

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

Report of Inspection

CO Report No. 289/69-4

Licensee: Metropolitan Edison Company
(Three Mile Island Unit 1)
License No. CPPR - 40
Category A

Date of Inspection: July 23-25, 1969

Date of Previous Inspection: May 16, 1969

Inspected By: N. C. Moseley for
D. E. Whitesell, Reactor Inspector, Construction

9/14/69
Date

Reviewed By: N. C. Moseley
N. C. Moseley, Senior Reactor Inspector

9/14/69
Date

Proprietary Information: None.

SUMMARY

Independent measurements of the Reactor Bleed Tanks were made by GAI, UE&C, and the ASME Code Inspector, to determine if the deviations in the fit up of the head to shell were within code tolerance. The results of these measurements verified that all deviations were within code limits. This item is considered closed. The procedures for cleaning these tanks, together with the hydro-static test documents were audited and no deficiencies were noted.

DRL discovered some inconsistencies in the PSAR, relative to the line size from the sump in the reactor building to the spray pumps and decay heat removal pumps. The reasons for these variations were investigated and satisfactorily explained by GAI.

UE&C welding procedures, procedure qualification tests and welders performance test documents were audited and found to conform to the requirements of Section IX, ASME codes.

The mill certificates for the E308 filler metal, 308L consumable rings and 4" Schedule 10 ASTM 312-304 pipe were audited and no deficiencies noted.

The site welding shop was visited and it was noted that the welding procedures are being followed. The area is heated, well lighted and the housekeeping is excellent.

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The paper trail for concrete work was found to be traceable and readily retrievable. No deviations were noted.

I. Scope

An announced visit was made to the site of the Pressurized Water Reactor being erected on Three Mile Island, near Middletown, Pa. The purpose of the visit was two fold; the first was to audit records and observe the progress of the work. The second reason was to determine if a quality assurance program and quality control procedures are being developed for the control of the work on TMI Unit no. 2, which was authorized by an exemption from 10 CFR 50.10 (b) and granted to Met-Ed June 27, 1969. (See CO Report 320/69-1).

II. Persons Contacted

A. Met-ED

- Mr. Vern Stuebner, Resident Engineer
- Mr. Gene Hreczuch, Resident QA Engineer
- Mr. Bud Avers, QA Manager (GPLI)

B. GAI

- Mr. Meyers, Mechanical Engineer

C. UE&C

- Mr. Milo Prisuta, Site QC Manager
- Mr. Dick Mason, Job Engineer
- Mr. Karl Brooks, Welding Engineer

III. Details

A. Reactor Bleed Tanks

1. Mr. Prisuta, UE&C, informed the inspector that independent measurements of the Bleed Tanks were made by Mr. Carl Larson and Mr. Fred Bullock, GAI; Mr. Dave Lambert, UE&C; and Mr. Ed Cox, Code Inspector; relative to the poor fit-up of the head to shell. The measurements verified that all deviations were within code tolerances. This item is therefore considered closed.

- 2. PDM's fabrication documents such as radiographs, welders performance qualifications, etc.; have not been received by UE&C. These documents will be audited at a future date.
- 3. PDM's procedures for cleaning the Bleed Tanks were reviewed. The procedures had been approved by both Met-Ed and GAI. The procedures provided for wire brushing, vacuuming, washing with a rotary power spray and a solution of 666 lbs of trisodium-phosphate to 1000 gallons of water. The tanks were rinsed with the power spray. The tanks were then inspected and spot cleaned with acetone.
- 4. After cleaning, the tanks were filled with demineralized water and the pressure was built up to 48.6 psi. The pressure was held for approximately 45 minutes, until all leak checks could be made. No leaks were detected. The over pressure test was witnessed by Mr. Cox, Factory Mutual Code Inspector, who affixed the code stamp to the tanks.

3. PSAR Inconsistencies

- 1. Mr. Denny Ross, DRL, noted some inconsistencies in the PSAR relative to the required size of the lines from the sump in the Reactor Building, to the spray pumps and decay heat removal pumps. The line size was noted in the PSAR as being 12, 14, and 18 inches and the size called out on the drawings was 14 inches.
 - a. Mr. Meyers, Mechanical Engineer, GAI explained that the original plans called for three 3,000gpm Decay Heat Removal Pumps and two 1,500gpm Spray Pumps or a total of 12,000gpm. Preliminary calculations, that were made before the performance of the pumps were known, indicated that a 14 inch line would be required.
 - b. Calculations made with the known performance of the pumps resulted in increasing the suction lines from 14 to 18 inches.
 - c. The system was revised to eliminate one decay heat removal pump and rearrange the piping so that a maximum of one 3,000gpm decay heat removal pump and two 1,500gpm could draw from any single suction line. The results of the calculations for the new requirements indicated a 12 inch line could handle the 6,000gpm.
 - d. Subsequent design reviews and calculation checks led to the opinion that a 12 inch line would be too marginal and the line was increased to 14 inches.

- e. Mr. Meyers stated that it was embarrassing that these inconsistencies had not been corrected prior to the release of the PSAR. He also said that the inconsistencies would be corrected.
- f. In response to a direct question as to whether or not there was a written procedure for documenting any changes and/or deviations from the PSAR, the Inspector was informed by Mr. Hreczuch, that Section VII in Met-Ed's QA Manual No. IQA-1 specifically provides for deviations and changes in the PSAR.

C. Defects in Head of Condensate Tank

- 1. On a previous visit, Met-Ed's site QA Engineer had pointed out defects in the head of the sixth stage Condensate Tank, and had initiated a deficiency report on this matter.
- 2. UE&C arranged with Conam Inspection to perform an ultrasonic check for the head thickness. A drawing of the head was made which located the defects to be investigated. The maximum depth of each defect was measured and deducted from the head thickness. The deficiency report notes, that the head thickness exceeds the specified thickness by a sufficient amount to bring the suspected areas within tolerance.
- 3. This condensate tank is not a Class I component, but this example is a good illustration of Met-Ed's involvement in implementing and policing their quality assurance program.

D. UE&C Welding

- 1. The only welding currently being done by UE&C is the fabrication of the spool pieces for the 4 inch stainless steel floor drain system in the Reactor Building, and installation of portions of the underground fire loop.
- 2. An audit was made of the following UE&C's welding procedures.
 - a. Procedure No. 1 Rev. dated January 16, 1968. This procedure is for joining P-1 base metals with an E 7018 electrode.
 - b. Procedure No. 20+8 Rev. dated February 1968. This procedure is for joining P-8 base metals with a P-8 consumable insert, using TIG process for the root pass and manual metal arc using an E 308-16 for balance of the weld.

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- c. Procedure No. 32 dated 1969 which is for joining P-8 base metals with a P-8 backing ring using an E 308-16 electrode.
- 3. Each procedure specified the process, electrodes, current characteristics, joint preparation, cleaning, heat treat and interpass temperatures if required, weld repairs, etc. Each procedure had been qualified in accordance with Section IX of the ASME code.
- 4. There are currently 18 fitters qualified on both procedures no. 1 and 20+8, one boiler maker qualified on procedure no. 32, four iron workers and two electricians qualified on procedures no. 1. The performance qualification tests of each of the welders were audited and found to conform to Section IX of the ASME code.
- 5. The mill certificates for the 308 filler metal, the 308L consumable inserts, and the 4 inch schedule 10-304 stainless steel pipe were audited and no deficiencies were noted.
- 6. The liquid penetrant records, relative to the drain lines were audited. The records identified the joint number, the welder that made the joint and remarks on any deficiencies noted. The cleaner, penetrant, and developer used are Magnaflux "Spotcheck" SKC-5, SKD-5, and SKL-5, the chemical check analysis showed the halogens and sulfur content to be "Nil".
- 7. The fabrication of the stainless steel pieces for the Reactor Building drains, is being performed in a well lighted, insulated and heated, prefabricated steel building. The benches used are heavy duty benches with stainless steel tops. The angle supports, clamps, and all other equipment that comes in contact with the pipe are stainless steel, so that the stainless steel pipe does not come in contact with carbon steel at any time during fabrication. The housekeeping in the area is excellent. All fittings are stored in wooden bins, the front of which is covered with plastic to prevent excessive dust from collecting. The pipe is stored outside in wooden racks, and it was noted that all ends were sealed with plastic caps, and all piping was clear of the concrete slab on which the rack is located.

Electrodes are stored in a separate tool and supply room within the building. This room has a full time attendant that issues the electrodes to the welders. The coated electrodes are stored in holding ovens, one for carbon steel and one for stainless steel. There are individual holding ovens on the floor of the shop for the welders convenience.

- 8. The Inspector observed a portion of the fabrication work and noted that procedures were adhered to.
- 9. UE&C has contracted with Conam Inspection to perform all nondestructive testing. The Conam Inspectors are all certified to levels two and three in radiography, ultrasonics, magnetic particle and dye penetrant. Conam's written procedures XR-1-NP, UT-1-NP, MP-1-NP and LPT-1-NP, have been approved by UE&C and Met-Ed.

Met-Ed and UE&C have jointly established a welding training program for six Conam inspectors certified to levels II and III in non-destructive testing. These people will be given formal training in welding processes and procedures. They will be indoctrinated in welding techniques and basic requirements of fit up, cleaning, etc. When they have completed the course they will serve as welding inspectors, and perform all the specified nondestructive testing of the welds.

E. Concrete Work

- 1. The concrete work on the containment wall has been completed to approximately 15 feet above the floor line. The placement areas are recorded on the stretch out drawings of the tendons. The placements are numbered in lifts between the buttresses (eg. buttress 3-4, lift 3)
- 2. A placement area was chosen at random and the paper trail was followed through the sign-off sheet, batch tickets, inspectors report of slump, temperature, weather, etc., the laboratory reports of sieve analysis, cylinder identification and breaks. The records were found to be traceable and readily retrievable, no deficiencies were noted.
- 3. The batch plant was audited to verify adherence to Procedure No. 1-QC, for the control of structural concrete. The records showed that sand moisture was checked hourly by baking and weighing, and sieve analysis of the aggregates are run daily. The last calibration date shown on the scales was May 1, 1969. The procedures specify that these scales are to be checked monthly. In discussing this deviation with Mr. Prisuta, the Inspector was informed that calibration in June and July had been performed but calibration stickers had not been received in the field for posting these dates. The Inspector observed that standard weights were available at the batch plant for such calibration, and accepted this explanation as valid.

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4. The ice storage plant, scales and crushing equipment were inspected. The Inspector was informed by Mr. Prisuta, that the ice was made in Lancaster Pa., using the public drinking water supply. Water analysis had been made and was audited, no deficiencies were noted.

F. Exit Interview

1. An exit interview was held with Mr. Vern Stuebner, Resident Engineer, Mr. Gene Hreczuch, Site QA Engineer, Met-Ed; and Mr. Milo Prisuta, QC Manager, UE&C.
2. The Inspector stated that he had found no deficiencies in the records audited, and observed no deviations from the applicable procedures for the work being performed. Met-Ed was also informed that the deficiency reports indicated that the quality control program was being well policed and hoped that there would be no relaxation in such policing.

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