

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

Report of Inspection

CO Report No. 247/70-2

Licensee: CONSOLIDATED EDISON COMPANY  
Indian Point No. 2 (IP-2)  
License No. CPPR-21  
Category B

Dates of Inspection: January 22 and February 6 and 11, 1970

Dates of Previous Inspection: December 9 to 19, 1969

Inspected by: R. T. Carlson for 3/5/70  
G. L. Madsen, Reactor Inspector Date

Reviewed by: R. T. Carlson 3/5/70  
R. T. Carlson, Senior Reactor Inspector Date

Proprietary Information: None

SCOPE

Announced inspections were made at the Indian Point No. 2 (IP-2) construction site at Buchanan, New York on January 22 and February 6 and 11, 1970. The major items reviewed included status of the pipe allegations program, preoperational testing, reactor pressure boundary requirements, and the Wedco organization.

SUMMARY

Con Ed has completed the vendor audit program for stainless steel pipe and fittings as related to the previous pipe allegations. The information presented in Con Ed's final report on this subject is considered adequate; however, this in no way implies acceptability to the requirements of Table A. (Section II.A.)

Twenty preoperational testing procedures have been prepared and accepted for implementation by Con Ed and Wedco. A review of these 20 procedures, which relate to system flushing and hydrostatic testing, revealed the procedures to be detailed and generally provide an acceptable program. The lateness of preoperational

811120635 700312  
PDR ADOCK 05000247  
Q PDR

testing procedure preparation relative to the August, 1970 fuel loading date is an item of concern. (Section II.B.)

The reactor coolant system field welding has been completed. Compliance's surveillance of this effort is considered complete except for one followup item relating to qualification of weld procedures. (Section II.C.1.)

Application of the DRL reactor pressure boundary criteria, Table A, is receiving attention by Con Ed. The need to radiograph cast stainless steel valve discs and the absence of documentation relating to specific NDT tests are the items which will present the most difficulty with respect to conformance to Table A requirements. (Section II.C.2.)

The carbon collector shoes of the polar crane have been replaced with bronze as a result of a previous electrical supply problem. (Section II.D.)

The Wedco organization is functioning in an active role with respect to construction management. The organizational structure in existence at the site is in conformance with supplement 4 of the FSAR. (Section II.E.)

A listing of previously identified items requiring resolution are included in this report. (Section II.F.)

#### DETAILS

##### I. Persons Contacted:

###### A. Con Ed

Mr. F. McElwee, Resident Construction Manager  
Mr. A. Corcoran, Construction Project Superintendent  
Mr. E. Dadson, Quality Assurance Supervisor  
Mr. W. Monti, Production Engineer  
Mr. J. Makepeace, Reactor Engineer  
Mr. B. Cosgrove, Mechanical Engineer  
Mr. R. Schuster, Quality Assurance Inspector  
Mr. F. Repose, Mechanical Inspector

###### B. Wedco

Mr. T. Lawson, Quality Assurance

C. United Engineers and Constructors

Mr. J. Jailett, Welding Inspector

II. Results of Visits

A. Pipe Allegations

As reported previously,\* Con Ed completed the vendor audit program for stainless steel pipe and fittings for IP-2 as related to the pipe allegations.\*\* Con Ed issued a final report on this subject\* and have taken the position that sufficient data has been gathered to provide reasonable assurance of the adequacy of the nuclear plant piping. A review of this report by Compliance raised questions relative to the complete acceptability with respect to the Associated Steel pipe and substitution of fabricators normal practices for supporting documentation. These questions were raised with respect to the reactor pressure boundary piping.\*\*\* Mr. Corcoran's response to the questions was that the allegations report was meant to be responsive to the initial allegations and was not intended to be a response to Table A.

The inspector indicated that the information presented is considered an adequate response to the initial allegations; however, Con Ed was informed that this in no way implies acceptability to the requirements of Table A. Mr. Corcoran indicated that Con Ed is presently working on answers to Table A. The inspector indicated that the pipe allegation question is considered resolved in that the remainder of the outstanding compliance questions will need to be included in Con Ed's responses to Table A.

B. Preoperational Testing

1. General Review of Preoperational Testing Program

a. General Purpose

As previously reported,\*\*\*\* the proposed pre-operational test program consists of three general

---

\*CO Report No. 247/69-11, Paragraph II.A.

\*\*CO Report No. 247/69-7, Paragraph II.J.1.

\*\*\*Maccary Document, Table A.

\*\*\*\*CO Report No. 247/69-11, Paragraph II.H.1.

classifications and includes hydrostatic testing; flushing; system electrical and mechanical functional checks; fuel loading; initial criticality; and testing during the approach to full power.

b. Scheduling

To date, 20 Phase I hydrostatic testing and flushing procedures have been prepared and accepted for implementation. Copies of these procedures were made available to the Compliance inspector. The remainder of the preoperational procedures are in varying degrees of preparation. The inspector previously indicated a concern relative to lateness of the completed procedures and the absence of a projected test schedule.\* Activities relative to procedure preparation have increased; however, a projected schedule for completion of procedures and performance of specific tests was not made available to the inspector. The inspector indicated grave concern relative to the lateness of the program, the short period of time remaining before the projected fuel loading in August of 1970, and the potential for inadequate attention being devoted to the test program because of various pressures during the last months of construction. Con Ed shares a similar concern and indicated that pressure is being exerted in this area.

c. Personnel Involvement

The first draft of the procedures are prepared by the Wedco site startup organization. The drafts are reviewed by Westinghouse and Con Ed and comments are referred to the Wedco startup organization who in turn resolves the comment items, revises the procedure, and issues the procedure. The procedures then receive another review and "walk through" by the joint test group which is composed of Wedco and Con Ed personnel. If the procedure is mutually found acceptable for use, the procedure receives a signature approval by Con Ed construction and production personnel and a representative of the Wedco startup organization.

Scheduling of testing requires the approval of Wedco and Con Ed. The actual testing will be accomplished by personnel from Wedco, Con Ed, and the various subcontractors.

The test results are to be evaluated by Wedco and the results of the evaluation are to be forwarded to Con Ed for final evaluation and approval.

d. Testing Coverage

An outline of the proposed test program was made available to the inspector. The pre-loading test program included in the outline was compared to the FSAR\* and was found to include the general requirements presented.

During a discussion of testing philosophy relating to functional checking of systems, the inspector asked if the testing would be performed to demonstrate operability during normal and emergency conditions including temperature, pressure, flow, radiation, etc. The inspector was informed that these procedures have not been written; however, future reviews of these procedures will be evaluated with the above thought in mind.

2. Preoperational Procedure Review

a. General

Twenty Phase I flushing and hydrostatic testing procedures, were made available for review. Each procedure was found to contain the following items:

- 1) A clear statement as to the purpose of the test.
- 2) Precautions to be followed.
- 3) List of reference materials.

---

\*Table 13.1-1.

- 4) Condition under which the tests can be performed.
- 5) A step-by-step detail of testing to be performed and an accompanying sign off for each step.
- 6) The procedures were stamped as approved by the Joint Test Group and contained signatures by cognizant personnel from Con Ed construction, Con Ed production, and Wedco.

b. General Flushing and Cleaning Procedure

The general flushing procedure for the nuclear steam supply system (NSSS) was reviewed. The procedure specifies:

- 1) Degree of cleanliness required.
- 2) Requirements for Westinghouse keeping a detailed log of flushing activities.
- 3) Requirements relating to completeness of construction prior to testing and restrictions on construction activities following a system flush.
- 4) The general restriction for flushing specific systems within the NSSS.
- 5) Requirements relating to cleanup of the exterior surfaces of system components which includes a cleaning with solvent and de-mineralized water.

This procedure was found to give a good general definition of the flushing program for the NSSS.

c. Water Chemistry Requirements for Flushing, Hydrostatic Testing and Initial Filling

This procedure contains water quality specifications for flushing, hydrostatic testing, hot functional

testing, and reactor operation for the NSS. When compared with the water chemistry requirements for the reactor coolant system, as specified in the FSAR\*, the listed coverage is deemed acceptable to the inspector.

d. General Hydrostatic Testing Procedure

The general hydrostatic test procedure was reviewed and contains the following pertinent items:

- 1) Definition of gagging procedures for relief valves.
- 2) Protection will be provided on the test pump to prevent over pressurization of the system being tested. The set point for this protection is to be no greater than 110% of the test pressure.
- 3) Pressure gauges are to have ranges between 1-1/2 and 2 times the test pressure. Calibration of the test gauges shall be checked against a standard dead weight tester not more than one month prior to conducting the test.
- 4) The test pressure is to be maintained for a minimum of 30 minutes.
- 5) If leaks are detected, corrective action will be initiated, and the testing will be resumed.
- 6) The test pressures, general boundary definition, and test medium are defined for each system or subsystem of the NSSS.

The procedure was found to be generally acceptable; however, the following items were presented to the licensee for consideration:

- 1) The definition of pressure boundaries is not all inclusive. Mr. Monti stated that this was only intended to be a general definition of test boundary and the specifics are to be included in the individual systems test procedures.

- 2) The containment sump drain to the heat removal pumps was to be tested at 100 psig whereas the design print specifies a 150 psi system.
- 3) The containment spray suction line is listed to be tested at 24 psig whereas it appears to be a 150 psig design system.
- 4) The lines from the volume control tank are to be tested in conjunction with the tank at 112 psig. The inspector questioned that this meets the intent of the pipe code. This piping was also designed at 150 psig.
- 5) City water was specified as the test medium for several waste disposal system tanks and the primary water storage tank. The desirability of this was questioned. Mr. Monti indicated that he believes these items are incorrect and will followup on same.

e. System Flushing Procedures

The primary water, chemical volume control, spent fuel, waste disposal, nuclear equipment drain, instrument air, and service water systems flushing procedures were reviewed to varying depths. These procedures were found to be detailed, consistent, and provide the necessities for an acceptable flushing program. The procedures for flushing of the reactor coolant and safety injection systems have not been finalized.

f. System Hydrostatic Test Procedures

The component cooling and one portion of the chemical volume control system hydrostatic test procedures were reviewed. These procedures contain sufficient detail, give total system coverage, and are consistent with the requirements of the general hydrostatic test and water chemistry requirements. The two procedures were found to be acceptable; except for the following questions:

- 1) The component cooling surge tank is scheduled for a 225 psig test whereas the FSAR\* specifies a 100 psig designed tank.
- 2) The attainment of the hydrostatic test pressure for a portion of the chemical volume control system is dependent on leakage through a check valve.

Mr. Monti agreed to pursue answers to both of these questions.

g. Status of Testing

Flushing of the primary water makeup, chemical volume control systems, spent fuel storage, and turbine oil systems, are in progress and nearing completion. The flushing procedures for the main steam, boiler feedwater, condensate, and boiler feed pump suction have been approved and flushing is in progress on a 24-hour per day basis. Con Ed has production and construction personnel assigned to provide coverage on a continuous basis. Mr. Monti estimated that the flushing and hydrostatic testing of the piping in the conventional building would require 4-5 weeks.

c. Reactor Coolant System

1. Field Welding

The 32 reactor coolant field welds have been formed and have received final acceptance. During a previous inspection\*\* the mill certificates for the 316 welding electrodes were not readily available. This subject was pursued during the December, 1969, in-depth quality control inspection\*\*\* and adequate documentation was available. The item of certification of welding electrodes is therefore considered resolved. On the

---

\*Table 9.3-1.

\*\*CO Report No. 247/69-10, Paragraph II.E.

\*\*\*CO Report No. 247/69-12, Paragraph III.A.2.e.

basis of the overall findings during the in-depth inspection and previous monitoring of the reactor coolant welding, surveillance of this effort is considered complete with the exception of the followup required relative to confusion existing in the area of documentation for qualification of weld procedures.\*

2. Reactor Pressure Boundary

The context of Attachment I and Table A was previously discussed with the licensee as it relates to the IP-2 reactor pressure boundary. At that time, Con Ed stated that the difficulty in meeting the presented criteria was associated with the need to radiograph cast stainless steel valve discs. Con Ed met with DRL on November 23, 1969, to discuss the definition of reactor pressure boundary as it relates specifically to valve discs. During the course of this meeting, attended by the inspector, 26 valves were selected as those requiring NDT conformance on valve discs as defined in Table A. During the previous inspection\*\* Con Ed indicated that a component review of 21 valves included in the reactor pressure boundary had been initiated which included the safety valves, relief valves and the first two valves greater than 2 inches in diameter, in lines leading from the reactor coolant loops. A comparison of the above listings disclosed that 14 of the 21 valves initially selected by Con Ed are included in the 26 valves which were eventually selected and requiring NDT of discs. The inspector inquired as to Con Ed's intent on this matter and was informed that their present intent is to include the additional 12 valves in the evaluation of valve disc conformance to Table A requirements.

A review of isometric drawings for piping included in lines leading from the reactor coolant loops to the outermost branch valves as agreed to between DRL and Con Ed, was made by the inspector to determine to what degree the final pipe allegations report\*\*\* covered the

---

\*CO Report No. 247/70-1, Appendix A.

\*\*CO Report No. 247/69-11, Paragraph C.2.

\*\*\*Paragraph II.A. of this report.

reactor coolant pressure boundary piping as defined in Table A. The review of these isometrics indicated to the inspector that some 50 spools of reactor coolant pressure boundary piping were not included in the allegations audit. Con Ed indicated that the reasons for the omissions include the following:

- a. The pipe spools had not been fabricated or shipped prior to the Dravo audit.
- b. The pipe was designed for pressures considerably less than the normal reactor coolant system pressures and hence was not 100% investigated.
- c. The interpretation of the words, "pressure boundary", was not clearly defined or understood.

Con Ed indicated to the inspector that mill certification for the remaining pipe spool pieces would be obtained and would be included in the response to the requirement of Table A.

The inspector inquired as to Con Ed's plans relative to additional NDT of Associated Steel, 6 inch schedule 80S pipe. Mr. Dadson indicated that the welds included in this material were recently PT in the field.

The licensee asked the inspector for some indication as to the type of response Compliance expected from Con Ed on the subject of answers relating to the Table A requirements. The inspector indicated that followup on this subject was to be handled by the Compliance inspector in an informal manner and it was hoped that Con Ed's approach to replying to Table A would include the following:

- aa. A deviation disposition report for each item that does not comply with Table A. These reports should clearly define the deficiency and technical justification for the acceptability of each.

- bb. An overall summary of the findings relating to the audit which includes positive statement that, with the exception of specific deviation, the intent of Table A has been satisfied.
- cc. A method for retention of the disposition requests and final acceptance letter.

The inspector then indicated that the subject information would be evaluated by the regional office, and transmitted to Compliance, Headquarters. The information will then be discussed with DRL. Following these discussions, CO:HQ will provide the regional Compliance office information relative to a positive regulatory position. At this time Con Ed will be informed of further actions that might be required in order to meet the minimum requirements of Table A.

#### D. Polar Crane

As previously reported\* a partial loss of electrical supply to the polar crane was encountered. At that time a portion of the carbon collector shoes were replaced with bronze. Upon request, the inspector was informed that all the collector shoes are now bronze and no additional power losses have occurred. This subject is therefore considered resolved.

#### E. Organization

As previously reported\*\* the IP-2 project reorganization included establishment of Wedco. The Wedco organization is functioning in an active role with respect to construction management and UE&C continues to provide the site quality control functions. The organizational structure in existence at the site is in conformance with supplement 4 to the IP-2 FSAR.\*\*\*

#### F. Previously Identified Items Requiring Resolution (CO Inspection Report Reference Given In Parenthesis)

- 1. In-depth quality control followup items.  
(247/70-1, Appendix A)

---

\*CO Report No. 247/69-9, Paragraph II.H.

\*\*CO Report No. 247/69-11, Paragraph III.D.

\*\*\*Volume V, Section III.

2. Completeness of safety injection system weld records.  
(247/69-11, Section II.B.1.)
3. Replacement of pipe spool SIS-136.  
(247/69-11, Section II.B.2.)
4. SIS valves of CF8 material versus CF8M.  
(247/69-11, Section II.B.3.)
5. Reactor pressure boundary criteria.  
(247/69-11, Section II.C.2.)
6. Closure of Containment - Cadweld stagger question.  
(247/69-11, Section II.E.)
7. Fuel Storage Building - Completion of preoperational testing and discrepancies with the FSAR.  
(247/69-9, Section II.G.)
8. Pipe supports - Installation of stainless shims.  
(247/69-9, Section II.J.)
9. Code stamp - "N" on Section III Class C tanks.  
(247/69-7, Section II.N.)
10. Steam generator - Hydrostatic test and code stamping.  
(247/69-10, Section II.I.)
11. Preoperational Testing - Lateness of procedure preparation - Hydrostatic test questions.  
(247/70-2, Section II.B.1, Section II.B.2.d. and Section II.B.2.f.)
12. Reactor Pressure Boundary - Table A.  
(247/70-2, Section II.C.2.)

### III. Management Interview

A management interview was held with Messrs. Corcoran and Dadson at the conclusion of the visits. Items discussed included the following:

A. Pipe Allegations

The inspector indicated that the information presented in the Con Ed final report on the pipe allegations was considered an adequate report with respect to the specific pipe allegations; however, this in no way implies acceptability to the requirements of Table A. Mr. Corcoran indicated that Con Ed is presently working on answers to Table A.

B. Preoperational Procedures

The inspector indicated generally satisfactory findings relative to the 20 preoperational procedures completed to date; however, the lateness of completion of procedures is an item of considerable concern. Mr. Corcoran indicated an appreciation for the inspector's concern and that Con Ed is equally bothered because of the impending workload during the next months. The inspector pointed out the specific questions which had been related to Mr. Monti for consideration. Mr. Corcoran assured the inspector that answers would be forthcoming.

C. Reactor Coolant System

The inspector indicated that the reactor coolant system field welding is considered to be completed and acceptable, except for some required followup action relating to the qualification of weld procedures. Mr. Corcoran indicated that this item is presently being evaluated.

The status of implementation of the reactor pressure boundary criteria, Table A, was reviewed. Mr. Corcoran indicated that Con Ed engineering is pursuing answers related to the valves and Con Ed site construction is evaluating the pipe and fittings. Mr. Corcoran indicated that an active program is presently in progress.

D. Wedco

The present status of the Wedco involvement at IP-2 was discussed. The inspector indicated that the present involvement appears to fulfill the requirements as presented in Supplement 4 to the FSAR. At this point, Mr. Corcoran indicated some concern relative to communications with the UE&C site quality control group. He indicated that he considered the condition to be under control but having the potential for future problems.