

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

Report of Inspection

CO Report No. 286/69-7

Licensee: CONSOLIDATED EDISON COMPANY
INDIAN POINT NO. 3
License No. CPPR 62
Category A

Dates of Inspection: October 8 - 9, 1969

Dates of Previous Inspection: June 25 - 26, 1969

Inspected By: A. A. Varela
A. A. Varela, Reactor Inspector (Construction)

11/3/69
Date

R. F. Heishman
R. F. Heishman, Reactor Inspector

11/3/69
Date

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

11/3/69
Date

Proprietary Information: None

SCOPE

A routine announced inspection was made of the 3025 Mwt pressurized water power reactor (Indian Point 3) now under construction at Indian Point, Buchanan, N.Y. The purpose of the visit was to ascertain the action taken on deficiency items reported previously, principally in concrete control, and to review the overall quality control procedures being implemented by the licensee and the principal contractors on work performance since the construction permit was issued on August 13, 1969. This visit was also made to transfer inspection responsibilities to the newly assigned principal inspector, Mr. Heishman.

SUMMARY

Five unresolved items remained from the last inspection. During this inspection the status of these items was examined. Of the five, four have been completed except for final documentation in the FSAR and one regarding cadweld splice stagger is being evaluated by UE&C and Con Ed Engineering to determine a satisfactory solution. Four new items were identified during this inspection which are listed below and discussed in Paragraph II.C.

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1. Liner plate metallurgy.
2. Liner plate weld gap.
3. Subsurface drainage.
4. Component coolant pumps.

Items 1, 2 and 4 are being evaluated by the licensee to provide a satisfactory solution. Item 3 is being corrected by a change in design to be documented in the FSAR.

Approved quality control procedures were not available on site for review but evidence of a working QC system using draft procedures was observed. The initial Quality Assurance Inspection scheduled for November 17-21, 1969 will pursue this item.

Con Ed informed the inspectors of their decision to add cladding to the nozzles and safe ends on the pressure vessel. (See paragraph II.I).

DETAILS

1. Persons Contacted:

The following persons were contacted during the visit:

Con Ed

Mr. F. McElwee, Resident Construction Manager
Mr. A. Corcoran, Site Construction Engineer
Mr. E. Dadson, Quality Control Engineer
Mr. F. Matra, Site Construction Engineer Assistant

United Engineers and Constructors (UE&C)

Mr. J. Fant, Quality Control Engineer

Westinghouse (Wedco)

Mr. M. Snow, Manager of Reliability

II. Results of Visit

A. Status of Construction

The status of work on IP-3 is estimated to be 20% completed. The vapor containment building liner plate has been erected to about elevation 70 and welding was in progress on the third ring above the knuckle plate. Installation

of the bottom layer of rebars over the base liner plate and anchor bolts has been completed and work on the upper layer of reinforcing steel for the internal mat was going on. No rebars for the containment wall have been installed above elevation 49.

The reactor pit and sump pit slabs have been poured and, it is expected that the reactor pit walls will be poured in about a week. The three foot internal mat is expected to be poured early in November.

The base slab of the primary auxiliary building was placed and the walls were being formed.

The turbine generator building concrete work has been completed and 50% of the structural steel has been erected. The building cranes have been installed.

The deicing piping and discharge canal bridge are completed.

B. Administration and Organization

1. Con Ed

Con Ed has increased the on-site Quality Control Inspection force by the addition of a QC inspector with extensive background in welding inspection. Mr. Rudy Schuster started work on October 8, 1969.

2. UE&C

UE&C plans to hire three additional personnel in the near future in the QC organization. These positions will be two additional clerical personnel to maintain records and one additional inspector.

Mr. J. Fant, UE&C Quality Control Engineer informed the inspector that UE&C and Westinghouse have a contract whereby UE&C will provide QC inspection and engineering for an indefinite period.

3. Westinghouse (Wedco)

The status of the Wedco organization is essentially the same as reported in Inquiry Memorandum #247/69-B dated September 16, 1969 on Indian Point No. 2. No estimate of changeover time from UE&C to Wedco could be determined.

The implementation of the Wedco organization will be followed closely by the inspector and reported as appropriate in future reports.

C. Status of Items of Nonconformance*

Consolidated Edison's records of nonconformance items were audited by the CO inspectors. The list is compiled by Con Ed from deficiency items found by UE&C's Quality Control and/or Con Ed or Con Ed's Quality Control surveillance consultant, U. S. Testing Company. The number of items listed as being outstanding at the time of this audit was nine. Of this total, two are on cement, two on concrete and one on cadwell splice stagger, all on work performed under the exemption. The above items were previously identified by CO. Two items were on liner plate on work performed since the construction permit was granted on August 13, 1969. Of the two other items remaining in Con Ed's list of nonconformance, one was on acceptance of three component cooling pumps and the other on the subsurface drainage system.

1. Cement

One of Con Ed's nonconformance items on cement relates to the use of Type II cement whereas Type I was specified in the PSAR. The change in cement will be documented in the FSAR. Another nonconformance item on cement relates to the cement user test which will also be changed in the FSAR. The PSAR commitment to sample "all cement at the ready-mix plant" will be changed to random sampling. The inspectors' audit of cement certificates showed that mill certificates in compliance with ASTM C-150, are on file for all cement used to date and, two grab samples taken at the batch plant by PTL on June 19 and July 8, 1969 attest to conformance.

2. Concrete Placement

One concrete deficiency item listed in Con Ed's record of nonconformances relates to the frequency of slump tests. Westinghouse wanted to change the PSAR commitment on frequency from every truck to every third truck; however, Con Ed has insisted that every truck be sampled. The Compliance audit of concrete records indicates that all concrete truck deliveries since resumption of concreting have been slump tested.

3. Concrete Test Cylinders

The fourth item of nonconformance is on concrete strength decline. This item, covered in CO Report No. 286/69-6, Paragraph II.B.2.b, was brought to the attention of Westinghouse by Con Ed's Site Construction Engineer, Mr. Corcoran, in a letter dated June 6, 1969. During this

* Con Ed defines "Nonconformance" as follows: "Any condition not in compliance with the PSAR, FSAR, specifications or codes and which requires technical resolution and/or review action. This may lead to a requirement change or replacement."

inspection CO audited all compression strength results on 7 and 28 day test cylinders for 3,000 psi concrete placed since June 1969 and found that the results met design requirements. The monthly averages for 28 day test cylinders were all above 4,000 psi, with the lowest value 3,890 psi.

4. Cadweld Splices

The nonconformance item relating to cadweld splice non stagger, reported in CO Report Nos. 286/69-5 and 69-6, is presently being evaluated by UE&C and Con Ed Engineering. Con Ed informed CO inspectors that the results of this evaluation will be discussed with DRL. The CO inspectors were informed during this inspection that check surveys made by Con Ed to determine the as-built status of all cadweld splices in the containment wall disclosed other variances from drawings and the PSAR than those previously reported by CO. At present, evaluation drawings based on a UE&C field survey are being field checked by Con Ed personnel before submission to Con Ed engineering. The CO inspectors were additionally informed that the reoccurrence of a problem of this nature will be obviated by Con Ed's insistence that UE&C maintain up-to-date, detailed, as-built cadweld location drawings. The inspectors' reply to this was that, primarily, field control in rebar placement by UE&C should be tightened. ||

5. Vapor Containment Liner

The record of nonconformances in the vapor containment liner work being done by CB&I lists two items, one on metallurgy and one on weld gap.

a. Metallurgy

The metallurgical nonconformance item is on two liner plates, of different heat numbers, that have a manganese content slightly in excess of ASTM A 442 Grade 60, requirement. However, all other chemical and physical requirements of this specification have been met. The actual ladle analysis manganese content for each plate is 1.13 and 1.18 respectively, but since code requirement limits the manganese content to 1.10, a "Hold" tag has been placed on these plates pending engineering review by UE&C. ||

b. Weld Gap

The nonconformance item on liner plate weld gap is on a CB&I field cut for fit up of a shop fabricated penetration sleeve panel which

was overcut at the bottom seam with the second liner ring above the knuckle plate. The planned gap tolerance is given as 1/4" but, as a result of the field overcut, 3/4" exists. This nonconformance with plans was found by UE&C in September 29, 1969 and the field Quality Control Inspector rejected it. Con Ed was concerned that if the plan tolerance was exceeded in this case it would set a precedent for the remainder of work. The CO inspector was informed that CB&I has prepared a weld repair procedure, binding on this case only, which was submitted to UE&C engineering for approval. Essentially it calls for use of a backing plate when welding one side, removal of the backing plate by chipping, and welding the other side. The completed weld to be 100 % radiographed and magnetic particle inspection performed. CO will follow up on this matter at a later date.

6. Subsurface Drainage

Another item of nonconformance listed by Con Ed is on subsurface drainage. Whereas Supplement 2 to the PSAR shows crushed stone at elevation 34'*, a portion of the north east segment rock excavation has been concrete filled to about elevation 43'. This is one of the six construction items, on changes to the PSAR, that Con Ed and UE&C representatives discussed with DRL at a meeting held on August 12, 1969 about which DRL saw no evident problem.** The inspectors were informed that Con Ed is carrying this item in the "Nonconformance Record" until an approved drawing showing the drainage starting at elevation 43' and down to 34' with crushed rock backfill, is received in the field.

7. Vendor Items

Item nine on the nonconformance record relates to three component coolant pumps, presently in storage at the site, which were received in June 1969. Before these pumps were shipped from the Westinghouse vendor (Ingersol Rand, Cameron Pump Division, Phillipsburg, N.J.), U. S. Testing Company inspected them in November, 1968, witnessed the performance test and reviewed documents. The U.S. Testing Report No. 10066-20 dated February 6, 1969 states their concern over three problem areas. These areas, discussed below, were not resolved before the pumps were shipped to the site.

Correspondence from Westinghouse to Con Ed's Chief Mechanical Engineer dated September 16, 1969 seems to resolve the first of the problems, i.e., "low level noise suggesting a possible cavitation", by stating:

Answer to question 4.4, figure 4.4-1

Letter D. R. Müller to R. S. Boyd of August 13, 1969

"Other installations and the supplier's many years of experience have given Westinghouse confidence in the satisfactory operation of the pump. The low level noise referred to is normal in this style of pump. In addition the low vibration readings do not indicate any apparent malfunction. Therefore, it is our conclusion that the unit will perform properly in its application."

Action is pending on the other two problems which reflect nonconformance with the Westinghouse specifications on interior painting and final cleaning requirements. Con Ed's quality control on the site considers this an unresolved item. CO will audit this item during a future visit.

D. Tour of Material Storage Area

Inspection of the material storage area disclosed various items of equipment which were not sufficiently protected from the weather. Heat exchangers which had been covered by plastic were uncovered due to deterioration of the covering and exposed to the weather. The inspector was told by Mr. Dadson that recent meetings with UE&C and Westinghouse dealing with this subject had brought forth agreement to cover this equipment utilizing wooden frames and canvas to prevent recurrence.

A stack of stainless steel pipe, various sizes, was observed to be uncovered and segregated. A closer observation showed this pipe to not be for use at the site but had been erroneously sent to Indian Point. This pipe was marked with various colored paint and a tag was in the vicinity giving instructions for the pipe to not be used. Disposition of this pipe could not be determined. There was evidence of corrective action being taken to protect this material.

E. Containment Liner

1. Quality Control Documentation and Weld Leak Tests

The CO inspectors performed a limited audit of the following UE&C quality control documents on the liner plate and the weld leak tests.

- a. As-built drawing showing heat number, welder initials, coupon run-off.
- b. Metallurgical certificates.
- c. Vernier caliper plate measurements.
- d. Welder qualifications, 13 welders.
- e. CB&I qualification of welding procedure.
- f. Run-off coupon test by UE&C.

- g. Seam weld radiography location plan.
- h. Liner plate weld test results for seams inaccessible for radiography.
 - (1) 5 psig vacuum box test
 - (2) 54 psig air test, 15 minutes hold
 - (3) 47 psig freon-air leak test
 - (4) 47 psig air, soap test
 - (5) 47 psig air, two hour hold

The above audit disclosed no deficiencies in the sample records inspected. The CB&I QC test reports were signed by Mr. M. Constable and, the UE&C inspection report on tests, signed by Mr. J. Gasparich, certify satisfactory results for each test zone, some after repair by grinding and rewelding.

The inspectors were informed that additional, 54 psig two hour hold, air testing of some channels will be made by UE&C after clean up and before concrete is placed to check for possible damage inadvertently caused by transporting equipment and working over liner plate channels after the CB&I test.

2. Radiography

The CO inspectors were informed by Con Ed's QC Engineer Mr. E. Dadson, that the radiographic technique used by CB&I produces films that meet the minimum density requirement of ASME code Section III. Radiographs that have fallen below the minimum of 1.3 density have been taken over with the result that density of 3.0 and over was obtained on the retakes. The inspectors were additionally informed that Con Ed's concern over the CB&I films with minimum of 1.3 density has caused extra surveillance by UE&C and, also, Con Ed has requested U. S. Testing Company to audit and inspect all of CB&I's liner plate radiography. Inspector was informed by Con Ed by telephone on October 16, 1969 that UE&C will delay concrete placement on the internal mat, elevation 43 to 46 pending audit by U.S. Testing of all CB&I radiographs.

F. Status of Quality Control Procedures

1. Con Ed

Previous inspection efforts directed toward the quality assurance program and specifically the QC procedures referenced in Appendix E, of the Quality Assurance Supplement to the PSAR, dated February 20, 1969, pointed out these procedures were not yet approved or available for use on site. During this inspection the inspector attempted to review these procedures with the following results:

- a. QAP 1, 2, 3, 5, 6 and 7 were previously provided the inspector in preliminary form.
- b. QAP 4 and 8 have not not been reviewed to date and Mr. Dadson reported to the inspector that they were being prepared but no date of completion was given.
- c. QAP 3 "Procedure for Review of Contractor's Drawings" - Final draft copy being used on site.
- d. QAP 5 "Procedure for Continuous Monitoring of Construction On Site" - Final draft copy being used on site.

Mr. Dadson stressed the point that the procedures did not contain new concepts but were documentation of the system used on Indian Point No. 2 with improvements derived from experience. This subject was not pursued pending completion of the initial QA inspection scheduled for the near future.

2. Westinghouse and UE&C

None of the procedures indexed in Appendix E of the Quality Assurance Supplement to the PSAR were available for review at the site and the status was:

- a. UE&C - being prepared in Philadelphia, completion date unknown.
- b. Westinghouse - Con Ed requested postponement of review by CO until the new organization (Wedco) goes into effect at a later unspecified date. This matter was not pursued further at this time pending completion of the initial QA inspection by CO.

G. Status of U. S. Testing Company Audits

A review of the reports of the consultant (U. S. Testing Company) audits of quality assurance and quality control for the period May - August 1969 appeared to indicate that the onsite quality control phases reviewed were complying with the PSAR.

In one instance, a gross typographical error was found* regarding a concrete mix which showed "stump 9 1/2 inches" and should have been "slump 4 1/2 inches". This error was reported to the licensee by the inspector and no record of corrective action was available. Mr. Dadson, Con Ed QC Engineer, called the U. S. Testing Company office and reported to the inspector that a corrected report would be prepared.

Other reports showing minor deficiencies have been acted upon promptly by the licensee indicating an improvement in the Quality Assurance program as was reported in CO Inspection Report No. 286/69-6.

H. Pressure Vessel Safe Ends Cladding

Con Ed informed the inspectors that they had decided to add cladding to the nozzles and safe ends of the pressure vessel. This is cladding not required by the original purchase specification but is being added as insurance against chloride stress corrosion. This cladding is being accomplished by Combustion Engineering (fabricator) from the nozzle to the field welds in accordance with Westinghouse Welding Procedure #PS 82121 LF. Cladding over the field welds will be done on site using the same procedure.

I. Exit Interview

An exit interview was held on site with Messrs. Corcoran, Dadson and Matra on October 9, 1969. Items discussed were as follows:

1. The lack of follow-up action on U.S. Testing report No. 10066-79 dated June 9, 1969, which had a serious error regarding slump of a concrete pour for the discharge canal, was discussed. The inspectors stated that the fact that this was not corrected indicates an apparent lack of review or follow-up action regarding surveillance reports. Mr. Corcoran stated this was a result of personnel changes on his staff and a closer check is now being made of these reports. Inspection of consultant reports confirmed follow-up action was being taken as required. (See paragraph II.G.)
2. No approved quality control procedures were available on site as specified in the QA Supplement to the PSAR dated February 1969.

Mr. Corcoran stated they were aware of this and the procedures were being processed and would be available in the near future. It was observed by the inspector that a working system was in effect but the approved written procedures were not available. (See paragraph II.F.)

3. Items stored in the bulk storage area were not adequately protected from the elements. This item was reported to the inspector by Con Ed and verified by him. A proposed plan for better protection was discussed and is in process of being implemented. The plan consists of canvas covered frames in addition to the plastic coverings. (See paragraph II.D.)

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