

U. S. ATOMIC ENERGY COMMISSION
DIRECTORATE OF REGULATORY OPERATIONS
REGION I

RO Inspection Report No.: 50-289/73-04

Docket No.: 50-289

Licensee: Metropolitan Edison Company

License No.: CPPR-40

Three Mile Island 1

Priority: _____

Category: B 1

Location: Middletown, Pennsylvania

Type of Licensee: B&W 831 15We PWR

Type of Inspection: Routine, Announced

Dates of Inspection: April 18 and 19 & May 9, 1973

Dates of Previous Inspection: March 26-28, 1973

Reporting Inspector: *R.L. Spessard*
R.L. Spessard, Reactor Inspector

5/27/73
Date

Accompanying Inspectors: *T.A. Rebelowski*
T.A. Rebelowski, Reactor Inspector

5/27/73
Date

R.H. Brickley
R.H. Brickley, Reactor Inspector

5/27/73
Date

Other Accompanying Personnel: None

Reviewed by: *E.J. Brunner*
E.J. Brunner, Chief, Facility Testing and
Startup Branch

5/27/73
Date

1451 056

7910180 *828*

SUMMARY OF FINDINGS

Enforcement Action

None

Licensee Action on Previously Identified Enforcement Items

Corrective action relative to the failure to establish a quality assurance program as required by Criterion II of Appendix B, 10CFR50, has been completed. (Paragraph 6)

Design Changes

None

Unusual Occurrences

None

Other Significant Findings

A. Current

1. The licensee has committed to incorporate additional requirements for measurements and change the test procedure, as required, when vibration data is taken on safety related rotating equipment. (Management Interview Item E and Para. 7)
2. The station battery discharge and charge test was completed, and satisfactory results were obtained. (Para. 8)
3. A significant personnel change has been made in the GPU Startup and Test Organization. (Para. 3)

B. Status of Previously Reported Unresolved Items

1. Test program for primary coolant leak detection and measurement systems (RO Report No. 50-289/72-17 & 73-01)-Not inspected
2. Scope of the core flow flood test (RO Report No. 50-289/73-01) - Not inspected
3. Functional testing of safety related alarms (RO Report No. 50-289/73-01) - Not inspected

1451 057

Management Interview

A management interview was conducted with Messrs. Klingaman, Barton, Miller, and Nelson on May 9, 1973. The following items were discussed:

A. Quality Assurance

With respect to the previous violation regarding the lack of an approved quality assurance program covering testing and startup activities for Three Mile Island 1, the inspector stated that the licensee's corrective measures, described in their response letter of November 20, 1972 and subsequently revised during the RO inspection conducted on January 9-11, 1973, had been completed. The inspector stated that RO:I considered all licensee commitments to be firm agreements, and that as such these should be accomplished by the date committed. The licensee representatives indicated their understanding with respect to commitments made to RO:I. (Para.6)

The inspector requested that RO:I be provided a copy of the recently approved quality assurance program for startup and test activities for Three Mile Island 1 and 2. The inspector stated that this was requested to facilitate RO:I's inspection effort and that the document would be returned upon completion of RO:I's review. The inspector further stated that following review by RO:I, the findings would be discussed with the licensee and documented in an inspection report. A licensee representative stated that, based on discussions with his management, he was not authorized to provide the inspector with a copy of this document and that RO:I would have to make this request in writing. The inspector stated that a written request would be made.

During a subsequent telephone call on May 11, 1973, a licensee representative informed the inspector that a copy of this document would be provided to RO:I.

B. TP401/3 - Station Battery Discharge and Charge Test

The inspector stated that the test procedure and the test results had been reviewed and that RO:I had no further questions on this preoperational test. (Para. 8)

C. Startup and Test Program Schedule

The inspector requested that RO:I be provided a detailed schedule for the startup and test program. A licensee representative stated that the secondary plant schedule had been submitted to TWG, but the nuclear plant schedule had not. He further stated that these schedules would

1451 058

be provided when the inspector returned to the site for a future RO inspection. (Paragraph 4)

D. Surveillance Test Program

The inspector stated that it was RO:I's position that the program for conducting all surveillance tests required by the Technical Specifications must be documented and implemented prior to issuance of an operating license. The inspector further stated that in those cases where surveillance tests could not be performed due to plant conditions, these tests must be included in the initial startup phase program. A licensee representative acknowledged the inspector's statements on this matter, and he stated that MET Ed planned to have their surveillance test program documented and implemented before the issuance of an operating license. He further stated that surveillance and preventive maintenance procedures were currently being prepared. (Paragraph 5)

E. Vibration Data on Safety Related Rotating Equipment

The inspector stated that, based on discussions with a licensee representative during this RO inspection, it was his understanding that TP 250/2 would be the implementing document. The inspector stated that TP 250/2 required assurance that meaningful data be taken and the conditions of testing be repeatable. The inspector further stated that the item would remain open pending RO review of the system turnover packages. A licensee representative stated that after further review of this matter, vibration tests in TP 250/2 would be modified to incorporate additional requirements for measurements when the procedure was used on safety related rotating equipment. He stated that individual check points would be marked to provide repeatability and that a more sophisticated IRD would be used to provide more meaningful data (amplitude and phase angle). He further stated that TP 250/2 would be changed, as required, when the procedure was used on safety related rotating equipment. The inspector stated that the action taken on this matter would be reviewed during a subsequent RO inspection. (Paragraph 7)

F. Unusual Occurrences

The subject of reporting unusual occurrences was discussed. A licensee representative stated that the principal inspector or his Branch Chief would be notified by telephone prior to the issuance of any formal report.

1451 059

G. Pre-operational Test Procedures and Test Instructions

The inspector stated that RO:I review of selected pre-operational test procedures and a test instruction had revealed certain deficiencies which required resolution. These deficiencies and their proposed resolution, which had been previously discussed with licensee representatives during this RO inspection, were reviewed. The licensee representatives concurred with the previously obtained commitments for resolution for these deficiencies. With respect to the question of whether the Decay Heat Removal System function of Fuel Transfer Canal fill and drain would be tested or removed from the FSAR, a licensee representative stated that this matter would be submitted to the TWG for resolution. The inspector stated that this matter remained unresolved pending final action by the licensee. (Paragraphs 9 and 10) ,

During a subsequent telephone call on May 11, 1973, a licensee representative informed the inspector that TWG review of the Decay Heat Removal System test procedures disclosed that Fuel Transfer Canal fill and drain operations would be tested during the performance of test procedures TP 203/7 and TP 203/4. The inspector stated that this matter would be reviewed during a subsequent RO inspection.

1451 060

DETAILS

1. Persons Contacted

Metropolitan Edison Company

- R.M. Klingaman, Superintendent
- J.G. Herbein, Assistant Superintendent
- J.J. Colitz, Station Engineer

General Public Utilities Service Corporation

- J.J. Barton, Startup and Test Manager
- G.P. Miller, Test Superintendent
- R.J. Toole, Asst. Test Superintendent
- M.A. Nelson, Technical Engineer

2. Principle Reactor Inspector Site Turnover

The licensee representatives were informed that the principle inspection responsibilities for TMI-1 & 2 during the testing and startup phase had been assigned to Mr. R.L. Spessard. The RO:I Test and Startup Program and the status of testing relative to TMI-1 were discussed. A tour of the TMI-1 plant was made by the inspectors.

3. Personnel Changes

A licensee representative informed the inspector of the following change in the GPU Startup and Test Organization:

Mr. G.P. Miller was hired and assigned as GPU Test Superintendent. As an interim measure, Mr. J.J. Barton, GPU Startup & Testing Manager, had been serving in this position due to the resignation of the former Test Superintendent.

4. Pre-operational Testing Planning and Scheduling Status

The inspector requested a licensee representative to explain how his test start dates were derived. The representative displayed a program that consisted of Critical Path Networks of all major test phases and computer printouts displaying a summary bar chart and a manpower level analysis. The representative explained how this program was used to control testing sequences. At the management interview a licensee representative committed to provide RO:I with a detailed schedule for the startup and test program.

The inspector discussed RO's policy regarding the need to witness certain preoperational and power ascension tests. Licensee representatives acknowledged their understanding of this matter and stated that they would inform the principle inspector in advance of the scheduled date for commence-

ment of each test of interest to RO:I so that the test could be witnessed by RO:I.

5. Surveillance Test Procedures

The inspector requested information on status of the surveillance program development. A licensee representative stated that as system equipment is tested and accepted by the licensee, a surveillance procedure is developed to insure proper development of the program prior to issuance of operating license. The inspector stated that the surveillance program should be a progressive type, built on system turnovers, and that the complete surveillance program should be documented and implemented prior to the issuance of an operating license. This matter was discussed at the management interview.

6. Quality Assurance

The inspectors reviewed the corrective actions taken by the licensee, as committed during a previous RO inspection,* to resolve the violation concerning the lack of an approved quality assurance program covering testing and startup activities for TMI-1. Based on a review of applicable documents, the inspectors verified that the Test Manual was approved by the TWG on January 18, 1973, that Test Instruction No. 18 was approved by the TWG on March 1, 1973, and that the QA Program for Startup and Test, TMI-1 and 2 was approved by GPUSC on March 3, 1973. According to a licensee representative, these documents were issued for use on the dates approved. The inspectors noted that this action was in accordance with the licensee's previous commitments with the exception that the committed date for approval and issuance of Test Instruction No. 18 was February 15, 1973, whereas the licensee accomplished this action on March 1, 1973. The matter of timely accomplishment of licensee commitments was discussed at the management interview. Additionally during the management interview, the inspector requested that a copy of the QA Program for Startup and Test, TMI-1 and 2 be provided to RO:I.

7. Vibration Data on Safety Related Rotating Equipment

The inspector requested licensee representatives to state the method of reporting vibration data of safety related rotating equipment.** The representatives stated that the generic test procedure TP 250/2, Testing and Checking of Mechanical and Electrical Equipment,

*RO Report No. 50-289/73-01, Management Interview Item E and Paragraph 5

**RO Report No. 50-289/73-01, Management Interview, Item D and Paragraph 8

would be the implementing document. This matter was discussed at the management interview, and a licensee representative committed to incorporate additional requirements for measurements and change TP 250/2, as required, when vibration data is taken on safety-related rotating equipment.

8. TP 401/3 Station Battery Discharge and Charge Test

The inspector reviewed the results of performance of Test Procedure 401/3 - Station Battery Discharge and Charge Test. The following observations were made:

a. Procedure Deficiencies*

- (1) A licensee representative presented data indicating that the battery discharge curve represents empirical data.
- (2) The prerequisites sign off have been modified on recently reviewed test procedures.

The above items are considered to be closed.

b. Test Review

The completed test procedure satisfactorily demonstrated:

- (1) Battery Banks 1A and 1B capacity to be greater than 100% of rated amperage.
- (2) Ability to recharge in specified time and to vary charger line ups.
- (3) Ability to maintain specific gravities of cells over charge and discharge ranges.

RO action relative to this test is considered to be complete, and this was brought to the attention of the licensee representatives during the management interview.

9. Preoperational Test Procedures

a. Status of Test Procedure Preparation, Review, and Approval

Preoperational Test Procedures Approved for Performance	- 31%
Preoperational Test Procedures Awaiting Final Approval	- 14%
Preoperational Test Procedures Under Review by TW & DOT	- 12%
Preoperational Test Procedures Written and Undergoing In-house Review	- 16%
Preoperational Test Procedures Not Started	- 27%

The target date for completion is October, 1973.

1451 063

b. Status of Preoperational Testing

Preoperational Tests Completed and Accepted	- 6%
Preoperational Tests in Progress	- 4%
Preoperational Tests Not Started	- 90%

c. RO Review of Preoperational Test Procedures

The inspectors conducted a review of the following preoperational procedures:

- TP 203/4 Decay Heat Removal System Functional Test
- TP 266/4 Nuclear Service Water Functional Test
- TP 276/3 Condensate System Functional Test
- TP 301/3A Nuclear Instrumentation-Preop. Calibration (Source Range)
- TP 301/3B Nuclear Instrumentation-Preop. Calibration (Intermediate Range)
- TP 401/1-2 Diesel Generator Startup Test

During this review, the inspectors identified a number of apparent deficiencies which required resolution. The deficiencies identified and the licensee representative's and inspector's comments were as follows:

(1) TP 203/4 Decay Heat Removal System Functional Test

Deficiency - The TP does not contain a valve position checklist for each test section. (Sections 9.1.1.2, 9.1.2.23, 9.2.1.4, 9.2.2.15, 9.3.1.7, 9.3.2.6, 9.4.2.1, and 9.4.2.5) These sections refer to the valve position checklist contained in OP 1104/4. It was recommended that these checklists be made an enclosure to this TP.

Licensee Comment - Consideration would be given to incorporating these checklists as an enclosure to the TP.

Deficiency - The Required Plant Status section does not specify the Operating Procedure (OP) to be followed to ensure that the plant system is operable. (Sections 7.1 and 7.2)

Licensee Comment - The procedure will be revised to include the specific OP.

Deficiency - The prerequisite section to the Decay Heat Removal during Reactor Cooling System Cooldown mode of operation states that the pressurizer level must be ≈ 220 " (Sec 9.2.1.3). The operating procedure OP 1104/4 calls for a pressurizer level of ≈ 265 " for the same mode of operation (Sec 4.4.2.1.(3)). There appears to be a conflict between these procedures.

Licensee Comment - The pressurizer level value will be reviewed and the procedure will be revised to show the correct value, if necessary.

1451 064

Deficiency - It appears that the Shift Test Engineer (STE) has the option of installing or not installing the temporary level indication as a prerequisite to the Decay Heat during Component Repair Test (Sec. 9.3.1.3). The operating procedure OP 1104/4 (Sec. 4.4.4.1(5)) does not give him this option for the same mode of operation.

Licensee Comment - The intent was not to give the STE the option of installing or not installing the temporary level indicator but to give him the option of selecting either of the two existing positions. The procedure will be revised to clarify this intent.

Deficiency - Section 9.3.1.6 requires that a "sufficient" supply of demineralized water be available without defining what constitutes a sufficient supply.

Licensee Comment - This section was intended to insure and establish a flow path of demineralized water for makeup purposes, if required. The procedure will be revised to specify this intent.

Deficiency - Section 9.3.1.8 requires that sufficient volume be available in the Boron Water Storage Tank (BWST) for rejected water without defining what constitutes a "sufficient" volume.

Licensee Comment - The procedure will be revised to specify the required volume.

Deficiency - Upon completion of Sec. 9.2.2.10 valve DH-4A is left in the open position.

Licensee Comment - Valve DH-4A should be in the closed position. The procedure will be revised so that this valve is left in the closed position.

Deficiency - The Decay Heat Removal during Reactor Cooling System Cooldown mode of operation test (Sec. 9.2) does not appear to demonstrate that the DHRS can lower the RC temperature from 250 to 140°F in 14 hours.

Licensee Comment - This will be demonstrated in the cooldown following the hot functional test and is contained in TP-600/24.

Deficiency - This procedure does not appear to demonstrate that the system can fill and drain the fuel transfer canal (FSAR 9.5.2.1).

Licensee Comment - Met. Ed. management does not intend to use this system to fill and drain the fuel transfer canal; therefore, the test was not included in this procedure.

Management Interview Comment - The licensee representatives stated that this matter would be referred to the TWG for resolution. During a subsequent telephone call, a licensee representative stated that TWG review of this matter disclosed that fill and drain of the fuel transfer canal would be demonstrated during the performance of Decay Heat Removal System test procedures TP 203/7 and TP 203/4.

(2) TP 266/4 Nuclear Service River Water Functional Test

Deficiency - Sections 9.15.6 and 9.15.11 do not specify the instrument that indicates the flow in the Nuclear Service River Water (NSRW) System.

Licensee Comment - The flow will be measured at FI-291. The procedure will be revised to specify this.

Deficiency - There appears to be an omission to the note following Sections 9.19.22.2 and 9.20.8.2. This note should contain the same information as the note following Sections 9.19.1.2 and 9.20.1.2.

Licensee Comment - This will be investigated and the procedure will be revised if applicable.

Deficiency - Sections 9.20.5 and 9.20.12 do not specify the ΔP at which the backwash is terminated.

Licensee Comment - The ΔP will be specified as soon as it is established.

Deficiency - Section 9.22.1.1 should specify the O.P. to follow in aligning the NSRW system for this test condition.

Licensee Comment - The procedure will be revised to specify the O.P.

(3) TP 276/3 Condensate System Functional Test

Deficiency - Sections 7.2, 7.3, 7.5, 7.6, 7.7, and 7.8 do not specify the O.P. that should be followed on each system.

Licensee Comment - The procedure will be revised to specify the O.P.'s.

Deficiency - Section 9.4.1 does not specify the checks to be made to ensure the deionized water (DW) supply line is pressurized.

1451 066

Licensee Comment - The procedure will be revised to specify the checks to be made.

Deficiency - Sections 10.3.3a, 10.3.3b, and 10.3.3c should have the entry - CO-P2 remains running yes _____ no _____.

Licensee Comment - The procedure will be revised to incorporate this entry.

(4) TP 301/3A Nuclear Instrumentation-Pre-Op Calibration (Source Range)

Deficiency - Sections 9.5.6 and 9.5.7 should indicate that the data is to be recorded on the data sheet (Enclosure 2)

Licensee Comment - The procedure will be revised to specify that the data is to be recorded on the data sheet.

Deficiency - The sections that constitute a recalibration of the count rate amplifier should be specified in Section 9.5.16.

Licensee Comment - The procedure will be revised to specify the applicable sections.

Deficiency - Section 9.8, Reactor Building Evacuation Alarm Calibration and Functional Check, is not in the procedure.

Licensee Comment - This section will be incorporated when the equipment design is completed.

(5) IP 301/3B Nuclear Instrumentation - Pre-op Calibration (Intermediate Range)

Deficiency - There were no apparent deficiencies

(6) TP 401/1-2 Diesel Generator Startup Test

Deficiency - Section 5 does not delineate all test equipment used in the procedure. Items such as tachometers, strobes, barrels, etc. are not included.

Licensee Comment - Licensee will review Section 5 for inclusion of additional items.

Deficiency - Section 6a requires standard safety practices be followed without defining specific requirements.

Licensee Comment - Licensee will review for inclusion of definitive items in the procedure.

Deficiency - Procedure does not identify pre-operational checks such as blowdown of cylinders, checking fuel rack movements, sampling of crankcase for water, check of blower lubrication, preliminary jacking of engine, setting of governor controls.

Licensee Comment - The diesel vendor will run the diesels prior to the performance of the test procedure and his start-up items include items listed above. The diesels will be in standby status following the vendors test.

Deficiency - The procedure (Sec. 8.k.) calls for removal of the alarm relay from the diesel generator control circuitry. The inspector requested whether the removal of this relay deactivated any safety circuits.

Licensee Comment - The function of the alarm relay will not effect the safety circuits.

Deficiency - The method of starting was discussed. The procedure does not indicate single solenoid air starts. The inspector requested whether solenoid fails open or if there are provisions for bypass.

Licensee Comment - The lineup for air start will be reviewed for one solenoid valve start. Review of solenoid position on loss of power will be made as well as bypass provisions.

Management Interview Comment - Licensee representatives stated that the test procedure would be changed to incorporate single solenoid air starts, that the solenoids, which are powered by separate sources, fail in the open position and thus a loss of power to the solenoids will not prevent diesel startup, and that there are no provisions for bypass; however, the solenoids (2 per diesel) are in parallel.

Deficiency - Fuel oil relief valve is not tested.

Licensee Comment - Licensee will review and the valve will be tested, if required.

Management Interview Comment - A licensee representative stated that this valve would not be tested since it was not a pop type valve and was partially open during operation to provide back pressure. The inspector stated that there were no further questions on this item.

Licensee resolution of the above deficiencies, as indicated by their comments, will be verified during subsequent RO inspections.

1451 068

10. Test Instructions

The inspectors conducted a review of Test Instruction No. 18, Test Procedure Documents. During this review, the inspectors identified a number of apparent deficiencies which required resolution. The deficiencies identified and the licensee representative's and inspector's comments were as follows:

Deficiency - Section 3.1.4.2.1, Special Procedures - Preparation Review and Approval, states that the review and approval requirements for Individual Test Procedures shall be used as a guide. This should be stated as a requirement.

Licensee Comment - The Master Test Index (MTX) assigns the review responsibility for Category A procedures to the Test Work Group (TWG) and Category B procedures to the Designer, Operator, Tester (DOT). The responsibility for minor procedures (not category A or B) will be assigned at issuance.

Deficiency - Sections 3.2.1(3) and 3.2.1(4) of Enclosure 6, Format and Instruction for Retest Assignment of Individual Test Procedures and Functional Verification Test Procedures, allows omission or lining out of parts of the test method and data requirements without instructions as to the method to indicate that the change is authorized.

Licensee Comment - The established procedure (TI-18, Enclosure 2) for indicating authorized changes will be followed.

Licensee resolution of the above deficiencies, as indicated by their comments, will be reviewed during subsequent RO inspections.

1451 069

MEMO ROUTE SLIP Form AEC-93 (Rev. May 14, 1947) AECM 0240		See me about this. Note and return.	For concurrence. For signature.	For action. For information.
TO (Name and unit) H. D. Thornburg, Chief, FS&EB	INITIALS DATE	REMARKS RO INSPECTION REPORT NO. 50-289/73-04 METROPOLITAN EDISON COMPANY - THREE MILE ISLAND 1 DOCKET NO. 50-289 The subject inspection report is forwarded for your		
TO (Name and unit) cc: RO:HQ (5) ✓ DR Central Files Reg Standards (3) Dir of Licensing (13)	INITIALS DATE	REMARKS information. Distribution will be made by this office to the PDR, LPDR, NSIC, DTIE and State representatives after review by the licensee for proprietary informa-		
TO (Name and unit) RO Regional Directors	INITIALS DATE	REMARKS tion.		
FROM (Name and unit) E. J. Brunner RO:I	REMARKS			
PHONE NO. X-3942	DATE 5/29/73			

USE OTHER SIDE FOR ADDITIONAL REMARKS

GPO : 1971 O - 445-409

1451 070

~~7910150828~~ Ky