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

# Report of Inspection

CO Report No. 247/69-6

Licensee:

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

Dates of Inspection:

April 17, 1969 May 15, 22 and 23, 1969

Dates of Previous Inspection: March 4 and 5, 1969

Madson Inspected by: G. L. Madsen, Reactor Inspector Reviewed by : Č. Moseley, Senior Reactor Inspector N. Proprietary Information: None

## SCOPE

Announced inspections were made to the Consolidated Edison Company, Indian Point No. 2 construction site on April 17, May 22 and 23, 1969. A meeting was held on May 15, 1969, to discuss the results of an investigation relating to piping allegations at IP-2.

### SUMMARY

The containment liner has been deemed dimensionally acceptable. Concrete has been placed to the 183 foot elevation.

Welding of 20 reactor coolant system welds is in progress. Significant repairs are required on 18 of these welds. The welding procedure has been revised to permit using 308 electrode on 316 material. Con Ed does not plan to submit an amendment to the FSAR on this matter. Wall thickness measurement of reactor coolant pipe revealed no deficiencies.



The safety injection pipe problem associated with surface fissures on piece SI-108 is considered resolved. Two additional sections (SI-112 and SI-136) were rejected during final fitup inspection.

Welding records for systems, other than the reactor coolant system, are deficient in that positive verification of the completeness of a system is difficult.

The Dravo conventional pipe problem is considered resolved; except that some deficiencies have been identified but not repaired.

The steam generator girth weld procedure was revised to permit field stress relieving. Final hydrostatic testing and magnetic particle testing remains.

The electrical cable placement is progressing at a slow pace. The cable criteria is in the process of being re-evaluated.

The Fuel Handling Building is nearing completion. The fuel liner bulge problem was evaluated by UE&C, Westinghouse, and Con Ed and the condition is considered to be acceptable.

The resolution of questions relating to investigation findings associated with general piping allegations is in progress.

Preoperational test procedures preparation is in progress. Con Ed has reviewed several proposed procedures; however, only one procedure has reached the final preparation status.

#### DETAILS

#### I. Persons Contacted:

## A. Site Inspection

1. Con Ed

Mr. A. Corcoran, Site Construction Engineer
Mr. P. Leo, Assistant Site Construction Engineer
Mr. F. Matra, Piping Engineer
Mr. T. Dragosits, Welding Inspector
Mr. J. Coulch, Assistant General Superintendent, Engineering, Quality Assurance
Mr. E. Dadson, Site Quality Assurance Supervisor
Mr. A. Karkosa, Superintendent Nuclear, IP-1

## 2. Westinghouse

Mr. G. Waldrop, Quality Assurance EngineerMr. T. Lawson, APED, Welding EngineerMr. W. Loyal, WHTD, Field Service EngineerMr. L. Cunningham, APED, Field Service Engineer

# 3. United Engineers

Mr. J. Fant, Quality Control Supervisor Mr. R. Phelps, Mechanical Quality Control

## 4. U. S. Testing

Mr. C. McDonnell, Quality Control Inspector

## B. Attendance at May 15, 1969 Meeting

- 1. Con Ed
  - a. Messrs. G. Wasilenko and B. Hawkins, Mechanical Engineering Department.
  - b. Messrs. Corcoran, Leo, Matra, Dragosits and Dadson of Site Construction Engineering.
- 2. Division of Compliance, Region I
  - a. Messrs. Moseley, Tillou and Madsen.

## II. Results of Visits

- A. Status of Construction
  - 1. Containment Building

Concrete has been placed to the 183 foot elevation. The major vessels are in position. Welding of the steam generator girth seams is complete.

## 2. Turbine Building

Installation of condenser tubing is basically complete. Flushing of the turbine oil system was in progress.

## 3. Fuel Handling and Storage Building

The building is basically complete. Final cleanup and flushing of the pit and coolant system is in progress. Acceptance of the building by Con Ed is expected by June 1, 1969. Receipt of fuel elements is expected to start about June 15, 1969.

## 4. Primary Auxiliary Building

Pipe erection and electrical cable pulling continues.

## B. Cadweld Splicing

Test result records indicate that the average weekly strengths of Cadwelds, tested since the January 20, 1969 inspection, have ranged from 92,000 to 106,500 psi. The minimum splice strength encountered was 78,450 psi. The quality of the splicing operation continues to be acceptable.

#### C. Containment

The containment liner dimensional measurements have been completed. Analysis of the data by UE&C, Westinghouse, and Con Ed indicates that the dimensions are within the FSAR requirements.\*

Placement of concrete for the containment walls resumed on April 15, 1969. Records indicate that 28-day compressive strengths for concrete placed at elevations 158 to 163 feet range from 3604 to 3939 psi which exceeds the 3000 psi design strength. Seven-day test cylinders for concrete for elevations 163 to 178 feet exceed 2100 psi.

#### D. Reactor Coolant System

#### 1. Erection Status

As previously reported\*\*,20 of the 32 reactor coolant system welds were in progress and two welds had been accepted by Westinghouse and UE&C. A review of records and field observations indicated significant repair

\*Paragraph 5.1.2.1. \*\*CO Report No. 247/69-3, Paragraph II.C. requirements on 18 of the first 20 welds. (The maximum grind-out dimensions noted were about 14 x 2.5 x 2 inches). Nine of the repaired joints are ready for final radiographing. An audit of the repair activities and the finished condition of the repaired joints will be conducted at a later date.

#### 2. Welding Procedure

As previously reported\*, type 316 stainless steel was being welded using ER-308 and ER-308-15 and 16 electrodes, which was contrary to the approved welding procedure No. 8. Amendment No. 1 to welding procedure No. 8 was reviewed by the inspector, which provides approval for the use of 308 electrodes for welding type 316 stainless material. In addition, the inspector was provided with a letter\*\*, which spelled out the Westinghouse position relative to the use of 308 electrode with 316 stainless. Items presented included:

- a. Section IX of the ASME Code allows use of any electrode of the same "P" number and "A" number for the same process without regualification.
- b. The change from 316 to 308 electrode was made with full concurrence of the cognizant  $\underline{W}$  chemistry and metallurgical groups.
- c. Although the FSAR for IP-2 lists the reactor coolant piping as SS-316, this in no manner excludes the use of other material during welding or fabrication.
  - d. The selection of type 316 pipe, in lieu of other austenitic steels is based on higher allowable stress values at the elevated temperatures. Although it is recognized that type 316 has superior corrosion resistance in certain environments, it was not the controlling reason for selecting type 316 in this application; therefore, the use of 308 electrode, as permitted by code, is considered acceptable.

\*CO Report No. 247/69-3, Paragraph II.C.3. \*\*Letter to J. J. Grob, Con Ed from O. M. Hauge, Manager, Project Engineering, IP-2, Westinghouse, dated April 11, 1969. The inspector indicated a possible conflict with the requirements of the FSAR. As a result of discussions on this matter, Con Ed indicated that they do not intend to present an amendment to the FSAR on this subject.

Based on the above, the inspector considers the use of 308 electrode with 316 stainless materials to be acceptable.

## 3. Wall Thickness

A wavey condition on the interior surface of the reactor coolant pipe was of sufficient magnitude to prompt additional checking. Con Ed initiated action which resulted in ultrasonic measurement of the wall thickness of the subject pipe spool piece No. 1809. The measurements were conducted by the Industrial Piping Laboratory of Grinnel Company, Inc., for UE&C. The inspector reviewed the calibration and measurement data which indicate that the required wall thickness did exist. No deficiencies were noted.

#### 4. Pipe End Preparations

As previously reported\*, the outside surface of the reactor coolant pipe spool ends had been machined. The resulting condition was questioned relative to potential stress concentration and wall thickness. Mr. Corcoran stated that Westinghouse and Con Ed had reviewed the condition and concluded that:

- a. The machined angle was, in compliance with the applicable code.\*\*
- b. A round surface exists at the root of the machined area and eliminates abrupt contours which would cause stress concentration.
- c. The existing conditions are considered to be acceptable.

٢

\*CO Report No. 247/69-3, Paragraph II.C. \*\*USAS B31.1, 1967, Paragraph 127.4.2C.

- 6 -

### E. Safety Injection Pipe.

#### 1. SI-108

One section (SI-108) of stainless steel injection pipe was previously observed to have surface fissures. Grinding repairs and dye penetrant testing indicated that the condition continued to excessive depths and hence the pipe section was declared defective. Visual inspection of similar piping revealed no additional deficiencies. Eight randomly selected sections of safety injection piping were dye penetrant checked and no unsatisfactory conditions were revealed. A member of the Westinghouse Field Quality Assurance and Reliability Organization visited the Dravo plant on April 11, 1969 and determined that:

- a. SI-108 was constructed of pipe from Lot No. 105.
- b. Three additional spool sections (SI-106, SI-110, and SI-140) were constructed from Lot No. 105.
- c. Sufficient documentation was available at the Dravo plant.

The three additional pipe sections from pipe lot No. 105, have been dye penetrant checked and no objectional conditions were identified.

As a result of the above findings, Westinghouse and Con Ed consider the validation process complete with respect to the SI-108 problem.

## 2. SI-112 and SI-136

Two additional sections (SI-112 and SI-136) were rejected during the final fitup inspection. Discussion and observation revealed the following information:

- a. The sections were fabricated by Cameron Iron Works.
- b. The seamless pipe was fabricated to ASTM A-376, TP-316, S-2, S-4, and S-6.

- c. The deficiency was associated with an apparent incomplete machining of the internal surface.
- d. The pipe sections have been segregated and are scheduled to be returned to the fabricator for corrective action.

The inspector indicated that this problem would receive additional followup by Compliance.

## 3. Site Erection

A review of records for the field erection, between high pressure safety injection pumps Nos. 22 and 23 and containment, revealed the following information:

- a. Isometric drawings are employed to present the status of completion.
  - b. Specific information for individual field welds is available and complete.
  - c. The isometric diagram indicated that two of the 10 field welds had been completed. The inspector reviewed the specific field weld information for these two welds and found that FW-54AB had been rejected by Westinghouse and subsequently was cut out, rewelded, but had not been radiographed. The inspector questioned the accuracy of the isometric diagram record keeping.
- As a result of the above findings, the inspector asked Con Ed if they considered the present record keeping system adequate and capable of clear definition of completeness of individual systems. Mr. Corcoran indicated that UE&C has indicated that steps will be taken to clarify this point. In addition, Con Ed plans to perform a systems audit of all field welds, the results of which will also be available for review.

## F. Pipe Contractor

J. Courter became the pipe welding contractor to UE&C effective February 19, 1969. The inspector previously\* asked if this change necessitated requalification of welders. The inspector reviewed correspondence from J. Courter Company to UE&C requesting the transfer of welder qualification certificates. On further questioning the inspector was informed that UE&C would continue to act as the qualification agent for J. Courter. The inspector considers this approach to be acceptable to the code and the item has been resolved.

## G. Conventional System Piping

As previously reported\*\*, quality deficiencies were identified in the conventional system piping procured from Dravo. UE&C issued a report on this subject on February 7, 1969, which included the following conclusions:

- Spot check radiography in the field of shop welds originally requiring 10% or 20% random radiography was performed. All these welds were acceptable. In addition shop audits by UE&C verified that Dravo actually radiographs the 10% and 20% systems 100%. These two specific checks along with previous audits indicates no problem in this area.
- 2. All the welding problems involved zero radiographic systems. A comprehensive inspection program was instituted and all zero radiographed welds were thoroughly examined. The results of this program were previously reported.\*\*\* Repairs of all deficiencies are nearing completion.

Westinghouse and Con Ed concur that proper corrective actions have been initiated and adequate steps are being taken to assure adequate quality control.

*C0	Report	No.	247/69-3,	Paragraph	II.J.
**C0	Report	No.	247/69-2,	Paragraph	II.H.,
CO	Report	No.	247/69-3,	Paragraph	II., and
со	Report	No.	247/69-6,	Paragraph	Е.
**C0	Report	No.	247/69-2,	Paragraph	II.H.

- 9 -

Based on the above information and the results of a Compliance Dravo visit\*, the inspector considers this problem resolved. The progress and completion of repair activities will be followed during a future visit.

## H. Steam Generators

### 1. Welding Procedure

As previously reported\*\* the Westinghouse welding procedure for the steam generator girth welds did not include temperature and holding times for local stress relieving. The inspector reviewed the revised welding procedure No. 841150 which replaces the original procedure No. 600924. The revised procedure contained a 1125 ± 25° F stress relieving temperature which coincides with the requirements for shop treatment. The revision also authorized a preheat temperature of 225° F, minimum, instead of the original 300° F. The revised procedure was issued by Westinghouse Heat Transfer Division, Tampa, Florida on April 10, 1969, and was approved by Project Engineer, Project Manager and Manager of Metallurgical Engineering.

During the stress relieving of the first steam generator, it became apparent that the approved temperature gradient was not attainable. WHTD evaluated the situation and on April 15, 1969, issued Amendment No. 1 of procedure No. 841150. The amendment specified the following stress relieving conditions.

<u>Temperature <sup>O</sup> F</u>					
Maximum	Hours Holding Time				
· · · · ·					
1150	3-1/2				
1150	7				
1100	10-1/2				
	<u>ure <sup>0</sup> F</u> <u>Maximum</u> 1150 1150 1100				

This amendment was authorized by the same groups as approved procedure No. 841150.

The inspector considers the above actions to be in compliance with codes and the existing procedures are deemed acceptable.

\*CO Report No. 247/69-1. \*\*CO Report Nos. 247/69-2, Paragraph II.I.l., and 247/69-3, Para. II.F.

## 2. Girth Welds

The four generator girth welds have been completed. Records indicated approval of final fitup, cleanliness, preheat temperatures, welding material used, welders performing the work, stress relieving conditions, and performance of magnetic particle checking. The records indicate that the girth welding was performed according to procedure. The inspector inquired as to repairs required and was informed that only two minor repairs were needed. Con Ed indicated that these two conditions were actually code acceptable. The radiographic film was not available for review; but, is available in Philadelphia.

The inspector inquired as to the status of code inspector acceptance and was informed the code inspector had indicated satisfactory findings to date but must await final hydrostatic testing and magnetic particle testing before a code stamp can be affixed.

## I. <u>Electrical</u>

Cable placement between the control room, containment, and auxiliary building is progressing at a slow pace. Mr. Corcoran indicated that Westinghouse and Con Ed Engineering have not completed the re-evaluation of the cable routing criteria; hence, the holdup in construction progress.

## J. Pipe Allegation

Special visits were made to the IP-2 site\* and the Youngstown Welding and Engineering Company\*\* in connection with general pipe allegations. The results of the site visit as discussed with Mr. Cahill, Assistant Vice President were previously reported.\*\*\* A meeting was conducted at the site on May 15, 1969, to discuss the findings of the two special visits and to hear Con Ed's plans relative to actions for resolution of existing problems. Mr. Corcoran presented a status report on this subject dated May 8, 1969.

\*Memo to J. P. O'Reilly from G. W. Reinmuth, dated May 7, 1969. \*\*CO Report No. 247/69-5.

\*\*\*Memo to J. P. O'Reilly from N. C. Moseley, dated April 28, 1969.

A summary of the allegations, question, answers, and resolution status follows:

# 1. General Allegations

st a.e

- a. Certain 6", 8" and 10" stainless steel pipe used in some nuclear plants does not meet specifications in one or more of the following ways:
  - Filler metal was used in pipe specified to be fabricated to ASTM A-312.
    - Unauthorized substitutions are made; for instance welded pipe is supplied when seamless pipe is specified.
    - The specified minimum wall thickness is not provided, as evidenced by underweight lots.
    - Piping is supplied by firms neither qualified to supply it nor distributors of any known manufacturer.
    - 5) Material certifications are inadequate or are affadavits made out by a distributor to cover "stock" material.
- b. Stainless steel fittings are supplied by firms using welders who have not been qualified. These firms also do not perform the nondestructive tests specified by the appropriate codes.
- 2. Site Visit April 22 and 23, 1969

Previous reports\* of the site visit raised questions. These questions and the partial answers presented by Con Ed follows:

a. The process employed in fabrication of pipe welded to ASTM A-312 type 304 material without employing filler metal was questioned.

\*CO Report No. 247/69-5.

Initial contacts, by Con Ed indicated that Youngstown Welding Company has a technique which permits welding of stainless pipe to schedule 40 and 8" diameters without the addition of filler metal. Arrangements were made for a vendor visit to this firm on April 29, 1969, to witness the process.

b. No evidence of hydrostatic testing of pipe and fittings was available at the site.

Manufacturing hydrostatic test records are provided to the pipe fabricator as part of the mill certificate. The fabricator retains these at his shop until completion of the contract, at which time he is to forward the certificates to the buyer. In the interim, the records are available for inspection. In addition, system hydrostatic tests to 1-1/2 times design are required after erection by ASA B31.1.0, Pressure Piping Code.

c. Only general certifications of materials are available at the site, with no way of assuring that purchase orders and specifications have been met.

The general certificate of compliance is an affidavit of the suppliers that will be validated by individual mill certificates of a later date. During vendor visits, these documents are checked to determine compliance with specifications. Periodic audits have been performed by Westinghouse, UE&C, and UST.

d. The UE&C audits of the supplier are not 100%; therefore, site personnel cannot be assured that materials and components are acceptable.

Surveillance of pipe manufacturing facilities is not normally made. The mill certificate is used to determine acceptability of produced materials. Site personnel will investigate materials which, from visual inspections, leave doubts as to conformance with specifications.

- e. How can the site trace all piping from the mill to 100% erection?
  - Each spool piece is assigned an alpha-numerical designator. This designator enables each component of pipe spool to be traced back to the Dravo fabrication sheets, which include reference to the applicable materials mill certificates.
- f. Fittings have been supplied and are being used which are not of a welded construction, whereas the Westinghouse specification requires seamless A-403 (6", schedule 80).

Con Ed stated that the Westinghouse specification G569866, Revision 2, dated April 29, 1966, requires seamless fittings as specified in ASTM-A403 only in schedules 10 and 160. A subsequent review of this topic disclosed that the Compliance inspectors were erroneously provided with the IP-3 Westinghouse specification G569866, Revision 4, dated March 1, 1968, during the April visit. Con Ed's statement on this subject is in agreement with Revision 2; hence, this item is considered resolved.

g. Was Flowline fitting 2718, 8" schedule 40, 0.322 wall thickness identified as A-312, WP304W welded with or without the addition of filler material?

Con Ed stated that Flowline will be visited by Con Ed and their process audited to prove that fittings marked A-312 are welded without the addition of filler metal. ASTM A-403 states "a certificate that the finished fittings conforms to the requirements of these specifications and that the materials from which they are made conforms to the chemical and mechanical requirements specified in Table I, shall be the basis for acceptance." Such a certificate is furnished to the fabricator by Flowline. h. Westinghouse specifications prohibit acid pickling of fabricated piping while the UE&C purchase specifications only require that "pickling solutions used to remove scale, etc., shall not contain HCl or other chloride bearing materials.

In answer, the Westinghouse specification prohibits cleaning by acid pickling. Section III.C.3 of UE&C specification 9321-01-248-18 provides methods of cleaning pipe bends, but does not include acid pickling as an allowable process. Addendum No. 1 revises the UE&C Section III.C.3., to read "Bends in stainless steel pipe may be cleaned by acid pickling." Pickling must be done after solution anneal heat treatment. Addendum No. 3 to the UE&C specification further clarifies by stating that the solution shall not contain hydrochloric acid or chloride bearing compounds.

i. The pipe fabricators cleaning process removes identification markings and there was some evidence of cleaning being performed with the end cap on.

The pipe fabricator is required only to identify his spools by alpha-numerical spool numbers. He has never been directed to retain mill markings of his raw materials as he can identify each piece from shop fabrication sheets as previously discussed in item e., above. Cleaning is normally done in its entirety, inside and outside, followed by visual inspection and capping the ends. The pipe examined by the AEC inspectors was an exception which would have been discovered dirty by normal erection inspection. Recleaning on the site will be accomplished.

j. Check values in the charging system were installed with flow arrows in the wrong direction.

The values in guestion are stop values, rather than check values, in the charging system. Westinghouse drawing 684J627, Note H, specifies the values will be installed with pump flow over, vice under, the disc thus showing the arrows pointing opposite to the normal flow. In their service as isolation valves, they prevent the return of high pressure water from the common discharge header to the pump discharge valves. The inspector considers this item to be resolved.

k. Has Con Ed reviewed radiographs of piping longitudinal welds?

Arrangements had been made on March 6, 1969, to have the Con Ed surveillance agency (UST), visit two suppliers in order to review radiographs of pipe and fittings. Preliminary work to this end is in progress. Radiographs will be evaluated at Allegheny Ludlum on April 29, 1969. In addition, the overall investigation of Dravo will include a review of this subject.

Subsequent to the April 22 and 23, 1969 site visit, it was revealed that Westinghouse specification G569866, Revision 4, dated March 1, 1968, was made available for the review; whereas, Revision 2, dated April 29, 1966, actually applied to IP-2. A review of Revision 2 versus Revision 4 revealed numerous differences; therefore, the previously reported specification review\* is misleading.

The applicable Westinghouse specification No. G569866, Revision 2, contains the following significant information:

Stainless steel pipe diameters 1/2" to 12" in schedules 10 - 80 shall conform to ASA B36.19.

5" to 12" pipe schedules 10, 40 and 80 shall be seamless or welded A-312, type 304 for design conditions up to including 1300 psig and  $300^{\circ}$  F.

1/2" to 10" pipe schedule 80 shall be seamless or welded A-312, type 316 for design conditions 1400 psig - 650° F, 1500 psig - 350° F, and 1575 psig - 200° F.

2-1/2" to 12" pipe schedule 160 shall be seamless A-312, type 304 for design conditions 2500 psig - 400° F, 2100 psig - 650° F, and 3200 psig -  $200^{\circ}$  F.

\*CO Report No. 247/69-5, Paragraph B.

2" to 12" fittings, schedule 10 shall be seamless A-403, WP-304.

2-1/2" to 10" fittings schedule 40 and 80 shall be seamless or welded A-403, WP-304 for design condition up to and including 1300 psig -  $300^{\circ}$  F.

2-1/2" to 10" fittings, schedule 80 shall be seamless or welded A-403 WP-316 for design conditions 1400 psig -  $650^{\circ}$  F, 1500 psig -  $350^{\circ}$  F, and 1575 psig and 200° F.

2-1/2" to 12" fittings, schedule 160 shall be seamless A-403, F-304 for design conditions 2500 psig - 400° F, 2100 psig - 650° F, and 3200 psig - 200° F.

2-1/2" to 12" fitting, schedule 160 shall be seamless A-403, WP-316 for design conditions 2580 psig -  $650^{\circ}$  F.

When these pipe and fitting specifications are related to the previously reported inspection\* of installed and stored piping, the reported summary\*\* should be altered as follows:

The previously reported variance\*\*\* "some welded elbow fittings identified as schedule 80, type 316 were seen in locations where specifications call for schedule 80 fittings to be seamless" is an incorrect statement. This item is considered resolved.

One additional variance noted was the existence of some welded piping identified as ASTM A-358, type 304, schedule 40, whereas the specification calls for A-312, type-304 for schedule 40.

\*CO Report No. 247/69-5, Paragraphs E and F.
\*\*CO Report No. 247/69-5 Summary.
\*\*\*Memo - J. P. O'Reilly from N. C. Moseley, dated April 28, 1969.

# 3. Youngstown Welding and Engineering Company Visit

As previously reported,\* a visit was made to the Youngstown Welding and Engineering Company (YW) on April 29, 1969, to witness the fusion welding of A-312 pipe. The following additional information was requested relative to the YW process:

- a. Positively identify the pickling solutions used and relation to Westinghouse specifications.
- b. Verify by direct measurements of pipe wall thickness at the site that the YW fusion welding process did not result in wall thinning below Westinghouse requirements (sample basis).
- c. Verify that tensile test results of the weld area are satisfactory.
- d. Verify that 100% radiography of welds was performed and radiographs were properly reviewed.

## 4. Followup Actions

In conjunction with the findings relative to the general pipe allegations, Con Ed has stated that the following actions will be taken:

- a. UE&C will review on-site records and visually inspect all pipe and fitting made from ASTM-312 material.
- b. UST will perform investigations of the Dravo fabrication facility to verify that all tests required for A-312 pipe have been performed. This verification includes:
  - Radiography of all longitudinal welds as required by Westinghouse specifications.
  - 2) Physical test results of welding procedures.
  - 3) Hydrostatic testing of pipe sections.

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

- c. The pickling solution used at YW will be identified. A telegram has been received which identifies the chemical makeup of the solution as being basically hydroflouric and nitric acids. A certified analysis is forthcoming.
  - d. Con Ed instructed Westinghouse to perform ultrasonic inspections of pipe sections on the site to determine wall thickness in the vicinity of the welds formed by the YW fusion welding process. Four lengths of safety injection pipe were initially inspected. Measurements adjacent to the weld and about  $90^{\circ}$  away from the weld were taken. This inspection was witnessed by Con Ed and it was found that the welding process used reduces the parent metal wall thickness adjacent to the weld approximately 0.010 inches. However, no area was found where the thickness was less than ASTM requirements for A-312 pipe, which allows wall thickness to be 12.5% under the specified nominal wall thickness.
    - Ultrasonic inspections will continue until Con Ed is satisfied that wall thickness requirements have been met by all manufacturers of A-312 pipe fittings for IP-2.
  - e. Con Ed requested and received a copy of the YW fusion welding procedure qualification test results which is attached to this report as Addendum 1.
  - f. When asked if Con Ed has considered a more positive position in regard to the receipt of material not accompanied by mill certifications, the answer presented includes the following:

Prior to the start of IP-2, contractual agreements with pipe suppliers specified that mill certificates and radiographic information would be retained by the supplier and no requirement was in existence that necessitated transmittal of this information at the time of delivery. The agreement required availability of these records for review which is conformance with ASTM requirements. Audits of this information were made by Westinghouse, UE&C and UST. Con Ed feels that the nature of the foregoing makes collection and maintaining of all the data for IP-2 an unrealistic requirement at this point.

They recognize the AEC's concern over receiving and accepting material without associated mill certificates.

In order to assure themselves that material received has been manufactured and tested as required by applicable codes and specifications, Con Ed intends to utilize their own personnel and UST to visit the suppliers of pipe and fittings for IP-2 with particular emphasis on A-312 material. During these visits, audits will be performed on records associated with material certification, radiography, hydro testing and other physical testing requirements.

# K. Fuel Handling Building

The fuel handling building is nearing completion. Cleaning, flushing and testing of the associated system is in progress. Receipt of fuel assemblies is scheduled to begin about June 15, 1969.

On completion of the fuel pit liner fabrication, measurements revealed the presence of bulged areas. The maximum deflection noted was 2-3/4 inches. UE&C design engineering evaluated the condition relative to potential effects on weld and liner plate integrity. Calculations indicate that the welds and plates would not be overstressed as a result of existing conditions. Westinghouse and Con Ed has reviewed the condition and agree that the liner is structurally acceptable. Based on these evaluations, the inspector considered this subject to be resolved.

## L. Preoperational Testing

Preparation of preoperational testing procedures is in progress. Mr. Karkosa indicated that several proposed procedures have been received from Westinghouse for comment by Con Ed. To date, the only procedure which has reached the final status is associated with the cleanup of the fuel handling system. Mr. Karkosa stated that some of the completed procedures should become available within the next month.

# M. Organization

The site construction organization has been expanded to include three electrical and three mechanical oriented field inspectors. In addition, a Quality Assurance Site Supervisor has been employed and future plans include hiring of two quality control inspectors.

#### III. Management Interviews

Exit interviews were held with Mr. Corcoran at the completion of the visits. Items discussed included the following:

## A. Reactor Coolant System

The significant repair requirements on the first 20 welds formed on the reactor coolant system were discussed. Mr. Corcoran indicated that periodic radiography will be completed during the formation of the remaining 12 field welds. The inspector indicated that the use of 308 electrode with 316 base material questions appears to have been resolved; except for a possible need for a FSAR revision. The ultrasonic test results were reviewed and the inspector indicated that this subject is considered complete. The inspector indicated that the machined condition of the pipe spool ends appear to be acceptable.

## B. Safety Injection System

The identified deficiencies noted during field inspections of safety injection piping was discussed. The inspector indicated that the SI-108 problem was considered adequately resolved; however, additional followup would be required for the conditions associated with SI-112 and SI-136.

C. Welding

The inspector indicated that welding records associated with safeguard systems seemed inadequate in that positive verification of system completion is difficult. UE&C indicated that actions will be taken to correct this condition. Mr. Corcoran stated that he was aware of the problem and that Con Ed plans to perform a systems audit of all field welding.

The inspector indicated that the acceptance of J. Courter of UE&C welder qualification data appeared acceptable.

# D. Conventional Pipe

The conventional pipe problem was discussed. The inspector indicated the corrective actions initiated appear to be proper.and the subject will be considered resolved on the completion of identified repair requirements.

## E. Steam Generators

The inspector indicated that the existing girth weld procedure was found to be acceptable.

## F. Fuel Handling Building

The status of the fuel handling building was reviewed. The inspector indicated satisfactory findings with respect to the bulges associated with the fuel pit liner plate.

## G. Pipe Allegation

The inspector made a general summation of the pipe allegations and indicated that the Con Ed plan for resolution appears appropriate. The licensee was encouraged to pursue 100% verification that all piping at IP-2 was fabricated to applicable codes. Mr. Corcoran stated that investigation of the Dravo pipe situation has been initiated and a report on this subject will be issued.