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

REPORT OF INSPECTION

CO Report No. 247/70-4

Licensee:	Consolidated Edison Company Indian Point No. 2 (IP-2) License No. CPPR-21 Category B
Dates of Inspection:	April 10, 21, and 22, 1970
Date of Previous Inspection:	March 26 and 27, 1970

Inspected By: G. L. Madsen 5/15/70
G. L. Madsen, Reactor Inspector — Date

Reviewed By: N. C. Moseley 5/18/70
N. C. Moseley, Senior Reactor Inspector — Date

Proprietary Information: None

SCOPE

Announced inspections were made at the Indian Point No. 2 (IP-2) construction site on April 10, 21, and 22, 1970. Major items discussed included preoperational testing, organization, training, core internals fitup, electrical installation, and the Wedco takeover of the site quality control functions.

SUMMARY

Ninety percent of the flushing and hydrostatic test procedures have been approved. To date, no additional preoperational procedures have been finalized. Internal cleanup of the reactor coolant system and associated support systems is essentially complete. Hydrostatic testing of the reactor coolant system is presently scheduled for May 25, 1970. (Section II.A)

Placement of electrical cables within containment is about 40% complete. Con Ed has a continuing program for auditing the safeguards cable installation. Wedco's lack of involvement in this area is considered to be a weakness in their quality assurance program. Wedco indicates that corrective action will be forthcoming. (Section II.B)

Wedco has assumed the vendor surveillance and on site quality control functions previously performed by UE&C. (Section II.C)

Closure of the containment building construction access openings is in progress. Placement of concrete is scheduled for June 1970. (Section II.D)

The potential undesirable effects associated with pumping concrete through aluminum piping was discussed. The licensee stated that aluminum piping or chutes were not employed for transporting concrete at the IP-2 project. (Section II.D)

Wall thickness measurements were taken on one of eight safety injection check valves in an attempt to determine their acceptability for use. The measurements were less than the previously calculated minimum value. Con Ed has requested a justification from Westinghouse for employment of these valves. (Section II.E)

The reactor vessel and internals cleaning has been completed. The lower core internals have been installed. The vibrational instrumentation for the core internals are in place. (Section II.F)

The proposed staffing for IP-1 and IP-2 presents concerns with respect to reactor engineering coverage, licensed operator control room coverage, and technical support to the shift operating crews. (Section II.G)

The formalized training program is progressing. Upon completion of the proposed program, the licensee will have fulfilled the requirements of the FSAR. (Section II.G)

Insulation has been applied to some of the main steam and feedwater piping inside of containment. The subject of inspectability of weld joints during hydrostatic testing is being evaluated. The removal of some installed insulation is anticipated. (Section II.H)

The four main steam flow nozzles were rejected during receipt inspection. (Section II.I)

Five previously identified items have been resolved by the submission of supplement 8 to the FSAR and replacement of pipe spool S1-136. (Section II.J)

A listing of previously identified items requiring resolution is included in this report. (SectionII.K)

I. Persons Contacted

A. Con Ed

Mr. F. McElwee, Resident Construction Manager
Mr. D. McCormack, General Superintendent, Production
Mr. A. Corcoran, Construction Project Superintendent
Mr. P. Leo, Assistant Project Superintendent

Mr. E. Dadson, Quality Assurance Supervisor
Mr. B. Cosgrove, Mechanical Engineer
Mr. A. Karkosa, Assistant General Production Superintendent
Mr. W. Monti, Production Engineer
Mr. R. Schuster, Quality Control Inspector
Mr. T. Houlihan, Electrical Inspector

B. Westinghouse

Mr. E. Manning, Quality Control Technician
Mr. M. Ferguson, Quality Control Technician

C. Wedco

Mr. M. Snow, Manager, Reliability
Mr. T. Lawson, Manager, Site Quality Control
Mr. R. Matheny, Manager, Startup Operations

II. Results of Inspection

A. Preoperational Testing

1. Status of Test Procedure Perparations

About 90% of the Phase I, flushing and hydrostatic test procedures, have been approved for use by the Joint Test Group. Mr. Matheny indicated that 20 Phase II procedures have been forwarded to Con Ed for review. To date, no Phase II or III procedures have been finalized or approved for use.

The inspector voiced concern relative to the absence of a procedure preparation completion schedule. Mr. Matheny presented a series of schedules which indicated that a planning program has been in effect for some time. The inspector inquired as to why this information had not been previously presented. Mr. Matheny indicated the the construction schedules have been constantly changing and hence, a realistic preoperational testing program was difficult to schedule. To date, the scheduling has been looked at as an internal plan which would be changed on a short term interval. Mr. Matheny presented schedules which reflect the latest proposed core loading date of September 7, 1970. These schedules included completion dates for test procedures, scheduled testing dates, and manpower requirements. A minimum of one month's time was indicated between completion of an individual procedure and the scheduled time for the test performance. Mr. Matheny also presented a schedule which proposed testing on a 24 hour per day basis. He indicated that the present sets of schedules are to be presented to his man-

agement in the next week. It is his hope that a reasonably firm testing completion target schedule will result. Mr. Matheny stated that in his opinion the release of the earlier internal schedules would have caused confusion and would have been of little value to other groups because of the constant revisions. The inspector indicated that the series of schedules presented was evidence of previous planning by the testing group and he would look forward to reviewing the updated schedule during the next site inspection.

2. System Flushing

The system flushing procedures have been approved for use and have been reviewed to varying depths by the inspector. The procedures were found to contain sufficient detail and coverage for an acceptable flushing program. Internal cleanup of the reactor coolant system and the associated support system is essentially complete. Flushing of the main steam, boiler feedwater, and turbine building piping is about 90% complete.

3. System Hydrostatic Testing

About 80% of the hydrostatic testing procedures have been approved for use and reviewed by the inspector. The finalized procedure for hydrostatic testing of the reactor coolant system has not been made available to the inspector for review. Hydrostatic testing of the main steam and feedwater systems is scheduled to begin on May 4, 1970. Hydrostatic testing of the reactor coolant system is presently scheduled to begin on May 25, 1970, which is one month slippage from that previously reported.*

The previously identified question** relating to safety injection piping designed to 600 psig, as indicated on design prints, whereas the pipe sections are scheduled for a 2250 psig hydrostatic test, has been resolved by confirmation that the pipe spool drawing and pipe in the field was actually 1500 psig pipe.

B. Electrical

Placement of electrical cables within the containment building is 40% complete. Con Ed has physically traced about 50% of the safeguards power and control cables to determine installation conformance to the cable pulling

*CO Report No. 247/70-3, paragraph II.A.4
**CO Report No. 247/70-3, paragraph II.A.4.a

schedule. Con Ed indicated that no deviations were detected. The previously reported plan for Wedco's performance* of a sample audit of cable placement has not been accomplished. Mr. Snow stated that present plans include performance of this sample audit. The inspector indicated that the absence of Wedco's involvement in this area is considered to be a weakness in their quality assurance program. Mr. Snow indicated that corrective action would be forthcoming.

C. Wedco

Effective April 20, 1970, Wedco assumed the vendor surveillance and on-site quality assurance program which had been performed by UE&C for the Indian Point projects. The IP-2 component procurement is essentially complete, hence this organizational change will be basically restricted to on-site activities. A review of organization charts indicated to the inspector that little change of on-site personnel was involved in that most of the UE&C employees transferred to the Wedco organization. Presently, it appears that four individuals will be departing from the site and six individuals have been hired into the Wedco organization. The staffing of the Wedco Reliability Department organization is in conformance with the FSAR.**

D. Containment

Closure of the three construction access openings is in progress. Installation of the equipment hatch, reinforcement bars for one opening, and concrete placement for the three openings remains. Placement of concrete for these openings and the containment dome hatch is scheduled for mid-June 1970.

The inspector asked representatives of the licensee if they were aware of potential undesirable characteristics associated with pumping concrete through aluminum piping. Mr. Corcoran stated that they were aware of the potential for significant reductions in strengths; however, this is not a problem of IP-2 in that aluminum piping or chutes were not employed for transporting concrete at this site.

E. Valves

A program for determining the acceptability of eight installed safety injection check valves was previously reported.*** Wall thickness measurements of one valve revealed measurements of 1.452, 1.453, and 1.517 inches which is less than the value (1.65 inches) previously calculated by Westinghouse as being acceptable. Con Ed indicated that Westinghouse had been requested to provide justification for employment of these valves.

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*CO Report No. 247/70-1, paragraph II.E.3
**Supplement 8, Section III, pages III-7 and III-8
***CO Report No. 247/70-3, paragraph II.E

F. Reactor Vessel

Hand cleaning of the reactor vessel and core internals has been completed. The lower core internals had been installed and the upper internals were scheduled to be installed April 23, 1970.

The installation of vibrational detection instrumentation for the reactor internals was reviewed. Mr. Manning's presentation and the inspector's observations indicated that the FSAR instrument requirements* have been satisfied; in fact, four additional accelerometers have been installed on the upper core barrel.

G. Operating,Organization and Training (3800/1, Attachment N)

As previously submitted,** a joint review of Con Ed's organizational submittals for IP-1 and IP-2*** operating licenses was conducted with the IP General Superintendent. The areas of concern which were discussed included the following:

1. The functions served by the Reactor Engineer will become severely diluted if this position has shared responsibilities at IP-1 and IP-2.

2. The Operations Superintendent should be a licensed senior reactor operator at both IP-1 and IP-2 as this individual will be the only technically trained person in the operations group.

3. The acceptability of the control room coverage, as specified in the IP-2 FSAR**** was questioned.

4. An apparent need for technically trained senior operator coverage on a shift-wise basis during startup, testing, power ascension, and plant debugging exists.

The General Superintendent was informed that the above items would be forwarded to Headquarters for consideration, but that the final responsibility for the acceptance of the organizational structure rests with DRL. Mr. McCormack indicated that the proposed staffing was adequate in the eyes of Con Ed; however, the above areas of concern would be given consideration.

The status of the operation training program was discussed with Mr. Karkosa. The training program was initiated in December of 1967 for 14 supervisory personnel assigned responsibilities for the startup of IP-2. These individuals spent about four months familiarizing themselves with the IP-2

*Table Q, 13.1-1
**Memorandum to J. P. O'Reilly from R. T. Carlson and N. C. Moseley, dtd 4/14/70
***Volume V, Question 12.1
****Volume V, Question 12.1

Safety Analysis Report, and then attended a six-week training course sponsored by Westinghouse. Thereafter, five control room operators were added to the startup group and a formal on site training program was started for all members of the startup group. The training program includes classroom coverage of reactor theory, the primary system and the secondary system. This classroom activity is supplemented by numerous field trips and involvement in preoperational testing procedure preparation and performance. To date, all of the assigned startup personnel have received some 800 hours of formal training at the site. In addition, the supervisory personnel have attended the 240 hour Westinghouse course.

The group is presently scheduled to receive an additional 1300 hours of formal training prior to taking the senior reactor operator and reactor operator license examinations. Mr. Karkosa stated that the operations startup group is scheduled to work a 50 hour week schedule during the coming months for the completion of the proposed training and to permit involvement in the plant testing program.

Upon completion of the proposed training program, the licensee will have fulfilled the training requirements of the FSAR.*

H. Insulation

As previously reported, some insulation has been applied to main steam and feedwater piping within containment, whereas, the hydrostatic testing and related inspections have not been completed.** Con Ed's review revealed that about 90% of the horizontal sections of main steam lines within containment has been insulated; however, the fittings and circumferential welds are exposed. Con Ed determined that the fabrication history for this piping was traceable and that the individual sections had been hydrostatically tested in the vendor shop. The review also revealed that 90% of the large diameter feedwater and main steam piping within the turbine building has been insulated. Con Ed has verified traceability and shop hydrostatic testing of the main steam pipe and have scheduled a UST visit to Dravo for a similar verification relative to the feedwater piping. Mr. Dadson indicated that the subject of inspectability of weld joints versus presence of installed insulation is to receive additional consideration, and removal of some presently installed insulation is anticipated.

J. Resolution of Previously Identified Items (CO Report Reference in Parenthesis)

1. In depth Quality Control Items (247/70-1, Appendix A)

a. The FSAR*** was revised to permit usage of high pressure safety

*Section 12.2 and Volume V, Q-12.1
**CO Report No. 247/70-3, paragraph II.H
***Supplement 8, page 6.2-22

injection pump castings conforming to ASTM A296, CA-15 and residual heat removal pump castings conforming to ASTM A296, CF8a with a chromium content range of 21.0 to 22.5 percent (A.8 and 9)

b. The FSAR* eliminated the PT requirement for the recirculation pumps. (A.10)

c. The FSAR* eliminated the UT requirement for forged valves under 2-1/2 inches (A.11)

2. Pipe spool piece SI-136 has been replaced. Receipt inspections and available mill certificates indicated to the inspector that this pipe section is acceptable (247/70-2, paragraph II.F)

K. Previously Identified Items Requiring Resolution (CO Report Reference in Parenthesis)

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

2. Completeness of safety injection system weld records. (247/69-11, Section II.B.2)

3. SIS valves of CF8 material versus CF8M. (247/69-11, Section II.B.3)

4. Reactor pressure boundary criteria - Table A. (247/70-2, Section II.C.2)

5. Closure of containment - cadweld staggering. (247/69-11, Section II.C.2)

6. Fuel storage building - completion of peroperational testing and discrepancies with FSAR. (247/69-9, Section II.G)

7. Pipe supports - installation of stainless shims. (247/69-9, Section II.J)

8. Code stamps - "N" on Section III, Class C vessels. (247/69-7, Section II.N)

9. Steam generators - hydrostatic test and code stamping. (247/70-2, Section II.I)

10. Preoperational testing - lateness of procedure preparations. (247/70-2, Section II.B)

*Supplement 8, Table 6.2-13

11. Insulation on piping - hydrostatic test not performed. (247/70-3, Section II.H)

12. Replacement of main steam flow nozzles. (247/70-4, SectionII.I)

III. Management Interview

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

A. Preoperational Testing

The status of the preoperational testing program was reviewed. The inspector related a continuing concern relative to lateness of procedure preparation and the proposed core loading schedule, but indicated some comfort in that previous scheduling and planning by the Wedco test group was evident. Mr. Corcoran stated that he feels the startup activities are indeed ahead of construction completion schedule.

B. Electrical

The electrical cable placement audit programs were summarized. The inspector stated that the absence of Wedco's involvement and the minimal coverage of redundant instrumentation cabling appears to be the weakness in the on-site audit of the electrical cable placement. Mr. Corcoran agreed with this observation.

C. Wedco

The Wedco staffing of the reliability group was discussed. Mr. McElwee indicated that Wedco's takeover of the site quality control functions should provide beneficial results. The inspector indicated that based on the available personnel, no adverse effects are contemplated; however, this area will be evaluated during future inspections.

D. Valves

The results of wall thickness measurements taken on one safety injection check valve was reviewed. Mr. Corcoran indicated that Con Ed also questions the acceptability of these valves and has asked Westinghouse to provide additional justification.

E. Insulation

The presence of insulation on main steam and feedwater pipe was discussed. Mr. Dadson indicated that Con Ed shares the inspector's concern relative to inspection of weld joints during hydrostatic testing. The inspector was assured that a satisfactory resolution to the question will be forthcoming.

F. Items Resolved

The inspector indicated that the items included in Section J of this report were considered to be resolved.