

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

50289-800206
50289-810122
50289-810324

Region I

Report No. 50-289/81-11

Docket No. 50-289

License No. DPR-50 Priority -- Category C

Licensee: Metropolitan Edison Company

P.O. Box 480

Middletown, Pennsylvania 17057

Facility Name: Three Mile Island Nuclear Station, Unit 1

Inspection at: Middletown, Pennsylvania

Inspection conducted: May 1, 1981 - June 30, 1981

Inspectors:

D. Haverkamp
D. Haverkamp, Senior Resident Inspector (TMI-1)

7/23/81
date signed

F. Young
F. Young, Resident Inspector (TMI-1)

7/24/81
date signed

T. Moslak
T. Moslak, Radiation Specialist

7/24/81
date signed

W. Troskoski
W. Troskoski, Reactor Inspector

7/24/81
date signed

Approved by:

A. Fasano
A. Fasano, Chief, Three Mile Island Resident Section,
Projects Branch #2

7/27/81
date signed

Inspection Summary:

Inspection on May 1, 1981 - June 30, 1981 (Report Number 50-289/81-11)

Areas Inspected: Routine inspection by resident and regional based inspectors (231 hours) of licensee action on previous inspection findings; plant operations during long term shutdown including facility tours and log and record reviews; preoperational test program implementation; Reactor Protection System preoperational testing; nonroutine reporting program; annual overhaul maintenance on 'A' Emergency Diesel; radiological control assessment followup; and in-office review of licensee event reports.

Results: No items of noncompliance were identified.

Details

1. Persons Contacted

GPU Nuclear Group

J. Colitz, Plant Engineering Director TMI-1
J. Fornicola, Operations QA Manager TMI, Nuclear Assurance
R. Harbin, Technical Analyst Senior-I TMI-1
L. Harding, Nuclear Licensing Engineer, Technical Function
T. Hawkins, Manager TMI-1 Startup and Test, Technical Functions
D. Mitchell, Nuclear Licensing Engineer, Technical Functions
M. Ross, Manager Plant Operations TMI-1
*C. Smyth, Supervisor TMI-1 Licensing, Technical Functions
*R. Toole, Operations and Maintenance Director TMI-1
P. Walsh, Manager Plant Analysis, Technical Functions

The inspector also interviewed several other licensee employees during the inspection. They included control room operators, maintenance personnel, engineering staff personnel and general office personnel.

*denotes those present at the exit interview on July 1, 1981.

2. Licensee Action on Previous Inspection Findings

(Closed) Unresolved Item 289/77-37-01: Revision of Technical Specifications to reflect current onsite organization. Technical Specification Amendment No. 58, dated September 15, 1980, revised Figure 6-1 permitting the establishment of the General Public Utilities Nuclear Group (GPUNG) through which the operating and management responsibility for TMI-1 is implemented for Metropolitan Edison Company. The amendment also revised the plant staff organization. The inspector verified that the onsite organization was structured as shown in Figure 6-1. Minor changes to the onsite organization structure and changes in position titles to reflect the transition to the GPU Nuclear Corporation are identified in Technical Specification Change Request No. 98, dated January 26, 1981. That change request is currently under final review by NRR. This item is closed.

(Closed) TMI-2 Noncompliance Followup Item 289/79-IR-21: Unauthorized changes to the NRC approved organization. The inspector reviewed the corrective actions taken for TMI-1, as described in Metropolitan Edison letter to NRC dated December 5, 1979, regarding this TMI-2 noncompliance identified during IE Investigation 50-320/79-10. The corrective measures included re-documenting the organizational structure for both TMI-1 and TMI-2 with the NRC, re-defining the TMI-1 organization in the TMI-1 Restart Report and Technical Specifications, implementing major changes to address the organizational deficiencies noted through the many post-accident TMI-2 investigations, and modifying the Emergency Plan to improve the emergency organization. Additional information concerning the TMI-1 organizational changes is discussed in this report for

previous findings 289/77-37-01, 289/80-19-09 and 289/80-19-10, and in NUREG-0680, TMI-1 Restart Evaluation Report, and its supplements. This item is closed.

(Closed) Followup Item 289/80-19-09: Submit Technical Specification change request concerning interfacing among the various groups who function to review plant operations. Technical Specification Change Request No. 100, dated April 10, 1981, represented a complete rewrite of the administrative sections of the Technical Specifications (Appendix A and B). Section 6.5, Review and Audit, has been conceptually revised to provide for independent review using individuals/groups rather than committees. This change is currently under review by NRR. A Technical Specification amendment which incorporates the revised review functions is expected to be issued by NRR in September 1981. This item is closed.

(closed) Followup Item 289/80-19-10: Provide more detailed resumes of plant staff personnel to permit evaluation of specific work experience. The licensee submitted Amendment No. 20, dated August 8, 1980, to the TMI-1 Restart Report, which provided a revised Chapter 5 describing the organization of GPU Nuclear Corporation. The revised Chapter 5 included detailed resumes which permitted NRR evaluation of specific work experience. This item is closed.

(Closed) Noncompliance 289/80-21-05: Failure to report changes made pursuant to 10 CFR 50.59(b). The inspector reviewed the licensee's corrective actions as described in Metropolitan Edison Company letter dated November 26, 1980. The 10 CFR 50.59 reports for 1978 and 1979 were submitted to NRC Region I on October 20, 1980. The report for 1980 was submitted on March 19, 1981. The licensee still plans to develop a Technical Functions procedure to require the submission of this report at least annually. The procedure is now expected to be issued in August 1981. The inspector had no further questions concerning this item.

3. Plant Operations During Long Term Shutdown

a. Plant Logs and Operating Records

The inspector reviewed the following plant procedures to determine the licensee established requirements in this area in preparation for a review of selected logs and records.

- Administrative Procedure (AP) 1002, "Rules for the Protection of Employees Working on Electrical and Mechanical Apparatus," Revision 22
- AP 1007, "Control of Records," Revision 4
- AP 1010, "Technical Specification Surveillance Program," Revision 18

- AP 1012, "Shift Relief and Log Entries," Revision 14
- AP 1013, "Bypass of Safety Functions and Jumper Control," Revision 8
- AP 1016, "Operating Surveillance Program," Revision 13
- AP 1033, "Operating Memos and Standing Orders," Revision 2
- AP 1037, "Control of Caution and DNO Tags," Revision 2
- AP 1044, "Event Review and Reporting Requirements," Revision 2

The inspector reviewed the following plant logs and operating records.

- Shift Foreman Log and Control Room Log Book
- Primary Auxiliary Operator's Log-Tour Readings, Secondary Auxiliary Operator's Log Sheets, and Auxiliary Operator Log Sheets - Out-Building Tour
- Unit 1 Operations Memo Book
- Shift turnover checklist
- Temporary Change Notice (TCN) Log Book
- Active Tagging Application Book
- Locked Valve Log
- ISI Tag Book
- Night Order Book
- Do Not Operate and Caution Tag Log
- Jumper, Lifted Lead, and Mechanical Modifications Log (active and cleared)

Plant logs and operating records were reviewed to verify the following items.

- Log keeping practices and log book reviews are conducted in accordance with established administrative controls.
- Log entries involving abnormal conditions provide sufficient detail to communicate equipment status, lockout status, correction and restoration.

- Operating orders do not conflict with Technical Specification (TS) requirements.
- Jumper log and tagging log entries do not conflict with TS requirements.
- Problem identification reports confirm compliance with TS reporting and LCO requirements.
- Jumper/lifted lead/mechanical modification and tagging operations are conducted in conformance with established administrative controls.

No items of noncompliance were identified.

b. Facility Tours

During the course of the inspection, the inspector conducted multiple tours of the following plant areas.

- Control Room (daily)
- Auxiliary Building
- Reactor Building
- Fuel Handling Building
- Intermediate Building
- Pump House
- Vital Switchgear Rooms
- Diesel Generator Building
- Yard Area
- Site Perimeter

The following observations/discussions/determinations were made.

- Monitoring instrumentation: The inspector verified that selected instruments were functional and demonstrated parameters within Technical Specification limits.
- Valve positions: The inspector verified that selected valves were in the position or condition required by Technical Specifications for the applicable plant mode. This verification included control board indication and field observation of valve position.

- Radiation controls: The inspector verified by observation that control point procedures and posting requirements were being followed. The inspector identified no failures to properly post radiation and high radiation areas.
- Fluid leaks: No fluid leaks were observed which had not been identified by station personnel and for which corrective action had not been initiated, as necessary.
- Piping snubbers/restraints: Selected pipe hangers and seismic restraints were observed and no adverse conditions were noted.
- Equipment tagging: The inspector selected plant components for which valid tagging requests were in effect and verified that the tags were in place and the equipment in the condition specified.
- Control room annunciators: Selected lighted annunciators were discussed with control room operators to verify that the reasons for them were understood and corrective action, if required, was being taken.
- Control room manning: By frequent observation through the inspection, the inspector verified that control room manning requirements of 10 CFP 50.54(k) and the Technical Specifications were being met. In addition, the inspector observed shift turnovers to verify that continuity of system status was maintained. The inspector periodically questioned shift personnel relative to their awareness of plant conditions and knowledge of emergency procedures.
- Fire protection: The inspector verified that selected fire extinguishers were accessible and inspected on schedule, that fire alarm stations were unobstructed, and that adequate control over ignition sources and fire hazards was maintained.
- Technical Specifications: Through log review and direct observation during tours, the inspector verified compliance with selected Technical Specification Limiting Conditions during Shutdown Operation.
- Plant housekeeping conditions: Observations relative to plant housekeeping identified no unsatisfactory conditions.
- Security: During the course of these inspections, observations relative to protected and vital area security requirements were made, including access controls, boundary integrity, search, escort, and badging. No notable conditions were identified.

- Licensee meetings: The inspector frequently attended the licensee's Plan-of-the-Day (POD) meetings, held by licensee management and supervisory personnel at 9:00 a.m., each Monday, Wednesday and Friday, to assess licensee evaluation of plant conditions, status and problems and to review the licensee's plans for conducting certain major plant operations and maintenance activities which require special department coordination and management review. The inspector also attended Construction Status Meetings and Engineering Status Meetings to assess licensee progress and difficulties related to plant modifications required for restart.

Acceptance criteria for the above items included inspector judgement and requirements of 10 CFR 50.54(k), Regulatory Guide 1.114, Technical Specifications, and the following procedures.

- AP 1002, "Rules for the Protection of Employees Working of Electrical and Mechanical Apparatus," Revision 22
- AP 1008, "Good Housekeeping," Revision 7
- AP 1037, "Control of Caution and DNO Tags," Revision 2

No items of noncompliance were identified.

4. Nonroutine Reporting Program

The inspector reviewed the licensee's program for identification, review, reporting, and followup of nonroutine events. The review was performed to determine that administrative controls have been established for the items listed below.

- Prompt review and evaluation of off normal events to assure identification of safety-related events
- Prompt review of planned and unplanned maintenance and surveillance testing activities to assure identification of violations of limiting conditions for operations requirements of the Technical Specifications
- Reporting safety-related events internally and to the NRC
- Assuring completion of corrective actions relating to safety related equipment
- Prompt review and evaluation of vendor bulletins and circulars

To determine conformance with regulatory requirements, the inspector reviewed the following procedures and documents.

- Administrative Procedure (AP) 1044, Revision 2 (February 2, 1980), "Event Review and Reporting Requirements"
- Generation Procedure (GP), Revision 3 (January 2, 1978), "Generation Division Nonconformance"
- GP 0075, Revision 0 (August 10, 1977), Reporting of Defects and Noncompliance as Required by 10 CFR 21
- Safety and Licensing (S&L) Procedure 1, Revision 1, Evaluating Reportability of deficiencies to the United States Nuclear Regulatory Commission Under 10 CFR 50.55e and 10 CFR 21
- Operational Quality Assurance Plan, Revision 9

The inspector found numerous tracking systems in effect. Each system was designed to handle a specific area or item. The inspector reviewed the different systems and found that the tracking systems adequately addressed all items with the exception of Vendor Bulletins. The licensee stated that a new procedure to consolidate some of the tracking systems and to address Vendor Bulletins was in draft form and would be issued subsequently. The inspector plans to conduct further review of this area during a later inspection (289/81-11-01).

5. Annual Overhaul Maintenance on 'A' Emergency Diesel

The inspector observed portions of annual overhaul maintenance performed on 'A' Emergency Diesel. The observations and review of records was performed to determine the following items.

- The activity is performed within the limits of Technical Specifications.
- Required administrative approvals and tagouts are obtained prior to initiating the work.
- Approved procedures are being used and are adequate to control the activity.
- Replacement parts and materials being used are properly certified.
- Equipment is properly tested prior to returning to service.

To ascertain that the maintenance activity is being conducted in accordance with approved procedures and Technical Specifications, the inspector reviewed the following procedures.

- AP 1002, "Rules for the Protection of Employees Working on Electrical and Mechanical Apparatus," Revision 22

- AP 1037, "Control of Caution and DNO Tags," Revision 2
- AP 1016, "Operations Surveillance Program," Revision 13
- AP 1026, "Corrective Maintenance and Machinery History," Revision 11
- AP 1027, "Preventive Maintenance," Revision 9
- Surveillance Procedure (SP 1301.82, "Diesel Generator, Annual Inspection")

On May 19, 1981, the inspector observed maintenance being performed on 'A' diesel generator in accordance with SP 1301.8.2. The working copy of SP 1301.8.2 and QC acceptance documentation in the diesel generator room were reviewed and found to be correct and complete up to the point that maintenance had been performed and was in compliance with the site QA program. After completion of the maintenance portion of 1301.8.2, the inspector observed the initial startup and loading of 'A' diesel generator. The inspector questioned both the shift foreman and CRO in the control room and the auxiliary operator in the diesel room and found each to have adequate knowledge of the procedure. On May 28, 1981, the inspector was present in the control room for a portion of the 24 hour diesel load test. Discussions with the shift supervisor, shift foreman and control room operator showed each individual to have a good working knowledge of the procedure. The inspector reviewed the completed documentation and found that some of the work sheets used to document data were marked "for information only" vice "controlled copy". The inspector reviewed the documentation associated with 'B' diesel generator annual maintenance and several other current completed SP's to see if the same problem existed. It was noted that the wrong stamp was used on only a few pages of 'A' diesel generator surveillance procedure and the inspector considered this to be an isolated administrative error and noted that appropriate corrective action was being taken. The inspector had no further questions regarding this matter.

6. Preoperational Test Program Implementation

a. Scope

The Plant Maintenance/Preventive Maintenance Programs were reviewed by the inspector to verify that administrative procedures are in effect which control all maintenance activities during preoperational testing. Discussions with members of the Corrective Maintenance and Preventive Maintenance Groups were conducted to ascertain the implementation and conduct of these controls.

To verify that the testing was conducted in accordance with approved procedures and to evaluate the performance of the personnel conducting the test, the inspector reviewed the following documents and procedures.

- AP 1021-A, "Plant Modifications," Revision 7
- AP 1022, "Control of Measuring and Test Equipment," Revision 11
- AP 1023, "Test Equipment Recall," Revision 4
- AP 1026, "Corrective Maintenance and Machinery History," Revision 11
- AP 1027, "Preventive Maintenance," Revision 9
- AP 1043, "Engineering Change Modifications," Revision 1
- AP 1047-1, "Unit No. 1 Corrective Maintenance Procedures," Revision 7
- GP 1008, "QA Systems List," Revision 2

b. Findings

The corrective maintenance program requirements and responsibilities are defined by AP 1026. Corrective maintenance functions are controlled by AP 1047. Mechanism are provided for the following items.

- Tracking failure causes and resolutions
- Review and approval of procedures, including generic and standing procedures per Technical Specifications
- Review of job packages by QC to determine hold points
- Notification of code inspector for code safety valve testing, work on pressure boundries, or weld repairs under ASME, Section XI
- Use of calibrated test equipment
- Review for system changes/modifcations
- System isolation and tag out by operations
- Component alignment and post-maintenance testing
- Operations review of maintenance test results

-- Input from Operations/Engineering Departments with regard to acceptance criteria used in maintenance test procedures for the Emergency Feed Water- Reactor Protective System, and Engineered Safeguards Actuation System

Preventive Maintenance (PM) activities are controlled by AP 1027. The computerized portion of the system schedules PM jobs and stores the PM results. Provisions are included to evaluate and report nonconforming/defective items.

Control of measuring and test equipment used during maintenance and testing is provided by procedures AP 1022 and AP 1023. Whereas AP 1022 defines a program for notification for the return of test and measuring instruments to recalibrate on a pre-defined schedule, AP 1023 actually delineates the measures to assure that tools, gages, instruments and other measuring and test devices used in activities affecting the quality of nuclear safety related items are properly controlled, calibrated, and adjusted.

Plant changes and modifications conducted by a maintenance group are controlled under AP 1021-A and AP 1043. These procedures require the same safety evaluations, reviews, approvals and tie-in authorizations that would be required whether the work was done in-house or by a contractor.

No items of noncompliance were identified during the inspector's review of preoperational test program implementation.

7. Reactor Protection System Preoperational Testing

a. Procedure Review

NUREG-0680, TMI-1 Restart, Section C, Short-Term Actions, item 1.c, requires the addition of a reactor trip on loss of both main feedwater pumps and/or turbine trip. The licensee committed to installing a safety grade set of reactor trips prior to restart that will be used as input to the existing Reactor Protection System (RPS). Test Procedure 376/1, Revision 0, approved May 7, 1981, provides for the calibration and logic verification of these trips.

The procedure was reviewed by the inspector to verify proper review and approval. In addition, it was also reviewed for technical content to ensure that testing was planned to calibrate the trip bypass bistables; to verify the correct response time of the bypass bistables and contact buffers; and to verify proper operation of the module interlock string, the test interlock string, and the Turbine/Reactor trip string. The acceptance criteria used in the test were checked against applicable sections of the FSAR and Technical Specifications.

The test procedure appears to meet the objectives assigned. It should be noted that this procedure is meant to test only the two new trips. The RPS Surveillance Procedure 1303-4.1, Revision 36, is due to be revised and performed prior to startup to incorporate these additional trips. The inspector identified no items of noncompliance.

b. RPS Testing Observation

The inspector witnessed the testing of channel B per TP 376/1, "RPS Trip on Turbine/Feedwater Calibration and Logic Verification," to verify that personnel conducting the test used an approved procedure and that personnel conducted the test and collected data in an approved manner. The inspectors observed data collection, alarms, logic and instrument functions during the test. Within the scope of TP 376/1, no items of noncompliance were observed.

c. Test Results Evaluation

The test data obtained for the four RPS channels were reviewed and compared with the specified acceptance criteria. The calibration of the bistables was completed as specified, the response time of the contact buffers and bypass bistables were within the limits, and the logic strings functioned as required. Upon final approval of the test results by the Test Working Group, the calibration and logic checks will be complete. No items of noncompliance were identified.

8. Radiological Control Assessment Followup

A review was conducted of the licensee's actions regarding the followup to the findings of the Radiological Control Assessor. The assessor upon reviewing the Radiation Work Permit (RWP) posted at a job site considered that the area should have been posted as a High Radiation Area instead of a Radiation Area. The assessor's basis was that the highest radiation field for the work area was stated on the RWP to be 200 mR/hr. This concern was directed to the Unit 1 Radiation Protection Manager (RPM) and Deputy RPM who subsequently assigned a radiological engineer to conduct an investigation of the matter. The engineer concluded that a violation of station posting procedures did not occur. The 200 mR/hr reading was found to be a contact reading on a short section of pipe approximately 18 feet above the work area, a hot spot inaccessible to personnel. The area was currently posted as a Radiation Area.

The results of the inspector's review agreed with the Radiological Engineer's findings. No violations of 10 CFR 20 nor of Station Radiological Control Procedures occurred in this matter. The inspector had no further comments in this area and considered this item closed.

9. In-Office Review of Licensee Event Reports (LER's)

The inspector reviewed the LER's listed below, which were submitted to the NRC Region I office, to verify that the details of the event were clearly reported, including the accuracy of the description of cause and the adequacy of corrective action. The inspector determined whether further information was required from the licensee, whether the information involved with the event should be submitted to Licensing Boards, whether generic implications were indicated, and whether the event warranted onsite followup.

The following LER's were reviewed:

- LER 80-003/01T-2, dated June 5, 1981 (Inspection of all installed Crane Tilting Disc Check Valves (as per IE Circular 78-15) has revealed many inconsistencies in fabrication causing several failures of hinge pins and failures of seat ring retention. The design of the valve has been modified and the valves are being reworked)
- LER 81-004/03L-0, dated March 30, 1981 (A snubber was found inoperable while performing refueling interval functional testing due to personnel error of not replacing a shipping plug with a vent plug)
- LER 81-005/99X-0, dated April 28, 1981 (Crystal River 3, which is designated as TMI-1 host reactor for surveillance capsules, failed to maintain a cumulative reactor utilization factor of at least 65%)

The above LER's were closed based on satisfactory in-office review.

10. Exit Interview

Meetings were held with senior facility management periodically during the course of the inspection to discuss the inspection scope and findings. The inspectors met with the licensee representatives (denoted in paragraph 1) at the conclusion of the inspection on July 1, 1981, and summarized the purpose and scope of the inspection and the findings. The licensee representatives acknowledged the findings.