

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

Report of Inspection

CO Report No. 247/69-5

Licensee: CONSOLIDATED EDISON COMPANY
INDIAN POINT NO. 2 (IP-2)
License No. CPPR-21
Category B

Dates of Inspection: April 22 and 23, 1969

Dates of Previous Inspection: March 19 - 21, 1969

Inspected by: J. H. Tillou 5-27-69
J. H. Tillou, Reactor Inspector (Construction) Date

Reviewed by: N. C. Moseley 5/27/69
N. C. Moseley, Senior Reactor Inspector Date

Proprietary Information: None

SCOPE

This visit was arranged by Region I to obtain additional data regarding the general criticisms of piping supplier's practices, as mentioned in the allegations specifically directed toward Oyster Creek 1.

Accompanying Personnel: G. W. Reinmuth, CO:HQ

SUMMARY

Several piping assemblies identified as A-312 schedule 40 were observed which had noticeable longitudinal weld reinforcements on O.D. and distinct weld beads on the I.D.

Some welded elbow fittings identified as schedule 80 type S-316 were seen in locations where specifications call for schedule 80 fittings to be seamless.

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Other welded elbow fittings, identified as schedule 40, A-312; had obvious weld reinforcements on the O.D. ASTM A-312 prohibits the use of filler metal in fabrication of pipe or fittings.

Acid pickling of stainless steel piping assemblies is prohibited by Westinghouse Piping Specifications but pickling solutions free of HCl or chlorine compounds, are allowed by the UE&C procurement specification.

Site records covering acceptability of fabricated piping assemblies are virtually non-existent. UE&C depend entirely on reports from periodic audits of field inspectors, who spot check supplier's quality activities and records. Records covering each shipment are forwarded to UE&C Purchasing Department where it is assumed they are reviewed before filing although this could not be verified since there is no applicable quality control procedure.

Cleaning operations by the supplier almost completely remove the (ASTM required) identification markings on pipe and fittings. This makes accurate identification of these assembled components extremely difficult or impossible, after delivery and installation at site.

Piping assemblies are identified by the supplier using reinforced paper tags wired around the pipe. After delivery, this pipe assembly or spool number is painted in a conspicuous axial location on each assembly to assist site personnel in quick identification.

Discussions with Con Ed, UE&C and U. S. Testing representatives produced no evidence of additional efforts to upgrade the piping supplier's quality control activities nor to increase the frequency or depth of vendor surveillance, in order to avoid a repetition of the fabrication/delivery of substandard piping assemblies to this reactor site.

DETAILS

A. Persons Contacted at Site:

Consolidated Edison

A. Corcoran, Site Construction Engineer

G. Wasilenko, NYC Headquarters Engineering Department

Paul Leo, Assistant Site Construction Engineer

Ed Dadson, Quality Assurance Coordinator

J. Dragosits, Welding Inspector

Westinghouse

Glenn Waldrop, Site QA Engineer

U. S. Testing

Charles McDonnell, Section Manager, Nuclear Testing

UE&C

V. Fant, Site Quality Control Supervisor

B. General Discussion

At a preliminary meeting attended by representatives of the licensee, Westinghouse, UE&C and U. S. Testing, the purpose of the visit was explained and an audit plan outlined which was considered sufficiently discerning to ascertain whether or not any "suspect" pipe or fittings were installed or had been procured for this facility.

C. Specifications Review

1. Westinghouse Specification No. G-569866 "Material Specifications: Pipes and Fittings" contained the following significant quotations:

"Stainless steel pipe diameters 1/2" - 12" in schedules 10 - 80 shall conform to wall thickness and weight requirements of USAS B 31.19."

"5" - 12" pipe schedules 10 - 40; shall be seamless A-312 type 304."

"5" - 12" fittings schedules 10 - 40; shall be seamless or welded A-403 type 304."

"6" and 8" schedule 80 pipe: shall be seamless A-312 type 316."

"6" and 8" schedule 80 fittings: shall be seamless A-403 type 316."

"10" schedule 80 pipe: shall be seamless or welded A-312 or A-358 type 304."

"10" schedule 80 fittings: shall be seamless or welded A-403 type 304."

"6", 8" and 10" schedule 120 - 140 pipe: shall be seamless A-376 type 316."

"6", 8" and 10" schedule 120 - 140 fittings: shall be seamless A-403 type 316."

2. Westinghouse Specification No. G-676262 "Auxiliary Piping; Shop and Field Fabrication" contained this general requirement:

"Acid pickling is prohibited for the removal of scale and oxides from fabricated stainless steel pipe assemblies."

3. United Engineers & Constructors Specification No. 9321-01-248-18, "Fabrication of Piping Systems" (an attachment to Dravo purchase order) states:

"Pickling solutions used to remove scale, etc., as a result of heating and forming operations, -----, shall not contain HCl or other chloride compounds."

NOTE: By inference this approves pickling as a cleaning method, thereby violating the Westinghouse Specification requirement and degrading the quality of stainless steel piping.

D. Piping Assembly Records

Site records covering piping assemblies received from Dravo, consist solely of a letter on Dravo stationery, subject: "Certificate of Compliance" which states, "To the best of our knowledge and belief, the shipment of piping assemblies made this date meet all applicable materials and fabrication specifications." These letters contain no identification of system, piping sizes, or assemblies so they are almost impossible to trace back to specific items.

It was stated that UE&C have a separate Vendor Quality group which conduct frequent audits at Dravo covering compliance with inspection procedures and reviewing material, processing and test records. Reports of these audits are not forwarded to UE&C quality group at site.

The material, processing, inspection and test records for each piping assembly at site are reported to be filed in the Philadelphia purchasing office of UE&C. It was further stated that the site quality control supervisor for UE&C assumed they were reviewed and approved before filing, although there is no written procedure which requires this.

E. Inspection of Installed Piping

An inspection of random, accessible, installed stainless steel piping indicates that the cleaning operations accomplished at piping supplier's facility have almost completely removed all identification markings from the pipe.

Containment Spray System

Only one section of pipe and one fitting could be positively identified as follows:

Piping Assembly No. S1-69:

A length of 8" welded pipe was identified as, "Allegheny-Ludlum, Schedule 40S, type 304, ASTM A-358, 100% X-ray, heat 22988".

An 8" welded elbow was identified as "Flowline 8", schedule 40, .322 wall, wp-304-w, A-312."

Safety Injection System

Only one fitting could be positively identified and one pipe partially identified as follows:

Piping Assembly No. S1-44:

A length of seamless 6" pipe partially identified as "----(illegible)---- schedule 80, type 316."

A 6" welded elbow was identified as, "Flowline, schedule 80S, .432 wall, type S-316."

Other 6" pipes in this assembly were found to have no discernible identification marks but were observed to have approximately 1" wide longitudinal weld seams on the O.D.

F. Inspection of Stainless Steel Piping Assemblies in Storage Areas

As previously discussed, the supplier's cleaning operation had entirely removed or obliterated to a point of illegibility, nearly all identifying marks, so only the following complete or partial identification could be made:

Piping Assembly No. S1-173

"8" pipe partially identified as A-312, HT, type 304, schedule 40S, -----LUDL-----." This pipe had a distinct weld crown on a longitudinal weld.

An 8" welded elbow in this same assembly was identified as "Flowline 8", schedule 40, .322 wall, type 316."

Piping Assembly No. S1-170

8" welded pipe identified as "Alleghany-Ludlum, schedule 40, ASTM-A-358, type 304."

Piping Assembly No. S1-172

8" welded pipe identified as "Alleghany-Ludlum, schedule 40, ASTM A-358, type 304."

Piping Assembly No. S1-157

6" pipe seamless, identified as "Pipeco, cold drawn, type 304, ASTM A-312/376 heat 77450."

Sections of Pressurizer Surge Line (Bought by Westinghouse from National Valve Company)

Identified as "ASTM A-375, type 316 stainless steel test 2800 pounds w/s S-2, S-4 and S-6, schedule 160, Heat # -----(illegible)----" (A-375 is an obvious error, should be A-376)

G. Cleaning

During the above inspections of piping assemblies in storage, it was observed that where indistinct piping identification markings were close to the end of a pipe, that if the protective cap and attaching tape was removed the continuing identification markings under the tape and cap, were sharp and legible which leads to the assumption that the piping supplier cleaned only the outside of the pipe with the protective end caps in place. This incomplete cleaning was verified by an examination of the interior of several lengths of pipe each of which was dusty, dirty and had mottled stained areas.

H. Audits of Dravo Facilities

Several audits have been made of the Dravo fabrication facilities by representatives of Con Ed, Westinghouse and U. S. Testing. These in each case were particularly directed at the resolution of previously encountered piping problems. The reports of these audits got very limited distribution and as of the date of this inspection there has been no follow-up on the recommendations made by the auditing group.

I. Management Interview

At the conclusion of the inspection and audit, the above findings were discussed at a meeting attended by Messrs. Corcoran, Wasilenko, Leo and Dadson of Con Ed, Mr. Waldrop of Westinghouse, Mr. McDonnell of U. S. Testing and Mr. Fant of UE&C.

The following day, the same findings were verbally transmitted to a higher echelon of management during a telecon between Mr. N. Moseley, Senior Reactor Inspector, CO:I, J. Tillou, Reactor Inspector (Construction), CO:I and Messrs. W. Cahill and J. Grab of Con Ed. Mr. Cahill stated that a thorough inquiry would be made into each of these unsatisfactory conditions and that an early answer could be expected on each.