licensee stated that INT-TP-5.1, Paragraph 4.5 stipulated a minimum count rate of 2 cps attributable to core neutrons. The licensee was not aware of any neutron response checks on the source range instruments that would be performed prior to core loading, but considered the requirement for obtaining 2 cps above background during initial fuel loading a sufficient neutron response check. The inspector had no further questions on this item at this time.

- (b) The inspector stated that the sequence for performing this test was not specified in the procedure. The inspector noted that IPP-SU-8.6 "Nuclear and ΔT Calibration and Thermal Power Measurement Procedure" Rev. 3 dated July 23, 1973 had been performed on Unit 2. During the review of the results of this procedure, the licensee had committed to "reorganize this test procedure prior to future application on Unit 3 to distinguish between tests that require formal evaluation and those that do not". (Reference RO:I Report 50-247/74-18 Details, Paragraph 4.b.(5)(e)). The licensee stated that the test sequence would be described in INT-TP-7.1 "NSSS Startup Sequence" dated October 31, 1974. The inspector stated that the procedural organization remains open.

- e. The initial criticality procedure was reviewed to verify the following:
 - (1) Standard procedure requirements met;
 - (2) Predicted rod position and boron concentration specified;
 - (3) Precautions and limitations stipulated;
 - (4) Initial Conditions established; and
 - (5) Test conditions stipulated.

- f. The following are representative of items discussed with the licensee. In each case the licensee acknowledged the information.
 - (1) Predicted boron concentration and rod position at criticality.

INT-TP-7.2 "Initial Criticality" dated June 12, 1974, did not stipulate predicted boron concentration or rod position

at criticality. The licensee stated that these values and their acceptance criteria will be available prior to initial criticality but may not be specified in the procedure. This will be verified by the inspector.

(2) 1/m Plot Interpretations

The inspector stated that the use of 1/m plots during the initial criticality, including requirements for plot interpretation, were apparently not specified by procedure. The licensee stated that the procedure would be modified to include guidance on counting times, frequency of data collection, and requirements for plot interpretation. This item is open.

(3) Initial Criticality SUR Limit

Regulatory Guide 1.68 "Preoperational and Initial Startup Test Programs for Water-Cooled Power Reactors" dated November, 1973 recommends a conservative startup rate limit of less than .44 DPM or roughly a factor of 2.7 times per minute (no less than a 60 second period). The procedure establishes a limit of 1 DPM or a factor of 10 times per minute (no less than a 26.08 second period). This item is unresolved.

(4) Boron Dilution Rate

The inspector noted that the procedure allowed a boron dilution rate of 1.5% per hour until an inverse count rate of .05 was achieved. If the reactor does not go critical during mixing or subsequent rod withdrawal, the boron dilution rate is decreased to 0.3% per hour. The inspector stated that this approach appears to be inconsistent with that outlined on page 13.3-2 of the FSAR. The licensee agreed to review this area to insure that the procedure used during initial criticality is consistent with FSAR commitments. This item is open.

(5) Nuclear Instrumentation Settings

- (a) The inspector noted that the low power range trip was set at "15 ± 1% of full power" during initial

criticality. The power range instruments are apparently aligned to read full scale with an order of magnitude less current than typically expected during full power operation, so that a setting of 15 \pm 1% of full scale on the power range instruments would actually be equivalent to roughly 1% of full power. The licensee stated that INT-TP-8.5 provides for rescaling the power range instruments so that 100 micro amps is the equivalent of a full scale reading (100% power). Expected values at full power range from 700 to 800 micro amps. The inspector had no further questions on this item at this time.

- (b) The inspector noted that the procedure did not speak to the trip setpoints for the source and intermediate range instruments. The proposed Technical Specifications (Basis of Section 2.3) indicates that the source and intermediate range reactor trips provide protection during reactor startup. The licensee stated that INT-TP-4.8.2 "Reactor Plant System Setpoint Verification" dated September 14, 1973, provides for setting all reactor plant trips including Source and Intermediate Range Instruments. The inspector had no further questions on this item at this time.

(6) Manual Scram Test

The inspector was unable to determine that provisions were made to insure that the manual scram was tested prior to initial startup. The licensee stated that this requirement would be put in the procedure. This item is open.

(7) Procedural Details

The inspector was unable to determine from a review of available documents that items such as special equipment, required plant systems, calibration checks, limit switch settings, valve lineups, electrical power, and control power were prescribed for initial criticality. The licensee stated that these items would be included in checklists or Readiness for Test forms. This item remains open.

g. Selected procedures covering the power ascension test phase were reviewed to verify the following:

- (1) Standard procedure review requirements met;
- (2) Acceptance criteria properly specified;
- (3) Initial conditions established; and
- (4) Adequate test conditions invoked.

h. The following are representative of items discussed with the licensee. In each case the licensee acknowledged the information.

(1) Acceptance Criteria for Power Coefficient of Reactivity

INT-TP-8.1 "Power Level Change" dated March 29, 1974, in Paragraph 5.5 provided no acceptance criteria for the power coefficient of reactivity determination. The licensee stated that a reference to the appropriate document would be provided in the procedure. This item is open.

(2) Turbine Overspeed Limit

Figure 1 of INT-TP-9.7 "Generator Load Trip" dated January 25, 1974, appears to indicate that overspeed limits will be exceeded during the full load trip. The licensee stated that a Low Pressure Steam Dump System with 6 valves had been provided to preclude exceeding turbine overspeed limits on a generator trip. The system is designed so that with a single failure (only 5 of 6 valves operating) sufficient steam from the LP turbine - moisture separator reheater section is dumped directly to the condenser to preclude turbine overspeed. The licensee stated that a new curve would be generated reflecting the LP Steam Dump System. This item is open.

5. Motor Operated Accumulator Isolation Valve Testing (Reference RO:I Report 50-286/74-12 Details, Paragraph 4.b.(4))

The proposed Technical Specifications (Basis of Section 3.3) indicates that the 1000 psig limit below which the accumulator isolation valves may be closed is derived from the minimum pressure requirements of the accumulators combined with instrument error and an operational band, and is based upon avoiding inadvertent injection into the reactor coolant system. Additionally, proposed TS 3.5.5

requires that the coincident low pressurizer pressure/pressurizer level safety injection trip be unlocked when the pressurizer pressure is \geq 2000 psig. Proposed TS 3.3.A.1.c requires that the accumulator isolation valves be open and their power supplies be de-energized whenever the reactor coolant system pressure is above 1000 psig. With the valves closed and energized below 1000 psig, safety injection signals are available from high containment pressure, steam line break instrumentation, and manual initiation. The licensee stated that the accumulators are not considered to be required when below 1000 psig, and the valves will be administratively de-energized when shut to preclude inadvertent opening from any of the above actuation signals. The inspector stated that this item will remain unresolved pending further evaluation.

6. TP-4.12.2 Instrument Air Functional Test (Reference RO:I Report 50-286/74-04 Details, Paragraph 4.a)

The licensee stated that the valve renumbering and procedure revision effort is scheduled for completion on February 28, 1975. The inspector stated that this item is resolved and will remain open pending completion of action by the licensee. This information was acknowledged by the licensee.