

U.S. NUCLEAR REGULATORY COMMISSION  
OFFICE OF INSPECTION AND ENFORCEMENT

Region I

Report No. 50-320/81-07

Docket No. 50-320

License No. DPR-73 Priority --- Category C

Licensee: Metropolitan Edison Company  
100 Interpace Parkway  
Parsippany, New Jersey 07054

Facility Name: Three Mile Island Nuclear Station, Unit 2

Inspection at: Middletown, Pennsylvania

Inspection conducted: March 31 - April 3, 1981

Inspectors: W. F. Sanders, Reactor Inspector

April 29, 1981  
date signed

A. A. Varela, Reactor Inspector

4-29-81  
date signed

Approved by: L. E. Tripp

date signed  
5/5/81  
date signed

L. E. Tripp, Section Chief, Materials  
& Processes Section, EIB, DETI

Inspection Summary:

Inspection on March 31 - April 3, 1981 (Inspection Report No. 50-320/81-07)

Areas Inspected: Routine unannounced inspection by two region based inspectors of construction, civil, structural supports, fabrication of piping system, welding and NDE activities related to the Submerged Demineralizer system. The inspection involved fifty-two (52) inspector-hours on site by two region based inspectors.

Results: No items of noncompliance were identified.

## DETAILS

### 1. Persons Contacted

#### Metropolitan Edison Company/General Public Utilities Service

- J. Becker - N.D.E./Piping, Lead Supervisor
- R. Corbit - Lead Welding Inspector
- M. Herlihy - Startup and Test Manager
- N. Hollenbush - Modification Turnover System Coordinator
- \*L. King - G.P.U. Operations
- E. Mummert - Supervisor-Coordinator Unit 2 Standards
- \*J. Wright - Quality Control Manager
- J. Tietjen - Modification Construction Supervisor
- \*\*L. J. Lehman, Licensing Engineer
- \*\*+J. C. Devine, Manager Recovery Engineering
- \*\*T. R. Osterhault, Nuclear Recovery Engineer
- \*\*+G. R. Skillman, Recovery Project Engineer
- L. Lohnes, QA Engineer
- N. Hollerbush, QA Engineer
- +G. Hovey
- +R. Neuman

#### Catalytic Company

R. E. Lewis, Construction Superintendent

\*Denotes those at Exit Meeting with W. F. Sanders, April 2, 1981

\*\*Denotes those at Exit Meeting with A. A. Varela, April 3, 1981

+Denotes Conferees with Telecon 4/10/81

### 2. General

This inspection was made to inspect the work activities in progress, completed work, fabrication and testing status on the Submerged Demineralizer System (SDS) and review the records of the completed work for compliance with the licensee commitments or regulatory requirements. The requirements are defined in the Technical Evaluation Report (TER) dated April 10, 1980, ANSI Code for Pressure Piping B31.1, Regulatory Guide 1.143, and GPU procedure 3803-Rev.2 relative to the welding and inspection of the piping system. This inspection is a follow-up to an inspection in July 23-25, 1980 and was related to the verification of the following items:

- Control, verification and issuing of welding material.

- Review of the contractor welding procedures.
- Review of the qualification records of the weld procedures.
- Review of the welder qualification records
- Review of selected drawings
- Review of selected audit reports of vendor activities
- Observation of welding in progress on the filter manifold.
- Two walk through inspections of the work in progress.

### 3. Work Observations

These observations were made to inspect the completed parts of the piping system in the areas of (1) trial fit of the remote reach rods for the underwater connecting and disconnecting of the flow piping to the filter bed tanks; (2) Although the majority of the main fluid containing piping was either shielded with lead jackets or inaccessible, a visual inspection was made of the welds in the instrument and air system for conditions that would encroach on the minimum wall thickness such as undergrind of the weld fusion lines. Particular note was taken of the welds with respect to surface condition and the merging of the weld to the base material. This inspection included observations of the lead shielding attachments to the RCS Manifold, High Radiation Filter Manifold, and three Glove Box Control Consoles. No items of noncompliance were identified.

### 4. Personnel Qualifications

The requirement and commitment for the Non-Destructive Examination (NDE) of the piping welds was extracted from the ANSI Power Piping Code B31.1 and the more definitive licensee procedure GPU 3803 Rev. 2 which defines a visual examination to be performed after completion of the pipe welds. This is the extent of the NDE examination. The records documenting the qualifications of the two inspectors who performed the visual inspections on the welds were examined to the requirements of ANSI 45.2.6 with the following attributes noted:

- |                    |   |   |
|--------------------|---|---|
| <u>Inspector a</u> | - | Eye examination for visual acuity within the year                   |
|                    | - | Visual training school 40 hours.                                    |
|                    | - | Experience, 5 years of nuclear inspection                           |
|                    | - | TMI training on material non-conformance program<br>Procedure 15-03 |

- Inspector b
- Eye examination for visual acuity within the year
  - QA training, 40 hours
  - Visual training school 40 hours
  - Experience, 7 years NDE, 5 years nuclear

No items of noncompliance were identified.

#### 5. Record Review

An inspection was made of two randomly selected record packages which were considered complete, reviewed by quality control and turned over to the startup and test group. The records in these packages are listed and described below:

- a. Record package identified as "Installation of Chem-Nuclear demineralizer in the 'B' spent fuel storage pool, subsystem WG-25, inspection boundary ECM 700 Rev.0. Filter Manifold."
- b. Turnover agreement. This record tabulates items which have not been completed and will require further rework or disposition. The list is compiled after a walk-down inspection by quality control of a specific section of the system and all items of this nature are listed for subsequent actions or resolutions. The turnover agreement if acceptable, is assigned to the startup and test group who accepts the responsibility for completion prior to startup of the system.
- c. Weld material records which list the weld electrodes withdrawn by each of the welders from the controlled storage and issue station.
- d. Weld data documentation which lists the welder identity, filler metal used, and signature documentation of the visual inspection of the weld after completion. Thirty-two welds were reviewed.
- e. Records for the installation of the Chem-Nuclear Demineralizer in "B" spent fuel storage pool for reactor building clean-up ECM 719 Rev. 1 and CNTM-018, installation of feed pump and associating piping, including:
  - Turnover agreement for the quality control final acceptance of the inspection walkdown similar to 5b.
  - Review of weld records described in 5d for 34 welds.

No items of noncompliance were identified.

## 6. Requirements for Construction/Inspection and Verification

The inspection effort included review of the following:

- Bechtel's technical specification number P-321A, Installation, Inspection and Documentation of Rigid Pipe Supports, Hangers and Restraints for the SDS Piping.
- GPU quality assurance procedure number TMI-10-MO-002, QA Modifications /Operations Section - Inspection Program
- GPU quality assurance procedure number TMI-15-03, Important to Safety Material - Nonconformance Report
- Drawings by Chem-Nuclear Systems on the following: Monitor Tanks, Ion Exchange and Final Filter, Off Gas Separator, Prefilter/ Agitator, Radiation Monitors for Ion Exchange Filters, Fuel Pool Floor Equipment Bases and Installations, and Ion Exchange Support Rack Piping.
- Other drawings were reviewed in conjunction with above to evaluate design criteria, material, fabrication and Civil/ Structural requirements for conformance to codes and standards. These were observed clearly identified and cross referenced:

ANSI B31.1-77 Power Piping Code

AISC - 7th Edition Steel Construction Manual

MSS-SP-89-78 Manufacturers' Standards for Hangers and Supports - Fabrication and Installation Practice.

No items of noncompliance were identified.

## 7. Observation and Record Review of SDS Feed and Monitor Tank System Civil/Structural Supports

The inspector performed a walkdown inspection of the fuel handling building in company with contractor personnel to observe and discuss completed structural supports for the SDS Feed and Monitor Tank System. He observed the overall appearance to conform to standards of good practice and he randomly selected specific units for further detailed review of documentation prescribed by technical specification P-321A. Subsequently the inspector was informed by GPU QC that their inspection and audit of contractor documentation had not been completed due to need of clarification requested by GPU of Bechtel on the Safety -QC classification of ECM 714 on the Installation of SDS Feed and Monitor Tank System. NRC review of ECM 714 documentation received from contractor and approved by GPU will be made in a subsequent inspection.

No items of noncompliance were identified.

8. Inspector Evaluation of Civil/Structural Aspects of the SDS

The inspector observed in his review of the civil/structural aspects of the SDS that the regulatory positions of Regulatory Guide 1.143-78 appeared fulfilled. This guide identifies:

- Foundations and adjacent walls of structures that house the radwaste system should be designed to seismic loads for the buildings.
- Equipment and components used to collect, process or store solid or liquid radwastes need not be designed to seismic criteria required for the building housing the radwaste system.

No items of noncompliance were identified.

9. Unresolved Items - Licensee Commits to Report on Engineering Rationale and Justification for SDS Non-Seismic Design

Whereas the SDS is required to conform to Power Piping Code ANSI B31.1-77, the inspector was informed by the licensee that code section 101.5.3 on earthquake design was interpreted as not applicable. The inspector therefore requested justification for this deviation from the committed code. Licensee presented a draft report of his justification for the deviation at the exit interview April 3, 1981. This report will be revised to address items discussed at the exit meeting.

Subsequent to the exit interview, in telephonic discussions with licensee, they committed to include in the final engineering report, noted above, the matter of excess loading on the SDS fuel pool tank "A." This tank, a part of the seismically designed original Unit 2 fuel pool, contains four upright 15,000 gallon steel tanks filled during the special process control (SPC), emergency recovery following the accident. Radiation shielding covers of massive steel beams and concrete slabs have additionally subjected the fuel pool structure to excess loading. This appears to be a hazard that could jeopardize the structural integrity of the fuel pool during a seismic event. The licensee has committed to an evaluation analysis and justification that leakage resulting from seismic rupture of the overloaded fuel pool tank "A" will be contained and will not endanger the health and safety of the public.

The final engineering report will be reviewed in a subsequent inspection. Pending his review, the NRC inspector had no further questions. This is unresolved item number 81-07-01.

10. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, items of non-compliance, or deviations. One unresolved item disclosed during this inspection is discussed in paragraph 9.

11. Exit Interview

At the conclusion of the inspections on April 2-3, separate meetings were held at the site with representatives of the licensee. Attendees at this meeting included personnel whose names are indicated in paragraph 1. The inspector summarized the results of the inspection as described in this report.