

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

Region I

Report No. 50-289/80-20

Docket No. 50-289

License No. DPR-50 Priority -- Category C

Licensee: Metropolitan Edison Company

P.O. Box 542

Reading, Pennsylvania

Facility Name: Three Mile Island, Unit 1

Inspection at: Middletown, Pennsylvania

Inspection conducted: July 11-August 15, 1980

Inspectors: *L. Gage*
L. Gage, Reactor Inspector

9/16/80
date signed

S. Chaudhary
S. Chaudhary, Reactor Inspector

9/16/80
date signed

A. Varela
A. Varela, Reactor Inspector

9/16/80
date signed

Accompanied by: A. Sassani, Reactor Inspector

date signed

Approved by: *S. Ebnetter*
S. Ebnetter, Chief, Engineering Support
Section #2, RC&ES Branch

9/16/80
date signed

Inspection Summary:

Inspection on July 11-August 15, 1980 (Report No. 50-289/80-20)

Areas Inspected: Routine, unannounced inspection by regional-based inspectors of work activities and records associated with the Unit 1 Restart Program as well as certain previously unresolved items affecting Unit 1, including: the tendon surveillance program, the butt-splice program (Task RM-1), verification of components per IE Bulletin 79-01B, implementation of IE Bulletin 80-11, review of unresolved items associated with the licensee's architect-engineer effort, and review of unresolved items related to 10 CFR Part 21 and certificates of conformance. The inspection involved 115 inspection hours on site by four NRC regional-based inspectors. Results: No item of noncompliance was identified.

DETAILS

1. Persons Contacted

GPUSC

- N. Kazanas, QA Manager
- *J. Wright, QC Manager
- D. Croneberger, Manager of Engineering and Design
- Q. Billingsly, Administrative Assistant to Material Manager
- C. Smyth, Licensing Engineer, TMI-1
- M. Iqbal, Licensing Engineer, TMI-1
- M. Stromberg, Manager of QA Auditing
- E. Wallace, Manager of Licensing
- R. Wayne, QA Manager for Design and Procurement
- R. Markowski, QA Auditor
- D. Slear, TMI-1 Project Engineering Manager
- R. Prabhakar, Supervisor, Generation QA Engineering
- *T. Corrie, QC Engineer
- *E. Allen, Lead QA Engineer
- R. Milford, Licensing Engineer (by telephone)

Metropolitan Edison Company

- R. Harding, Supervisor of Licensing
- C. Hartman, Lead Electrical Engineer
- D. Mitchell, Licensing Engineer
- C. Rippen, Lead Electrical Foreman
- G. Troffer, Unit 1 Restart Deputy Director
- I. Porter, Unit 1 Restart and Test Supervisor
- *M. Shaffer, Unit 1 Restart

Gilbert Associates, Inc. (GAI)

- R. Rogers, Project Manager
- J. Daly, Sr., QA Projects Manager
- R. Holsworth, Corporate QA Program Manager
- M. Pratt, TMI QA Project Manager

Babcock and Wilcox, Inc.

- W. Rodgers, I&C Engineer
- S. Maingi, Electrical Engineer

Walsh Instrumentation, Inc.

- J. Riddlemoser, Engineer

U. S. Nuclear Regulatory Commission

A. Fasano, Chief, Site Operations Section, TMI
 *D. Haverkamp, Senior Resident Inspector, TMI-1

*Denotes personnel present at exit interview.

2. Licensee Action on Previous Inspection Findings

- a. (Unresolved) Item of Concern 80-04-02: Fabrication of Butt Splices (Tasks RM-1, RM-4, and LM-8A) Reference IE Inspection Report 50-289/80-17 for most recent review.

The referenced inspection report identified the previously fabricated butt splices as an item of concern because of the method used for producing the splice, the training of craft personnel, and the fire hazards analysis.

The inspector attended a training session conducted by the licensee for the training of craft personnel and QC inspectors involved in their upcoming butt-splice fabrication program. The instruction, the distributed reference material, and the response from the assembled personnel were satisfactory.

However, this item is still considered to be unresolved, pending an NRC review of the revised SECM and the fire hazards analysis during a subsequent inspection. (80-04-02)

- b. (Unresolved) Unresolved Items 80-04-01 and 80-13-01: Identification of Safety-Related Systems and Components.

The referenced items addressed the lack of identification of safety-related systems and components and the classification of related engineering change memos (ECMs) as unresolved items.

The inspector discussed the matter with the licensee's engineering department manager. The inspector stated that the licensee had indicated, during a previous NRC inspection, that a new listing of safety-related equipment, which would supersede the licensee's listing in GP-1008 (Revision 2), would be issued by May 22, 1980. The licensee replied that the new listing--referred to as the "QCL List"--had been prepared and was presently being reviewed. It would be released, to the GPU engineering department and to their architect-engineer (Gilbert Associates), by August 15, 1980 and it would be formally phased into their procedural system by September 19, 1980. The licensee provided the inspector with a copy of an internal memo, dated August 6, 1980, from D. Croneberger to M. Stromberg, documenting this schedule.

This matter is still considered to be unresolved pending an NRC review of the QCL List and of the classification of related ECMS generated prior to the issuance of the QCL List, during a subsequent IE inspection. (80-04-01 and 80-13-01).

- c. (Unresolved) Unresolved Item 80-05-04: Classification of Purchase Orders for Position Indication Equipment for PORV.

The referenced item identified the purchase orders associated with the position indication equipment for the power-operated relief valve and the containment radiation monitoring system as an unresolved item. The purchase orders were classified as "non-safety" yet the TMI-1 Restart Report commits the new instrumentation to meet the environmental and seismic requirements of IEEE-323.

This item is still considered to be unresolved. (80-05-04)

- d. (Unresolved) Unresolved Items 80-04-04 and 80-05-07: Certificates of Compliance.

The referenced items identify certificates of compliance, supplied by vendors for certain purchase orders, which apparently do not reference the full specification requirements of the purchase orders.

The inspector requested the licensee to provide documentation to support the certificates of compliance in the referenced items, during his inspection at the corporate offices in Parsippany, New Jersey on August 5-7. The licensee stated that this documentation was retained at the site. The inspector requested the documentation during his inspection at the site in Middletown, Pennsylvania on August 13-15. The licensee's site personnel stated that they did not have sufficient time to accumulate the documentation prior to the exit interview.

These items are still considered to be unresolved, pending an NRC review of the supporting documentation during a subsequent IE inspection. (80-04-04 and 80-05-07)

- e. (Closed) Unresolved Items 80-05-05 and 80-05-06: Incorporation of 10 CFR Part 21 and Qualification Requirements in Purchase Orders.

The referenced items identify purchase orders for material and equipment which apparently do not invoke the defect-reporting requirements contained in 10 CFR Part 21 or the containment environmental qualification requirements contained in the Restart Report.

The inspector reviewed the purchase orders 86018, 86019, 86022, 86082, 86097 and 86594 which were noted in the referenced items. The first three purchase orders pertained to vibration monitoring equipment, an electronic rack enclosure, and 600 volt cable, respectively. These

items are located outside of the containment building and were considered non-safety equipment. The last two purchase orders pertained to relays and SS 304L piping which were also located outside of containment and were considered non-safety equipment. Only purchase order 86082 involved safety related equipment located inside containment (Conax electrical connectors). The licensee reissued the purchase order, as purchase order 86685 and included the requirements for Part 21 reporting as well as qualification requirements per IEEE-323 and IEEE-344.

No items of noncompliance were identified.

3. 10 CFR Part 21 Implementation

The inspector reviewed the licensee's procedures for implementing the requirements of 10 CFR Part 21. Included in his review were:

- . Project Procedure EP-028, dated August 7, 1979, "Reporting of Deficiencies to the Nuclear Regulatory Commission."
(This procedure contains a flow diagram describing how the licensee identifies, evaluates, and notifies the NRC of reportable deficiencies.)
- . Quality Assurance Procedure 7-4-01, dated July 25, 1980, "QA Review of Procurement Documents."
(This procedure indicates the review that QA performs on purchase requisitions, purchase orders, and contracts, including Part 21 applicability.)
- . Site Quality Assurance Procedure TMI-16-02, dated July 21, 1980, "Important to Safety Quality Deficiency Reports."
(This procedure indicates how licensee personnel at the site identify, evaluate and notify others of potential important-to-safety quality deficiencies.)
- . Site Quality Assurance Procedure TMI-15-03, dated June 1, 1980, "Important to Safety Material Nonconformance Report."
(This procedure indicates how licensee personnel at the site identify, evaluate, and notify others of potential important-to-safety material nonconformances.)
- . Safety and Licensing Procedure S&L-1, dated January 10, 1978, "Evaluating Reportability of Deficiencies to the United States Nuclear Regulatory Commission Under 10 CFR 50.55(e) and 10 CFR 21."
(This procedure designates responsibilities in the licensee's corporate office for evaluating and reporting deficiencies.)

The licensee stated that procedure No. S&L-1 was in the process of being revised to incorporate deficiency reporting requirements presently contained in sections of other procedures previously issued by the licensee. The inspector asked the licensee to provide a reissue date for this procedure.

The licensee stated that a draft of the new procedure had been prepared, and that it was presently being reviewed: by August 22, 1980 they expected to be able to better define the status of the new procedure. On August 22, the inspector called the licensee to obtain an update on the procedure's status. He was informed that the procedure would not be issued in August, 1980.

This item is considered to be unresolved, pending an NRC review of the revised procedure S&L-1 during a subsequent inspection. (80-20-01)

4. Inspection at the Licensee's Architect-Engineer

(Reference: IE Region IV Inspection Report 99900525/80-02)

The inspector took part in a joint IE Region IV-Region I inspection of Gilbert Associates, Inc. (GAI), the licensee's architect-engineer, at GAI's corporate office in Reading, Pennsylvania on July 21-25, 1980.

The inspection included GAI activities in areas besides TMI-1. The TMI-1 activities inspected by this inspector, in summary, were:

- . Management review of the GAI QA Program.
- . Design verification of structural designs.
- . GAI closeout of their audit SA-79-1 findings.
- . Revision of the GAI "Project Management Manual."
- . Inclusion of the TMI-1 Restart Report in the list of design-verification bases.
- . Tracking of the GAI Restart Report commitments.

A complete discussion of the above activities appears in the referenced IE Inspection Report, which identifies five deviations from commitments to the TMI-Project.

5. Status of Licensee's Response to IE Bulletin 80-11

The inspector inquired into the status of the licensee's effort in response to IE Bulletin 80-11. The licensee stated that the responsibility for this effort was assigned to corporate personnel in Parsippany. They have conducted the wall-location surveys and have developed the required 60-day response. No documentation existed at the site.

The licensee stated that the responsible corporate engineer will be at the site on August 27, 1980 to provide further information to the inspector.

No items of noncompliance were identified.

6. Tendon Surveillance Program

The inspector reviewed records filed in the GPU Document Files which included unsigned field data sheets that provide lift-off ram pressures and total load as required for the tendons in Phase Three of the surveillance program. Other records, required by the Technical Specifications, identified in GPU/Met Ed Spec #1301-9.1, Revision 3, including observations of tendon grease, wire corrosion, measurements on wire buttonhead cracks and unseated wires, and concrete cracks at dome anchorages were reviewed by the inspector. These were copies of unsigned raw data sheets, the originals of which must be analyzed and evaluated by the licensee's subcontractor, VSL. VSL's report on this tendon surveillance will be reviewed by the licensee prior to submission to NRR (as required by Technical Specifications).

The inspector observed work performed by VSL Corporation on the last of the six designated dome tendons which included, in addition to lift-off force measurement and anchorage inspection, the complete destressing of one tendon wire for removal. He also observed the corrosion examination and physical testing of the removed tendon wire.

The inspector referenced the following inspection criteria when performing the record reviews and work observation:

- Tendon Surveillance Specification SP1301-9.1, Revision 3.
- Regulatory Guide 1.35, Revision 1, required by Technical Specifications.
- VSL Quality Assurance Program Plan.

The inspector accompanied two NRR personnel to the containment dome to observe the ring-girder concrete at dome-tension bearing plates near the northwest buttress.

As a result of site meetings between NRR and the licensee, it was decided that, because of extensive repairs to the ring girder in 1972, concrete cracks surrounding all dome anchorages should be monitored during the next two tendon surveillances (in 1985 and 1990).

The inspector identified that the tendon surveillance program did not include reinspection of horizontal tendon H51-013. This tendon had changes in the buttonhead splits, and the licensee's 1977 tendon-surveillance report committed to a reinspection to determine if further changes are occurring in the tendon's buttonheads. The licensee responded by adding this item to their present program.

No items of noncompliance were identified.

7. IE Bulletin 79-01B Installation Verification

a. The inspector performed an installation verification of components of the Reactor Protection System (RPS) and Make Up and Purification System (MUPS).

b. Reactor Protection System (RPS) Inspection.

(1) Documentation Reviewed:

- (a) Piping and Flow Diagram, Reactor Coolant System, C-302-650, Revision 18.
- (b) General Electric, Electrical Penetrations 238X297G1, Manual GEK-32433.
- (c) Field Change Package No. 04-2326-01, Customer No. 77978.
- (d) Penetration Drawing No. B-224-336.
- (e) Cable Routing and Termination Book, Drawing No. S-212-009.
- (f) Cable and Conduit Layout Drawing, No. E-215-081, Revision 34.

(2) Installation Inspection.

(a) The following instruments and associated penetrations and cables were inspected:

<u>Channel</u>	<u>Equipment #</u>	<u>Serial #</u>	<u>Penetration #</u>	<u>Cable #</u>
A	RC3A-PT1	74860	204E	RG18A
C	RC3A-PT2	74861	313E	RG106A
B	RC3B-PT1	74862	205E	RG62A
D	RC3B-PT2	74863	314E	RG146A

(b) Rosemount Model No. 1152GP9A92T0010PB transmitters, located on the operating floor, mounted to a plate on the secondary shield wall.

ley Meter Company No. 1946165A1 Conax connectors on the transmitters with two-conductor solid wire to splice boxes.

(d) Stainless steel armored flexible conduit to splice boxes.

(e) Splice boxes mounted on secondary shield wall close to transmitters.

- (f) Raychem shrink tubing number WCF5070-250 used on splice in splice box.
 - (g) Two conductor shielded cable in conduit from splice boxes to electrical penetrations.
 - (h) General Electric electrical penetration number 238X297G1, assembly number 117C2361G16.
- (3) The inspector identified the following for follow-up action:
- (a) The four splice boxes inspected had screws missing from the covers.
 - (b) Channel B, C and D splice boxes are not shown on cable and conduit layout drawings or on cable routing and termination boxes.
 - (c) The electronic housing of transmitter RC3B-PT2 is not mounted firmly to the sensor module.
 - (d) Electrical penetrations 204E, 313E, 205E and 314E had missing, broken and different types of screws on the penetration covers.
 - (e) The manufacturer's name and part number are not identified on the cable, conduit, boxes and the stainless steel armored flexible conduit. The licensee should determine this information.

c. Makeup and Purification System (MUPS) Inspection.

(1) Documentation Reviewed.

The following MUPS documentation was reviewed by the inspector:

- (a) Piping and Flow Diagram, Make Up and Purification System C-302-660, Revision 17.
- (b) General Electric, Electrical Penetration 238X297G1, Manual GEK-32433.
- (c) Babcock and Wilcox Drawing No. 33-41-624-01, MUV2A and 2B.
- (d) Penetration Drawing No. B-224-336.
- (e) Cable Routing and Termination Book, Drawing No. S-212-007 and S-212-002.

(2) Installation Inspection.

- (a) The inspector performed installation verification on the following valve operators and associated cables and penetrations.

<u>Equipment #</u>	<u>Operator Serial #</u>	<u>Type</u>	<u>Cable #</u>	<u>Penetration #</u>
MU-V2A	447271-DU	SMB-00	CR17A	315E
			CR331A	315E
			RR542A	315E
MU-V2B	447026-KY	SMB-00	CR25A	315E
			CR381A	315E
			RR543A	315E

- (b) Limitorque SMB-00 operators with Reliance motors. The operators are located in the basement, approximately three feet off the floor.
- (c) Two control cables from each operator to pull box J-209 and one power cable from each operator to pull box J-208.
- (d) Stainless steel armored flexible conduit from motors to condulet, and conduit from condulet to pull boxes.
- (e) Conduit from pull boxes to electrical penetration number 315E.
- (f) General Electric, electrical penetration 238X297G1, assembly number 117C2361G1T.

(3) The inspector identified the following for action:

- (a) Electrical penetration 315E has cables entering from the front of the penetration which are unprotected and subject to moisture intrusion.
- (b) The condulet from MU-V2A has a screw missing from the cover. (The condulet is below the water flooding level of the containment.)
- (c) The manufacturer's name and part number are not identified on the cable, conduit, boxes and the stainless steel armored flexible conduit. The licensee will determine this information to verify qualification documentation applicability to these items.

d. Safety Evaluation Report

The information gathered during this inspection and the followup items identified above will be used as a data base to assist in the overall evaluation of the test data and details provided by the licensee in their report submittal. The final evaluation will be documented in a Safety Evaluation Report (SER) that is to be written for this licensee. The SER is planned to be issued for this site by February 1981.

8. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, items of noncompliance, or deviations. Unresolved items reviewed during this inspection are discussed in paragraphs 2 and 3.

9. Exit Interview

The inspectors met with the licensee representatives (denoted in paragraph 1) at the conclusion of the inspection on August 15, 1980. The inspector summarized the purpose and scope of the inspection and the findings. The licensee acknowledged the findings. A subsequent telephone conference was held between the inspector and the licensee's representative on August 22, 1980 (refer to paragraph 3).