

U. S. ATOMIC ENERGY COMMISSION  
DIVISION OF COMPLIANCE  
REGION I

CO Inspection Report No. 50-247/72-05

Subject: Consolidated Edison Company

Indian Point No. 2

Location: Buchanan, New York

License No. CPPR-21  
DPR-26

Priority B

Category \_\_\_\_\_

Type of Licensee: PWR (873 MWe) Westinghouse

Type of Inspection: Routine, unannounced

Dates of Inspection: March 14 & 15 and April 10 & 14, 1972

Dates of Previous Inspection: March 3, 1972

Principal Inspector: G. L. Madsen  
G. L. Madsen, Reactor Inspector

5/5/72  
Date

Accompanying Inspectors: None

\_\_\_\_\_  
Date

\_\_\_\_\_  
Date

Other Accompanying Personnel: None

\_\_\_\_\_  
Date

Reviewed By: E. J. Brunner  
E. J. Brunner, Senior Reactor Inspector

5/8/72  
Date

Proprietary Information: None

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## SECTION I

### Enforcement Action

None.

### Licensee Action on Previously Identified Enforcement Matters

The licensee submitted reports to DRL and revised their operating procedures as a result of the primary pressure spikes encountered. (Paragraph 24)

### Unresolved Items

- A. Dynamic analysis of a "full blow" condition for the main steam safety valves disclosed a potential overstressed condition. (Paragraph 20)
- B. The residual heat removal heat exchangers developed tube leaks. The tube bundles were replaced with units from IP-3. Clarification of the code data sheets has not been completed. (Paragraph 25)

### Status of Previously Identified Unresolved Items

- A. Excessive vibration was noted during the operation of reactor coolant pumps 21 and 24. Alignment and balancing of these pumps has been conducted. This item is considered to be resolved. (Paragraph 23)
- B. The eight accumulator check valves received a partial overlay to obtain acceptable wall thickness. Hydrostatic testing and radiographing of the valve bodies was performed. This subject is still under review. (Paragraph 18)
- C. The DB-50 scram breakers have been modified. This item is considered resolved. (Paragraph 19)
- D. Mechanical Seal leakage and high pressure safety injection pump No. 21 siezed. Pump No. 21 has been replaced. Item considered resolved. (Paragraph 17)
- E. Mechanical Seals leakage was encountered on the residual heat removal pumps. Seals scheduled to be replaced.
- F. The Contingency Plan (earthquake, fire, and radiation) implementation. No change.

- G. Resolution of radioactive waste system deficiencies. Three of five items are considered resolved. (Paragraph 16)
- H. UT inspections of steam generator No. 21 revealed two indications not included in the original base line data. Report to be sent to DRL by the licensee.

#### Design Changes

Modification of the high pressure injection system was approved by DRL on March 28, 1972. The modification is complete with the exception of functional testing. (Paragraph 21)

#### Unusual Occurrences

- A. Two Primary pressure spikes were encountered. Inquiry Reports 50-247/72-07 and 11 and reports to DRL dated March 17, 1972 and April 14, 1972. (Paragraph 24)
- B. The residual heat removal heat exchangers developed tube leaks. (Paragraph 25)
- C. Con Ed received an order from the New York State Department of Conservation (DEC), to halt testing of the circulating water system at IP-2 because of substantial fish kills in February of 1972 (Inquiry Report No. 50-247/72-08). Subsequently DEC, issued a press release which contained recommendations relating to penalties and conditions under which the circulating system testing could be resumed. (Inquiry Report No. 50-247/72-12)

#### Persons Contacted

Mr. J. Makepeace, Startup Manager IP-2  
Mr. A. Kohler, Resident Construction Manager  
Mr. P. Leo, Construction Superintendent, IP-2  
Mr. E. Dadson, Superintendent, Site Quality Assurance  
Mr. A. Nespoli, Superintendent Operations, IP-2  
Mr. W. Monti, Assistant Superintendent Operations, IP-2  
Mr. O. Buesse, Electrical Startup  
Mr. S. Zulla, Production Engineer  
Mr. A. Barlaam, Mechanical Startup

Mr. S. Austin, Senior Mechanical Engineer  
Mr. G. Beers, Manager Quality Assurance

WEDco

Mr. M. Snow, Manager, Quality Assurance  
Mr. W. Diebler, Manager, Quality Control  
Mr. O. Hughes, Quality Control, Pipe and Structural Engineer  
Mr. G. Landrith, Mechanical Engineer

UE&C

Mr. P. Wentzel, Mechanical Engineer

Management Interviews

The following subjects were discussed with Messrs. Makepeace and Kohler:

A. Electrical

The inspector indicated that the electrical separation barrier and fire stop installation is considered complete, with the exception of some work at the electrical tunnel door, at the PAB fire repair location, and at the control room floor. Mr. Kohler indicated an agreement. (Paragraph 3)

B. Power Ascension Program

The inspector stated a need for completion of the power ascension test procedures. Mr. Makepeace stated that generator trip, heat rate, and loss of flow test procedures are in preparation. (Paragraph 8)

C. Pipe Hangers and Restraints

The inspector indicated that the installation of pipe hangers and restraint for the nuclear portion of the plant or systems which are affected by plant heatup is considered complete, with the exception of the punchlist items. Mr. Kohler indicated that the punchlist items had received an engineering evaluation and Con Ed considers the pipe restraint and hanger installation to be sufficiently complete for the heatup of the plant for "hot" subcritical testing. The inspector indicated that the punchlist will be reviewed for completion prior to initial criticality. (Paragraph 9)

D. Thermal Expansion Test

The inspector indicated satisfactory findings relative to the thermal expansion test coverage; however, additional reviews of the data for the 547° F plateau and the final evaluation of test results will be made by CO:I. Mr. Kohler confirmed that the thermal expansion data sheets will contain calculated movements, actual movements, and sign-off for each measurement point and at each temperature plateau. (Paragraph 10)

E. Emergency Plan

The inspector stated that the emergency plan (contingency plan) is not considered complete, in that the plan has not been implemented, the call lists are not current, and a notification drill has not been conducted. Mr. Makepeace indicated an understanding and stated that these items would be completed prior to initial criticality. (Paragraph 11)

F. Security

The inspector stated that the completion of the security construction and implementation of the security plan will receive CO coverage during a subsequent inspection. (Paragraph 12)

G. Primary Auxiliary Building - Fire Damage

The results of the review of fire damage component testing was discussed. The inspector indicated that some additional test procedures were required. Mr. Makepeace indicated an awareness of this. The inspector indicated satisfactory finding relative to the component testing completed to date. (Paragraph 14)

H. Surveillance Testing

The inspector indicated that a review of the surveillance program indicated that several procedures are not finalized and considerable additional testing is needed prior to going critical. Mr. Makepeace stated that much effort is being devoted to this subject and that it is their intent to have current test performance data available before going critical. (Paragraph 15)

I. Radioactive Waste Systems

The inspector reviewed the status of radioactive waste system items. Mr. Makepeace indicated that an additional vent stack halogen monitor is to be installed and that verification of representative sampling of the vent stack gas is planned. (Paragraph 16)

J. High Pressure Safety Injection System

The findings relating to the replacement of high pressure SIS pump No. 21 and the SIS modifications were reviewed. The inspector indicated that these items are considered complete with the exception of functional testing. Mr. Makepeace indicated that this testing will be completed in conjunction with the subcritical testing program. (Paragraphs 17 and 21)

K. Accumulator Check Valves

The inspector indicated that available records indicated the accumulator check valves were radiographed and hydrostatically tested after receiving a weld overlay. The inspector stated that this item will receive additional consideration by the CO:I Construction Staff. (Paragraph 18)

L. Main Steam Safety Valves

The status of the dynamic analysis calculation and modification of the main steam safety valves was discussed. The inspector indicated that CO would perform a review of the main steam safety valve modification program, after Con Ed has finalized the design modification. (Paragraph 20)

M. Condensate Storage Tanks

The status of repair of the condensate tanks was discussed. The inspector indicated that Con Ed owes CO:I a report relating to this repair program. Mr. Kohler stated that the report is in preparation. (Paragraph 22)

N. Primary Pressure Spikes

The findings relating to the primary pressure spike occurrences were discussed. Mr. Makepeace stated that operators have been reinstructed on this subject. (Paragraph 24)

O. Residual Heat Removal - Heat Exchangers

The inspector reviewed the findings relating to the RHR heat exchanger problem. Mr. Kohler indicated that subject of clarifying the code data sheets and code stamping would be pursued. (Paragraph 25)

P. Steam Generators

The inspector pointed out that Con Ed had not submitted reports to DRL relating to the steam generator clad failure and the UT inspection question for steam generator No. 21. Mr. Kohler indicated that these reports are in preparation by their Engineering Department.

SECTION II

Additional Subjects Inspected, Not Identified in Section I, Where No Deficiencies Were Found

1. General

Plant activities have been directed toward plant restoration of damage caused by the November 4, 1971 fire; completion of the pipe hanger and restraint installation; completion of miscellaneous construction; performance of subcritical testing as permitted by License No. DPR-26; and performance of a plant heatup for monitoring of thermal expansion of piping systems. Completion of the plant for initial criticality has been delayed until mid June 1972 by the need to modify the main steam safety valve installation.

2. Fuel Storage Building

- a. The removal of an existing pipe from the fuel storage pool.
- b. Verified that the main crane stops have been installed.

3. Electrical

Reviewed the installation status of electrical separation barriers and fire stops. Work remaining includes the following:

- a. Fire stops and separation barriers in the vicinity of the November 4, 1971 PAB fire area.
- b. Fire stops at the electrical tunnel door.
- c. Fire stops at the Control Room flight panel floor.

4. Hydrogen Recombiner

Reviewed the Hydrogen recombining test procedure No. 4.14 Addendum I. The actual performance of the test is included on the subcritical master punchlist.

5. Fuel Failure Detector

Plans relating to the installation of a fuel failure detector.



6. Building Seismic Reinforcement

Reviewed the completion status of reinforcement of the IP-1 stack and the IP-2 turbine building to obtain additional seismic protection.

7. HEPA and Iodine Filters

Reviewed the installation status of the containment recirculation fan filters.

8. Power Ascension Testing

Reviewed the status of procedure preparation for the power ascension testing program, following initial criticality.

9. Pipe Hangers and Restraints

- a. Status of pipe hanger and restraint installation for the nuclear portion of the plant and systems which are affected by heatup of the reactor coolant system.
- b. Reviewed punchlists for hanger and restraint installation remaining to be installed.
- c. Reviewed WEDCO Quality Control records for hangers and restraints for piping in the nuclear portion of the plant or associated with systems affected by plant heatup.
- d. The results of the WEDCO, Quality Control inspection program for the hydraulic snubbers associated with piping systems.

10. Pipe System Thermal Expansion Test

- a. Reviewed records pertaining to the test procedure requirements for initial conditions to be complete prior to the initiation of the pipe system thermal expansion test.
- b. Reviewed test data records collected and evaluated at ambient, 150°, 250°, and 350° F.
- c. Witnessed a portion of the measurement data collection at the 450° F temperature plateau.

- d. Witnessed an evaluation of a portion of the data collected at the 450° F plateau.

11. Emergency Plan

Discussed status of implementation of the Indian Point site emergency plan.

12. Security

- a. Discussed status of completion of plant security construction.
- b. Reviewed status of implementation of the approved plant security program.

13. Subcritical Preoperational Testing

Reviewed master punch lists pertaining to subcritical preoperational testing.

14. Primary Auxiliary Building - Fire Damage\*

- a. Reviewed functional test procedures for components affected by the PAB fire. Thirteen additional procedures are required.
- b. Reviewed test records pertaining to functional testing which has been completed (About 55 percent complete).

15. Surveillance Testing

- a. Reviewed records pertaining to the performance of Technical Specification surveillance requirements for the period November 1, 1971 to March 14, 1972.
- b. Reviewed status of Surveillance Test procedure preparation versus the performance requirements for power operation.
- c. Verified that prior to initial criticality the surveillance requirements of the Technical Specification will have been performed within the specified time span.

Details of Subjects Discussed in Section I

16. Radioactive Waste Systems

A previous inspection of the radioactive waste system revealed certain apparent deficiencies.\* The following summarizes the status of resolution:

- a. An additional vent stack monitor is to be installed for continuous monitoring of halogens.
- b. The inspector was provided calculations which indicate the existence of turbulent flow in the vent stack. The inspector was advised that traverse testing is planned to provide additional assurance that the existing stack monitoring probe will provide coverage equivalent to ANSI - N.13.1 - 1969.
- c. Charcoal filters are to be installed in the purge exhaust ducts, prior to the first refueling outage.
- d. Modification of the liquid waste evaporator package was reported to have been completed, in an attempt to provide design specification functions of 2 gpm and DF of  $10^{-6}$ . A polishing demineralizer package has been installed to provide additional purification if required to attain design capacities.
- e. The licensee provided engineering evaluations of the liquid probe locations, which concluded that representative samples can be obtained with the existing probes. No modifications are planned.

Items c, d and e above are considered resolved.

17. High Pressure Safety Injection Pump

As previously reported, high pressure safety injection pump No. 21 seized during testing.\*\* The inspector was informed that pump No. 21 has been replaced with a unit which was in storage and purchased for IP-3. The inspector was provided a test procedure for checking out of the replacement pump. The test procedure includes the flow-pressure characteristic checkout of the pump. A review of the pro-

\*CO Report No. 50-247/71-05, Paragraph D

\*\*CO Report No. 50-247/71-14, Paragraph 7a

cedure revealed no apparent deficiencies. The inspector was informed that the pump test checkout will be done in conjunction with the checkout of the high pressure safety injection modification. (Paragraph 21 of this report). The testing item is included on the subcritical testing master punchlist. This item is considered resolved.

18. Accumulator Check Valves

The accumulator check valves were determined to have inadequate wall thickness and subsequently received a weld overlay.\* A review of records revealed the following:

- a. WEDCO and Con Ed has approved the results of radiography of the valve bodies to a 2% sensitivity of the single wall thickness.
- b. The valve bodies were subjected to a 2500 psig, 220° F hydrostatic test.

19. DB 50 Scram Breakers

Discussion revealed that the DB-50 scram breakers have been modified to eliminate potential binding and operability problems. Additionally the inspector was informed that the scram breakers were given an undervoltage checkout after the modification. The inspector considers this item to be resolved.

20. Main Steam Safety Valves

As a result of previous discussions,\*\* Con had a dynamic analysis performed for the main steam safety valves, during a "full blow" condition. The inspector was informed that the analysis disclosed the potential for an overstressed condition and that a modification of these valves is needed. Initially, the licensee stated that the corrective measures were composed of changing the valve exit piping from the 90° original to a 33° exit elbow configuration. Subsequently, the inspector was informed that additional calculations indicated that excessive stress would still be encountered at the weldolet to the main steam line, even though the exit piping is modified. The detailed drawings and modification procedures for the reinforcement of the weldolets has not been formulated.

The inspector was informed that the weldolet reinforcement would be performed after the plant heatup and hot subcritical testing had been completed. The inspector asked if the main steam safety valves would

\*CO Report No. 50-247/72-02, Paragraph 9

\*\*CO Report No. 50-247/72-02, Paragraph 11

be available during the plant heatup and was informed that the 16 safety valves (four on each line) would be gaged and the 4 small safety valves (one on each line) would be available. The inspector was informed that calculations indicate that the small safety valves can take a "full blow" without imposing an excessive stress; however, a "full blow" plus a seismic condition would cause an excessive stress to be induced.

The inspector indicated that CO:I would conduct an evaluation of the weldolet reinforcement modification during a future inspection.

21. High Pressure Safety Injection Modification

Con Ed submitted a request to the Division of Reactor Licensing on February 7, 1972 for approval for a modification to a portion of the high pressure safety injection system. DRL approved the modification on March 28, 1972. A records review pertaining to this modification revealed that:

- a. The design was performed by UE&C and applicable drawings were available.
- b. A change notice was available which authorized the use of available valves at IP-3 and the procurement of piping to the IP-3 procurement specification.
- c. The piping spool pieces were fabricated by Tubeco and a spot review of pipe records indicate conformance to the purchase specifications.
- d. Records were available for the receipt of the valves at IP-3 and the transfer of the valves from IP-3 to IP-2.
- e. The field fabrication was completed in accordance with approved procedures.
- f. The modified system was flushed and hydrostatic tested (3105 psig) in accordance with approved procedure No. 1.6.1.
- g. A test procedure No. 4.5.1, Section 4, Revision 2, has been prepared for the checkout of the replaced high pressure injection pump No. 21\* and verification of equal flows to the 2" lines to the reactor coolant system. This testing is to be conducted in conjunction with the subcritical testing program.

\*Paragraph 17 of this report

Based on the above findings this item is considered closed.

22. Condensate Storage Tank

The inspector was informed that the condensate tank:

- a. Repair was complete
- b. Vent System has been modified
- c. Membrane has been reinstalled

The licensee indicated that they have raised additional questions which are presently under review.

The inspector indicated that this subject would receive additional followup by CO:I.

23. Reactor Coolant Pumps

As previously reported,\* excessive vibrations were encountered on reactor coolant pumps 21 and 24. The inspector was advised that Westinghouse has been performing pump alignment and balancing to eliminate the vibration and that the vibrations have been reduced to 8 to 9 mils on the shafts. The licensee indicated that the unofficial acceptance value is 12 mils. The reported official vibration acceptance limit is 2 mils on the pump frame and the present actual value is less than 1 mil.

24. Primary Pressure Spikes

As previously reported,\*\* two primary system pressure spikes were encountered. Con Ed submitted reports to DRL in accordance with Technical Specifications 3.1.4B.\*\*\*

The inspector verified that the operating orders and operating procedures have been revised to incorporate the formation of a gas bubble in the pressurizer, prior to starting the first reactor coolant pump. The inspectors review included a verification that the post core loading heatup procedure had been revised to incorporate this change.

\*CO Report No. 50-247/72-03, Paragraph 12b(3)

\*\*CO Inquiry Report Nos. 50-247/72-07 and 11.

\*\*\*Reports to Dr. Peter Morris, Division of Reactor Licensing dated February 28, 1972, March 17, 1972 and April 14, 1972.

25. Residual Heat Removal Heat Exchangers

As previously reported, the two residual heat exchangers (RHR) developed tube leakage.\* The inspector was informed that the two tube sections were replaced with units in storage at IP-3. A review of records revealed the following:

- a. The IP-2 and IP-3 RHR heat exchangers were procured to the same purchase specifications.
- b. The tube bundle sections of the IP-2 and IP-3 RHR heat exchangers were modified in accordance with a Westinghouse Change Modification, as a result of previous experiences during preoperational testing.
- c. The tube bundle section of the original IP-3 heat exchangers were hydrostatically tested at 900 psig in the vendor shop.
- d. Westinghouse, Quality Assurance approved the release of the IP-3 components for shipment.
- e. United States Testing performed a vendor inspection of the IP-3 heat exchanger in December of 1968 as an agent for Con Ed.

The inspector asked if the code data sheets and code stamping of the heat exchangers had been clarified to reflect the present as installed status. No definite answer was presented. The inspector indicated that this was considered an open item.

A. E. Upton  
Consolidated Edison Company

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RO AD for Procedures  
RO AD for Inspection & Enforcement  
L, DD for Reactor Projects  
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