

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

Report of Inspection

CO Report No. 247/69-10

Licensee:

CONSOLIDATED EDISON COMPANY
Indian Point No. 2
License No. CPRR-21
Category B

Dates of Inspection:

September 30 and October 1 and 2, 1969

Dates of Previous Inspection:

August 26, 27 and 29 and Sep-
tember 10, 1969

Inspected by: G. L. Madsen
G. L. Madsen, Reactor Inspector

10/28/69
Date

Reviewed by: R. T. Carlson
R. T. Carlson, Senior Reactor Inspector

10/28/69
Date

Proprietary Information:

None.

SCOPE

Announced inspections were made to the Consolidated Edison Company, Indian Point No. 2 (IP.2) construction site. The major items reviewed were the Westinghouse reorganization, status of the pipe allegation investigation, control of electrical cable placement, review of field welding, and auditing of the first fuel assembly receipt.

SUMMARY

Con Ed's audit program relating to previous pipe allegations is basically complete. A final report on this subject is partially complete and is to be reviewed by Con Ed Engineering. Thereafter, the report will be made available to Compliance.

Con Ed's mechanical surveillance of safety injection systems demonstrated that system isometrics were incomplete. As a result, Westinghouse has agreed to perform a similiar audit of all systems.

Eight check valves, located between the safety injection accumulators and the reactor coolant system, were fabricated from A351 grade CF8 materials whereas the Westinghouse specification calls for CF8M. The acceptability of usage of these valves with reference to ASAB16.5 requirements is also in question. Con Ed agreed follow this item to resolution and have initiated a field review of all safety injection system valves.

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The formation of Wedco, a subsidiary of Westinghouse, is in progress. UE&C Quality Control group is to remain at the IP.2 for an indefinite period of time.

The 32 reactor coolant field welds have been formed and 20 of these welds have received final acceptance. Final radiography of the remaining 12 welds has been delayed as a result of a decision to change radiographic firms. Mill certifications were not immediately available for the E316 electrodes in use.

Cable tracing of 75 cables by Con Ed failed to reveal significant deficiencies. Observations by the inspector revealed questionable conditions relative to required cable separation of redundant channels. This item will receive further evaluation by Compliance.

The first shipment of fuel assemblies was received. The unloading of assemblies was being conducted in compliance with approved procedures and SNM-1108. Previously identified discrepancies, between as-built and FSAR requirements for the Fuel Storage Building, are to be corrected or an amendment to the FSAR will be requested.

Two concrete lifts remain to be placed on the containment dome. Closure of two construction openings are in progress. Stagger of cadweld splices is being maintained or receiving engineering review.

A previous inspection of steam generators raised questions relating to stress relieving and magnetic particle checking of insulation nut plate welds. Magnetic particle checking of these welds following the final hydrostatic testing of these vessels is presently planned.

The eight reactor vessel nozzles are scheduled to receive a 1/8 inch weld overlay. Procedures have been prepared by Westinghouse and are receiving a review by Con Ed.

Final fabrication, fitup, and attachment of fibration detectors is in progress on the reactor intervals.

DETAILS

I. Persons contacted:

A. Con Ed

Mr. G. Nicholson, Assistant to Vice President of Construction
Mr. F. McElwee, Site Project Manager
Mr. A. Corcoran, Construction Superintendent
Mr. P. Leo, Assistant Construction Superintendent
Mr. O. Beusee, Electrical Inspection Foreman
Mr. F. Repose, Piping Inspector
Mr. E. Dadson, Site Quality Assurance Supervisor

B. Westinghouse

Mr. T. Lawson, Quality Assurance Inspector

C. United Engineers & Constructors

Mr. J. Fant, Quality Control Supervisor

Mr. M. Franchuck, Welding Foreman

II. Results of Visit

A. Status of Construction

1. Containment Building

Placement of the containment dome concrete is nearing completion. The 32 reactor loop field welds have been formed and 20 of these welds have received final acceptance. Fitup of the reactor internals is in progress.

2. Turbine Building

Erection of the turbine generator is in the final stages. Mechanical installation is about 95 percent complete.

3. Primary Auxilary Building

Mechanical installation is nearing completion. About 80 percent of the electrical cables to the main control room and the containment building are in place.

4. Fuel Storage Building

The building has been accepted by Con Ed. The first shipment of 12 fuel assemblies has been received.

B. Pipe Allegations

1. General

In conjunction with previously reported allegations*, Con Ed has continued activities associated with the vendor audit program for stainless steel pipe and fittings procured from Dravo. All pipe and fitting suppliers have been evaluated and Con Ed's total audit program is nearing completion.

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

2. Associated Steel Company (AS)

Con Ed continued their expanded surveillance program* for Associated Steel. A field inspection of all schedule 10 - 304 piping was performed and 18 spool sections were identified as either AS pipe or containing no positive source markings. Con Ed's follow-up program for this material included the following:

- a. Ultrasonic measurements on the 18 spool pieces indicated that the wall thickness exceeds the minimum requirements for ASTM A-312 or A-358 pipe.
- b. The longitudinal weld of one spool piece of each diameter supplied was radiographed. The radiographs indicated that the 3 and 4 inch diameter pipe was fabricated using a fusion welding process whereas the 8 and 12 inch pipe was fabricated using filler metal. Con Ed stated that the radiographs indicated acceptable weld quality.
- c. Spool piece SI 21A was rejected due to surface damage. Samples of this spool were taken and forwarded to UST for evaluation of physical and chemical characteristics. According to Mr. Dadson, the test results indicated that the material fulfilled the requirements for 304 pipe.

Based on this additional data and previous findings, Con Ed considers the pipe supplied by AS and installed at IP-2 to be acceptable.

3. Design Deviations

Mr. Corcoran presented communications from Westinghouse which provided approval for:

- a. The use of type 304L materials in lieu of type 304 for class 601** and lesser pressure systems.
- b. Substitution of A-358 for A-312 pipe in that 100 percent radiography of welded pipe seam, is required by the Westinghouse specification.
- c. Carbon contents less than 0.04 percent in Class 601 and lesser pressure systems. The 0.04 minimum carbon content is a Westinghouse specification limitation only.

* CO Report 247/69-9, Paragraph II.A.

** Westinghouse classification system generally based on temperature - pressure relationship. Additional details available in Region I.

4. Status

Mr. Corcoran stated that Con Ed presently feels that the audit results indicates that the Dravo pipe installed at IP.2 is acceptable for use. A final audit report is nearing completion and is to be evaluated by Con Ed Engineering and will be made available to CO. At that time Con Ed will present their final position relative to the pipe allegations subject.

C. Safety Injection System

1. Welding Records

As previously reported, Con Ed has conducted a mechanical audit of the safety injection system*. The audit demonstrated that the system isometrics were incomplete in that:

- a. Welds had been added during installation; however, they were not displayed on the isometrics.
- b. Some weld identification was missing.
- c. Spool pieces within a system had been interchanged.
- d. The weld identification had been reversed for welds at the two ends of a recirculation system valve.

As a result of these findings Con Ed met with Westinghouse, UE&C and Wedco, Westinghouse has agreed to perform mechanical audits of all systems to determine the status of the as-built systems as compared to existing isometrics. Each discrepancy is to be resolved and a final as-built isometric is to be provided Con Ed. Con Ed intends to continue their review and at a later date will compare their system status information to the Westinghouse final as-built isometrics. Upon completion of the above programs, verification of completeness of a system should be evident. This item will be audited during future visits.

2. Valves

The inspector made a visual inspection of the eight check valves between the four safety injection system accumulators and the reactor coolant system. The identification indicated that the body castings were ASTM

*CO Reports 247/69-9, Paragraph II.B.2

A-351, Grade CF8 material whereas the Westinghouse specification No. G-676241 Rev. 0 requires the use of A-351 Grade CF8M material. The inspector asked Con Ed to justify this deviation. Con Ed was not able to present an immediate reply; however, on the second day of this inspection, Mr. Dadson informed the inspector that Westinghouse had indicated their knowledge of the above identified discrepancy. The inspector questioned the acceptability of these valves for the intended use and compliance with ASA B.16.5. In addition the inspector indicated that the existence of these discrepancies raises a suspicion that other valves within the IP.2 system may contain similar problems. Mr. Dadson stated that Con Ed had already initiated a field review of all valves within the safety injection systems to determine conformance with the FSAR and Westinghouse specifications. If additional deficiencies are found Con Ed intends to request Westinghouse to perform a complete review of all valves. With respect to the accumulator check valve deficiencies, Mr. Dadson stated that this item will be followed until satisfactory resolution is attained.

D. Organization

Con Ed's organization changes and the establishment of Wedco Inc., as a subsidiary company of Westinghouse were previously reported*. The proposed establishment of Wedco and the assumption of managerial control remains as presented,* except:

1. The UE&C Quality Control group is to remain intact for an indefinite period of time. At some later date this function is to be incorporated into the Wedco organization.
2. The site Quality Control organization is to report to the Manager of the Reliability Group rather than the Construction Manager.

Discussions with Messrs McElwee and Corcoran indicated to the inspector that Con Ed is concerned about the organizational changes and the potential effects on construction quality and progress.

E. Reactor Coolant System

The 32 reactor coolant loop field welds have been formed. Twenty have received final acceptance and 12 are awaiting final radiography. The inspector was informed that the former radiographic firm (Grinnel) was unable to handle the volume of work at IP.2 and is being replaced by Branch Radiographics. The UE&C Quality Control Supervisor was in the process of checking out this firm's assigned technicians.

* CO Report No. 247/69-9, Paragraph C.
Inquiry Memorandum No. 247/69-B

A review of welding records indicated that 316 electrodes were employed for the formation of the last 12 field welds. The inspector asked for mill certifications for the 316 electrodes; however, this information was not immediately available. This item will receive follow-up during a future inspection.

F. Electrical

1. Cable Placement Status

Cable placement between the control room, containment, and the primary auxiliary building is about 80 percent complete. Cable placement within containment has not started.

2. Cable Tracing

Con Ed has traced 75 cables, from termination to termination, to determine accuracy of placement. Mr. Leo stated that this sample revealed no significant deviations; however, some metal separation barriers are missing. This is considered to be an in-process-of-construction item and is to be audited by Con Ed at a later date.

3. Cable Separation

During the last inspection, questionable conditions relative to required separation of redundant cables were indentified*. These conditions still exist and are presently being considered by Con Ed Engineering. A review of Nuclear Instrumentation cable, by the inspector, indicates that this cable will be enclosed in conduit from the sensor to the control room; however, cable drawings for this system indicates the routing of cables in trays between the control room Nuclear Instrument and Logic Panels. The total electrical cable separations problem will receive additional evaluation by Compliance.

G. Fuel Storage Building

1. Physical Layout

Observations during a previous inspection** revealed discrepancies between the as built and FSAR conditions. Con Ed indicated that an amendment to the FSAR will be forthcoming for the following items:

- a. Changing the fuel storage rack spacing from 21 to 20.5 inches.
- b. Changing the new and spent fuel storage capacity from 64 and 257 to 72 and 264 fuel assemblies.

* CO Report No. 247/69-9, Paragraph II.F.3

** CO Report No. 247/69-9, Paragraph II.G.2

The inspector related concern relative to a permanent pipe extending below the surface of the fuel racks and ability of the main crane to traverse over the spent fuel racks. Mr. Corcoran indicated that he was aware of these variances with respect to the FSAR and actions will be initiated to resolve these points prior to the fuel loading of the reactor core.

2. Fuel Assembly Receipt

The first shipment of 12 fuel assemblies has been received. The inspector witnessed the unloading, inspection, and storage of two assemblies. The security measures, health physics coverage, inspection program, material handling, and record keeping appeared to be in compliance with approved procedures and SNM-1108.

H. Containment

Closure of two temporary construction access openings to the containment building is in progress. The liner and weld channels have been installed. A review of UE&C Quality Control records indicated that the liner weld channels have been subjected to Freon, soap bubble, and continuous pressure leak testing as required by the FSAR*. The inspector's observation of rebar placement and cadwelding at the personnel access location and a subsequent review of Quality Control records revealed the following pertinent information:

1. Whenever possible a one foot two inch minimum stagger is to be maintained for adjacent rebar cadwelds. The inspector observed one condition where this degree of stagger did not exist. A review of records indicated that this condition had been identified and referred to UE&C Engineering for approval.
2. Cadweld formation is being performed in accordance with procedures and with previously qualified welders.
3. Record keeping is being maintained in an acceptable manner.

I. Steam Generators

As previously reported**, the insulation nut plates on the steam generator heads may not have been stress relieved or magnetic particle tested. Con Ed was made aware of this condition*** and have since decided to perform magnetic particle testing of these welds following final hydrostatic testing of these vessels.

* Paragraph 5.1.4.6

** CO Report No. 247/69-4, Paragraph G.1

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

J. Reactor Vessel

The inspector was informed that a weld overlay is scheduled to be applied to the eight reactor vessel nozzles, as is illustrated on Attachment No. 1 of this report. The nominal thickness of the overlay is to be 1/8 inch. Ultrasonic testing is to be performed prior to and after deposition of the overlay material. Welding procedures have been prepared by Westinghouse and will receive an evaluation by Con Ed Engineering. The procedures and welders are to be qualified to the requirements of ASME Section IX. The proposed procedures also include the following items:

1. Materials to be welded.
2. Type of electrodes to be employed.
3. Welding amperage requirements.
4. Minimum preheat temperature of 60° F.
5. Maximum interpass temperature of 300° F.
6. No peening is permitted.
7. Cleaning requirements.
8. Finishing requirements.
9. Final inspection requirements.

K. Reactor Vessel Internals

Final fabrication and fitup of the reactor internals is in progress. In addition, attachment of vibration detectors is progressing. These vibration detectors are to be utilized during cold and hot functional testing. The internals storage location is a controlled area and general cleanliness was being maintained at an acceptable level.

III. Management Interviews

Management interviews were held with Messrs Corcoran and McElwee at the conclusion of this visit. Items discussed included the following:

A. Pipe Allegation

The inspector indicated that Con Ed has been responsive to the pipe allegations and stated that the final report would be reviewed by Compliance.

B. Safety Injection System

The findings relating to the mechanical systems audit were reviewed. Mr. Corcoran stated that the audit demonstrated that the available isometrics were incomplete and Westinghouse was responsive relative to initiating a similar audit of all systems. He also indicated that the audits program should clearly demonstrate the actual status of the systems.

The existence of safety injection system check valves which contain material that is not in compliance with the Westinghouse specifications was reviewed. Mr. Corcoran agreed that this was a deviation, which must be resolved. The inspector indicated that compliance with ASA B16.5 for these valves is also questioned. Mr. Corcoran stated that this will also be resolved and that Con Ed has initiated a field review of all safety injection valves to determine if other similiar discrepancies exist.

C. Organization

The status of establishment and takeover of Wedco was discussed. The inspector indicated a general concern relative to various situations at IP.2 which lumped together could lead to an unacceptable situation.

The various situations include:

1. Courters recent takeover of field welding which was formerly managed by UE&C.
2. Replacement of Grinnel as radiographic agency.
3. Lack of firm identification of the Wedco responsibilities, takeover date, and assignment of personnel.
4. Westinghouse answer of, "we are aware of the problem" on identified discrepancies (low carbon content in piping, omission of "N" stamp on Section III Class C vessels, and substitution of CF8 for CF8M material in the accumulator check valves). The inspector indicated concern relative to how many additional similiar conditions exist which Westinghouse is aware of but have not been questioned to date.
5. Con Ed's site reorganization.

Mr. McElwee thanked the inspector for these views and stated similiar concerns. He also indicated that Con Ed would make every effort to assure control of the construction activities throughout the present transition period.

D. Electrical

The questionable status relating to separation of redundant cables was discussed. Mr. Corcoran indicated that Con Ed Engineering assistance has been requested. The inspector indicated that this question will receive additional Compliance follow-up and will require resolution.

E. Fuel Storage Building

The inspector indicated satisfactory findings relative to the handling and storage of fuel assemblies. The existing as-built discrepancies were reviewed. Mr. Corcoran stated that these items would be resolved prior to fuel loading.

F. Containment

The inspector indicated satisfactory findings with respect to Quality Control records relating to the containment closure activities. Mr. Leo stated that Con Ed is keeping a close eye on this activity, since they realize that attainment of cadweld stagger is indeed difficult.

The inspector telephoned Mr. Nicholson and discussed the subject matter contained in item C., above. Mr. Nicholson thanked the inspector for the information and stated that he was aware of the general problem. He also stated that this subject is receiving considerable attention by Con Ed Management and some corrective steps are contemplated.

CONSOLIDATED EDISON CO. (IP-2)

CO REPORT NO. 247/69-10

ATTACHMENT NO. 1

