

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

Report of Inspection

CO Report No. 247/69-7

Licensee: Consolidated Edison Company  
Indian Point No. 2  
License No. CPPR-21  
Category B.

Dates of Inspections: June 17, July 1 and 2, 1969

Dates of Previous Inspections: April 17, May 15, 22 and 23, 1969

Inspected By: G. L. Madsen 8/19/69  
G. L. Madsen, Reactor Inspector Date

Reviewed By: N. C. Moseley 8/19/69  
N. C. Moseley, Senior Reactor Inspector Date

Proprietary Information: None

SCOPE

An announced inspection was made to the Consolidated Edison Company, Indian Point No. 2 construction site on July 1 and 2, 1969. In addition, a visit was made to the Con Ed Engineering Office on June 17, 1969 to review purchase specifications for stainless steel valves.

SUMMARY

Cadweld splicing of the containment building reinforcement bars is basically complete. Placement of the containment dome section concrete remains.

Eighteen reactor coolant system field welds have been accepted by UE&C and Westinghouse. Final fit-up of the reactor coolant loop piping was in progress. The first 20 reactor coolant field welds will be formed using 308 electrode, while the remaining 12 will be formed using 316 electrode.

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Safety injection pipe spool pieces SI-112 and SI-136 have been returned to the vendor. Welding records relating to the safety injection system are somewhat deficient; however, Con Ed has initiated actions which the inspector believes will clarify the condition.

The deficiencies, previously identified, in the conventional piping procured from Dravo are essentially corrected. This problem is considered resolved.

Electrical cable placement is in progress. The quality assurance activities involve Con Ed, UE&C and the electrical contractor.

Con Ed has initiated a pipe vendor audit program in conjunction with previous findings relating to pipe allegations. An internal interim report will be published and available for review by August 1, 1969.

Carbon steel supports attached to stainless steel piping by welding was noted. Corrective actions have been initiated.

Con Ed was made aware of the apparent lack of stress relieving and magnetic particle checking of the nut plates on the steam generator heads.

Mill certificates for ER 308-16 electrodes procured from McKay Company do not contain physical test information.

A review of tags and code stamps associated with five inspected vessels revealed conditions to be in accordance with the FSAR; except, the code stamp on the gas decay tanks and the volume control tank indicated construction to ASME VIII rather than ASME III Class C.

#### DETAILS

##### I. Persons Contacted

###### A. Con Ed

Mr. A. Corcoran, Site Construction Engineer  
Mr. P. Leo, Asst. " " "  
Mr. J. Dragosits, Welding Inspector  
Mr. E. Dadson, Site Quality Assurance Supervisor  
Mr. G. Wasilenko, Mechanical Engineer

###### B. Westinghouse

Mr. G. Waldrop, Quality Assurance Engineer  
Mr. L. Cunningham, Field Service Engineer

C. United Engineers

Mr. J. Fant, Quality Control Supervisor  
Mr. R. Phelps, Mechanical Quality Control  
Mr. M. Franchuck, Welding Supervisor

II. Results of Visit

A. Status of Construction

1. Containment Building

Concrete has been placed to the 193 foot elevation. Placement of the containment dome concrete remains. All major vessels and piping are in position. The reactor internals are scheduled to arrive July 17, 1969. Field welding of the reactor coolant system is about 50% complete.

2. Turbine Building

Installation of condenser tubing is complete. The generator stator is undergoing final fitup.

3. Fuel Handling and Storage Building

Final cleanup and testing of the systems within the fuel storage building is nearing completion. Acceptance of the building by Con Ed at an early date is anticipated.

4. Primary Auxiliary Building

Piping erection is nearing completion. Electrical cable pulling continues. Final painting and insulation of vessels is in progress.

B. Cadweld Splicing

The formation of cadwelds for the containment building is basically complete. Records indicate that the strengths of cadwelds tested since the last inspection exceeded the design strengths of 75,000 psi.

C. Concrete

Placement of concrete for the containment building has progressed to the 193 foot elevation. Positioning of forms for the first dome section lift was in progress. Records indicate that the 28 day compressive strengths for concrete placed between elevations 178 to 188 feet ranged from 3515 to 4081 psi, which exceeds the 3000 psi design requirement.

D. Reactor Coolant System

1. Erection

As previously reported\*, 18 of the first 20 reactor coolant system field welds required significant repairs. An audit of repair records indicates that 18 welds have been declared acceptable by UE&C and Westinghouse. Two additional welds are awaiting final radiography. The final fitup of the remaining pipe spool pieces was in progress. Formation of the remaining 12 reactor coolant loop field welds is scheduled to begin in the next week.

Type 308 electrodes were employed for the formation of the first 20 welds of the reactor coolant loop 316 stainless steel material, as reported\*\* previously. The inspector was informed that type 316 electrodes would be employed for the formation of the remaining 12 welds. The inspector inquired as to the reason for the change in plans and need for documentation relating to the welding procedures. Con Ed indicated that appropriate welding procedure documentation would be made prior to formation of the welds.

2. Electrodes

The inspector made a spot check of mill certification reports for electrodes. Type ER 308-16 electrodes were procured from Westinghouse Electric Division and McKay Company. The mill certification values were in conformance with the requirements of ASTM 298; however, no physical test information was included by McKay. Con Ed agreed to followup on this subject.

E. Safety Injection System

1. SI-112 and SI-136

Two pipe sections (SI-112 and 136) were rejected\*\*\* and have been returned to Cameron Iron Works for repair. These sections were rejected due to an apparent incomplete machining of the internal surfaces.

2. Site Erection

Erection of the safety injection piping is about 70% complete. During the last inspection\*\*\*\*, welding records were found deficient in that positive verification of the completeness of a system is difficult. UE&C plans on making a 100% check of all welds as individual systems near completion. In addition, Con Ed has initiated a weld check for all systems.

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\*CO Report No. 247/69-6, Paragraph II. D. 1.  
 \*\*CO Report No. 247/69-6, Paragraph II. D. 2.  
 \*\*\* " " " " " II. E. 2.  
 \*\*\*\* " " " " " II. E. 3.

F. Conventional System Piping

The repair of the identified\* quality deficiencies is basically complete. Some minor repairs are still required in the turbine building; however, these are not nuclear safety oriented systems. The inspector considers the Dravo conventional pipe problem to be resolved.

G. Electrical

Cable placement between the control room, containment, and the auxiliary building is progressing. The inspector asked Con Ed to outline the actions which are being taken to assure proper routing and redundancy of safeguards cabling. Mr. Corcoran offered the following pertinent information:

1. The cable routing design is performed by UE&C. UE&C in turn issues a tabulation of all cables which includes cable identification, routing sequence, cable tray routing, and intended function.
2. Fishback and Moore (FM) is the electrical contractor. Prior to placement of a cable, FM checks the design routing slips to confirm accuracy; thereafter, the route slip will be given to the installation foreman.
3. The UE&C electrical inspector audits the installation to assure proper performance by the electrical contractor.
4. Con Ed has three site electrical inspectors. These inspectors are presently checking route slip data in an endeavor to identify discrepancies. As cable installation progresses, these inspectors will make audits to determine compliance with the design route slips. In addition, Con Ed plans to perform audits of safeguards system cables to verify proper redundancy, routing, separation and tray loading.

H. Pipe Allegations

In conjunction with the previously reported\*\* pipe allegations, Con Ed has initiated a pipe vendor audit program. Mr. Corcoran indicated that all the suppliers of safeguard system stainless steel pipe have been visited and audits were performed on records associated with mill certifications, radiography, hydrotesting and other physical code test requirements. Mr. Corcoran indicated that the audit results information is presently being digested and an internal interim report will be published and available for review prior to August 1, 1969.

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\*CO Report No. 247/69-6, Paragraph II. G.

\*\*CO Report No. 247/69-6, Paragraph II. J.

I. Pipe Supports

The inspector noted the attachment of carbon steel supports to auxiliary coolant stainless steel piping by welding. Upon inquiry, Con Ed personnel stated that the condition had been identified and removal of the supports was in progress. As a result of this finding, Con Ed Engineering is performing a study relating to types and methods of stainless steel pipe support designs being employed.

J. Steam Generators

As previously reported\*, the nut plates on the steam generator channel heads were not stress relieved or magnetic particle checked. Con Ed was not aware of this condition but stated they would pursue the matter and appropriate actions would be forthcoming.

K. Schedule

Core loading is presently scheduled for May, 1970 versus the previous estimate of January, 1970. Critical path items include pipe welding, electrical, and instrumentation activities. The entire pre-startup schedule is in the process of being revised.

L. Storage

As reported previously\*\*, outside storage of stainless pipe was hardly ideal. The inspector audited the pipe storage area and found conditions to be considerably improved. All stainless piping was resting on wood blocks and was wrapped in polyethylene. Con Ed indicated that the new pipe contractor had been contacted relative to the importance of proper pipe storage and are hopeful that this item will receive proper attention hereafter.

M. Valves

At the request of Compliance Headquarters, the inspector visited the Con Ed Engineering Office to review Westinghouse purchase specification for the stainless steel control, motor operated, manual, and self-actuating check valves for several systems. (Reactor Coolant, Auxiliary Coolant Isolation Valve Seal, Safety Injection, Sampling, and Waste Disposal)

The specified materials of construction include the following:

1. Material in contact with working fluids shall be austenitic stainless steel or equivalent.

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

\*\*Memorandum from G. W. Reinmuth to J. P. O'Reilly, dated May 7, 1969.

2. The body and bonnet material shall conform to ASTM A-182 F 316 or A351 CF8M, except that valves of 150# ASA B 16.5 rating may conform to A-182 F 304 or A-351 CF8.
3. The contact faces of the discs and main seats, shall be hard faced with stellite 6 for all valves above 150# ASA B 16.5 rating.
4. Bolting and nuts shall conform to ASTM A 193 and A 194, respectively.

Minimum Quality Assurance requirements for pressure containing parts are outlined in the following table:

Material	Service	ASA B 16.5 Rating	Radiographic Inspection	Liquid Penetrant Inspection	Hydrotest
Cast SS	Radioactive in excess of 200 psig or 212 <sup>o</sup> F	All	(a)	(b)	(c)
Cast SS	Radioactive <u>not</u> in excess of 200 psig or 212 <sup>o</sup> F		Not Req'd	(b)	(c)
Forged SS or Bar Stock	Radioactive	All	Not Req'd	(b)	(c)
Cast, Forged SS or Bar Stock	Non-Radioactive	All	Not Req'd	Not Req'd	(c)

- (a) Radiographic Inspection shall be conducted in accordance with the procedure outlined in ASTM E-94. Radiographic Acceptance Standards shall be as outlined in ASTM E-71 Class I or Class 2.
- (b) Liquid Penetrant Inspection shall be conducted in accordance with ASME B & PV Code, Section VIII, Appendix VIII. Liquid Penetrant Acceptance Standards shall be as outlined in ASA B31.1, Case N-10.
- (c) The hydrotest shall be conducted in accordance with Manufacturing Standardization Society - Standard Practices (MSS-SP-61), except that the test pressure shall be maintained for at least 30 minutes. The chloride content of the testing water shall not exceed 10 ppm.

#### N. Components

The inspector audited the tag and code stamps for the following components:

##### 1. Pressurizer

The tags indicate that the pressurizer was constructed to ASME Section III, Class A at a design pressure of 2485 psi and temperature of 680°F and was hydrostatically tested at 3105 psig at 70°F. This tag information is in accordance with FSAR requirements (Tables 4.1-3 and 4.1-9.)

##### 2. Accumulators

The tags indicate that the accumulators (4) were constructed to ASME III, Class C and at a design pressure and temperature of 700 psi and 300°F, as specified in the FSAR (Table 6.2-1 and 6.2-2.)

##### 3. Spray Additive Tank

The tags indicate the spray additive tank was constructed to ASME III, Class C, at design pressures and temperatures of 300 psi and 300°F, as specified in the FSAR (Table 6.3-1 and 6.3-2.)

##### 4. Safety Injection Boric Acid Tank

The tags on the boric acid tank indicates construction to ASME VIII and design pressures and temperatures of 100 psi and 250°F. The design temperatures and pressures is in compliance with the FSAR (Table 6.2-3); however, the FSAR (Table 6.2-1) specifies ASME III, Class C. Con Ed was asked to resolve this discrepancy.

##### 5. Gas Decay Tanks

The tags indicate that the four large gas decay tanks were built to ASME Section VIII at a design of 150 psi and 150°F. The FSAR specifies ASME III, Class C. This discrepancy was relayed to Con Ed for resolution.

#### III. Management Interview

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

##### A. Reactor Coolant System

The inspector inquired as to the reason for changing from 308 to 316 electrode for the welding of the last twelve reactor coolant field welds. Mr. Corcoran offered no specific answer; but, did state that procedural change documentation would be made prior to formation of the welds.



The absence of physical test characteristics associated with the McKay ER 308-16 electrodes was discussed. Mr. Corcoran agreed to followup on this matter.

B. Safety Injection System

The inspector indicated that welding records are still somewhat lacking. Mr. Corcoran indicated agreement and stated that Con Ed will make a system check of all safeguard systems. The results of their review will be available to the inspector.

C. Convention Piping

The inspector indicated that the conventional pipe problem was considered to have been resolved.

D. Electrical

The inspector indicated favorable findings with respect to the planned assurance program relating to electrical cable routing. Mr. Corcoran stated a strong desire to do the job right the first time.

E. Pipe Allegations

The status of Con Ed's pipe vendor audit was discussed. Mr. Corcoran indicated that a report would be issued by August 1, 1969.

F. Pipe Supports

The existence of carbon steel supports welded to stainless steel pipe was discussed. Mr. Corcoran stated that corrective action has been initiated and, in addition, the Con Ed Engineering Office is evaluating the entire pipe support criteria.

G. Steam Generators

Mr. Corcoran stated that Con Ed will pursue the stress relief and magnetic particle check question relating to the nut plates on the steam generator.

H. Components

The inspector pointed out that the code stamps on the gas decay tanks and the volume control tank indicated construction to ASME VIII rather than the FSAR Specification of ASME III, Class C. Mr. Corcoran agreed to followup on this matter.