

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

RO Inspection Report No. 50-289/72-13

Subject: Metropolitan Edison Company

Three Mile Island - 1

License No. CPPR-40

Location: Middletown, Pennsylvania

Priority

Category B

Type of Licensee: Power Reactor (PWR)

Type of Inspection: Routine, unannounced

Dates of Inspection: August 2-4 and 28, 1972

Dates of Previous Inspection: July 11-14, 1972

Principal Inspector: *B. K. McLeod*
B. K. McLeod, Reactor Inspector

10-13-72
Date

Accompanying Inspectors: None

Date

Date

Other Accompanying Personnel: None

Date

Reviewed By: *E. J. Brunner*
E. J. Brunner, Chief, Reactor Testing & Startup Br.

10-13-72
Date

Proprietary Information: None

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Section I

Enforcement Action

None

Licensee Action on Previously Identified Enforcement Matters

No enforcement items were identified in the previous Startup and Testing Program Inspection Report.

Unresolved Items

- a. Inadequate integrated testing of the instrument air system. (Paragraph 7.b.(4))
- b. Review of preoperational test procedures. (Paragraph 7)

Status of Previously Reported Unresolved Items

No unresolved items were identified in the previous Startup and Testing Program Inspection Report.

Unusual Occurrences

None

Persons ContactedMetropolitan Edison Company

J. L. Wise - Superintendent, Three Mile Island Nuclear Station
 J. G. Herbien - Station Engineer
 J. Colitz - Supervisor of Operations
 J. R. Floyd - Nuclear Engineer
 H. Morris - Supervisor of Maintenance

General Public Utilities Service Corporation

J. J. Barton - Startup and Test Manager
 R. J. Toole - Assistant Test Superintendent
 M. A. Nelson - Technical Engineer
 T. W. Hawkins - Shift Test Engineer

Burns & Roe Incorporated

N. E. Dickinson - Engineer, Special Projects

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Management Interview

Management interviews were conducted at the conclusion of the inspection visits with Messrs. Wise and Toole. The commitments made by Mr. Toole were confirmed by Mr. Barton on September 21, 1972. The following items were discussed during the management interviews:

Preoperational Test Program

The inspector stated that he had received 19 preoperational test procedures which had been prepared by Met Ed prior to GPUSC assuming responsibility for the technical content of the preoperational test program. He stated that RO:I review of three of these procedures indicated that they were grossly deficient and that further review of the remaining test procedures in this group would not be warranted until the licensee had revised all of these procedures. The inspector stated that his observations indicated that these test procedures do not conform to the licensee's administrative procedures, they do not contain appropriate acceptance criteria, they do not test all the functions and components of the systems as described in the FSAR and they are not approved by the TWG (Test Working Group) as required by the licensee's administrative procedures. The inspector stated that it was his position that these procedures must be revised to conform to the present administrative controls and upgraded to provide an adequate test of the systems. He stated that failure to do so would result in appropriate enforcement action being initiated. Mr. Toole stated that these procedures will be revised to conform to the current administrative procedures and upgraded to provide an adequate test of each system.

The inspector stated that RO:I review of test procedures is a sampling inspection and that it is not intended to identify every deficiency in every procedure. He stated that he expected his comments to be applied broadly and that the licensee should review all proposed test procedures for similar deficiencies. Mr. Toole stated that inspector's comments were so interpreted.

The inspector stated that RO:I review of one test procedure which had been prepared by the GPUSC Test Organization, revealed some deficiencies. He stated that satisfactory resolution of these deficiencies had been obtained. (Paragraph 7)

Facility Operating Procedures

The inspector emphasized the need for prompt attention to the Facility Operating Procedures. He stated that it was apparent that in many areas the scope of the program has not yet been defined; and that this and the lack of a firm schedule for completion of the task were of concern to RO. Mr. Wise acknowledged the inspector's concerns and stated that efforts to define and develop the missing areas of the Facility Operating Procedures were getting underway. (Paragraph 5)

1419 128

Section II

Additional Subjects Inspected, Not Identified in Section I Where No Deficiencies Or Unresolved Items Were Found

1. General

The inspector reviewed the status of system turnover for testing and of test procedure development. As a result of this review, the RO date for fuel loading was revised from June - 1973 to August - 1973.

2. QA Program for Operations

The inspector inquired as to the status of development of the licensee's QA Program for Operations. Mr. Wise stated that a draft program had been prepared by GPUSC and was being reviewed by Met Ed. He stated that Met Ed had hired a QC Engineer for the plant staff and would have him on board in the near future. The inspector stressed the need for development of this program at an early date and indicated that the approved program should be available for RO review a minimum of four to six months prior to the date that Met Ed expects an operating license.

3. Personnel

- a. A test superintendent, to replace W. E. Baker who resigned, has not yet been hired. GPUSC is actively recruiting to fill this position. As an interim measure, Mr. J. J. Barton, Manager of Testing and Startup, is serving as the Test Superintendent.
- b. R. G. Toole, formerly a Shift Test Engineer, has been promoted to Assistant Test Superintendent. The Shift Test Engineer vacancy has not been filled. GPUSC plans to fill the vacancy.

4. Post Erection Cleaning

The inspector discussed the licensee's post erection cleaning program with Mr. Hawkins. Mr. Hawkins provided the inspector with a copy of TP 250/4 - General Procedure for Cleaning and Flushing Systems and Components for RO:I review.

Details of Subjects Discussed in Section I

5. Facility Operating Procedures

The inspector inquired as to the status of development, and schedule for completion of the various categories of Station Operating Procedures. The licensee's response to these questions was as follows:

1419 129

a. Administrative Control Procedures

Mr. Herbien stated that an index of these procedures has not been prepared. He stated that none of these procedures have been written and there is, at present, no schedule for completion of these tasks.

b. Systems Operating Procedures

Mr. Colitz stated that an index has been prepared and that 80% of these procedures are in final draft form. He indicated that there is no firm schedule for completion. Mr. Colitz provided the inspector with an index of these procedures and with copies of 22 of the procedures for review by RO:I. Mr. Colitz agreed to send copies of the remaining draft procedures, which are available, to RO:I for review.

c. General Procedures for Reactor Startup, Shutdown and Operation at Power

Mr. Colitz provided the inspector with an index of these procedures and indicated that copies of final draft procedures will be forwarded to RO:I for review, as they become available.

d. Emergency Procedures

Mr. Colitz provided the inspector with an index of these procedures. He stated that 50% of these procedures are in final draft form. Mr. Colitz stated that he would forward copies of the procedures that are in final draft form to RO:I for review.

e. Abnormal Procedures

The licensee presently includes these as emergency procedures. After discussion with the inspector, Mr. Herbien stated that it may be to Met Ed's benefit to make a distinction between abnormal and emergency procedures and that this approach will be considered.

f. Surveillance Procedures

Mr. Herbien provided the inspector with an index of these procedures. He stated that less than 5% of these procedures have been written. Mr. Herbien stated that Met Ed does not intend to write some of the surveillance procedures (those tests not due until refueling) until some time during the first year of operation. The inspector stated that the RO:I position was that procedures must be complete prior to licensing and that exceptions are granted only on an individual procedure basis, and then only with proper

justification.

Mr. Herbien provided the inspector with a list of procedures that Met Ed does not plan to write prior to licensing. The inspector indicated that Met Ed should reconsider their position and that he would discuss this issue with Met Ed management during the next inspection.

g. Alarm Procedures

Mr. Colitz indicated that none of these procedures had been written. He stated that an index is in preparation and a copy will be sent to RO:I for review when it is complete.

h. Maintenance Procedures

Mr. Wise provided the inspector with a copy of the proposed index for plant maintenance procedures. He indicated that none of these procedures have been written and that no schedule for completion has been formulated.

i. Reactor Engineering Procedures

Mr. Herbien stated that there is presently no index of these procedures and that less than 10% of these procedures have been written. He stated that there is presently no schedule for completion.

j. Rad Con and Radio-Chem Procedures

Mr. Herbien stated that the rad con and radio-chem procedures are currently being prepared. He indicated that he was in doubt as to just what exactly the AEC required in these areas. The inspector stated that an inspection in these areas would be forthcoming in the relatively near future.

6. PORC Meeting Minutes

The inspector reviewed the PORC meeting minutes for the period of January 7, 1971 to July 7, 1972. The deficiencies noted and the inspector's and licensee's comments were as follows:

Deficiency - The minutes do not state the action recommended by the Committee on the items reviewed.

Licensee Comment - Mr. Wise stated that this information would be included in future PORC meeting minutes.

1419-131

7. Preoperational Test Procedures

The inspector conducted a review of certain preoperational test procedures and identified several apparent deficiencies which required resolution. The apparent deficiencies which were identified and the inspector's and licensee's comments relative to these deficiencies were as follows:

a. TP203/4 - Decay Heat Removal System Functional Test

- (1) Deficiency - This test procedure is not approved by the TWG (Test Working Group) as required by Test Instruction No. 18, which defines the methods for preparing, reviewing, modifying, and approving the various test procedures.

Licensee Comment - Mr. Toole stated that this test procedure was one of the test procedures prepared by Met Ed prior to GPUSC assuming responsibility for the Technical Content of the TMI-1 Test program. He indicated that this test procedure would be revised to conform to the present administrative procedures.

- (2) Deficiency - It was not apparent to RO:I during their review of the test procedure that the pump vault leakage detectors will be tested.

Licensee Comment - Mr. Toole stated that the pump vault leakage detectors will be tested and that the test procedure will be modified to include this test.

- (3) Deficiency - There are no sign-off requirements for verification that the required prerequisites for the test have been satisfied. There are also no sign-off requirements for verification that the required plant status has been established.

Licensee Comment - Mr. Toole stated that the test procedure will be modified to include sign-off for prerequisites and required plant status.

- (4) Deficiency - Several alarm set points are missing from the procedure.

Licensee Comment - Mr. Toole stated that this information would be added to the procedure as soon as it is known and that it would be included in the procedure prior to approval of the test procedure for performance.

1419 132

- (5) Deficiency - Step 9.1.1 of the test procedure references step 4.4.2.1.(5) in operating procedure - 1104-4. There is no step 4.4.2.1.(5) in that operating procedure.

Licensee Comment - Mr. Toole stated that this error would be corrected.

Inspector's Comment - The inspector stated that this item was an example and that the problem had been noted in other places in this and other test procedures. He stated that he expected this comment to be applied broadly and that other procedures should be reviewed for similar problems.

Licensee Comment - Mr. Toole stated that other test procedures will be reviewed for similar problems.

- (6) Deficiency - The procedure does not give predicted operating times for non-safety related valves nor does it specify acceptance criteria for safety related valves.

Licensee Comment - Mr. Toole stated that valves which do not perform a safety related function will be operationally checked and timed during the mechanical test of system components prior to starting the preoperational test. He indicated that in these tests the valve operating times will be recorded and compared to predicted values. He stated that valves performing safety functions will be handled in a similar manner with the exception that specific acceptance criteria would be included in the component test procedures.

Inspector's Comment - The inspector stated that since the component tests will not be TWG reviewed the performance of safety related valves would also not be reviewed by the TWG. He stated that it was his position that the performance tests of safety related valves must be reviewed by TWG.

Licensee Comment - Mr. Toole stated that consideration would be given to including the timing of safety related valves in the preoperational test procedures, which are reviewed by TWG. Subsequently, during the exit interview, Mr. Toole stated that the testing of safety related valves would be included in preoperational test procedures.

- (7) Deficiency - The procedure only requires a check of 1 point on the pump curve. This does not appear to be sufficient to verify pump performance.

Licensee Comment - Mr. Toole stated that more than 1 point on the curve would be checked to verify pump performance.

1419-133

- (8) Deficiency - The procedure states that the pumps and motors should be monitored for vibration; however, it is not specific in stating where the measurements will be taken nor what data shall be recorded nor what level of vibration is acceptable.

Licensee Comment - Mr. Toole stated that specific requirements would be incorporated in this and other procedures where vibration monitoring is appropriate.

- (9) Deficiency - It was not apparent that the exit temperature alarm for the decay heat coolers would be tested.

Licensee Comment - Mr. Toole stated that this alarm would be checked in the electrical pre-check procedure, which is a prerequisite for the conduct of the preoperational test procedure.

- (10) Deficiency - A number of components described in the FSAR are not tested in this procedure. Additionally, several performance specifications are not verified.

Inspector's Comment - The inspector stated that it was pointless to identify each of the items since there are a large number and the test procedure requires extensive revision.

Licensee Comment - Mr. Toole indicated that the test procedure will be revised to cover all equipment within the system and verify performance data given in the FSAR.

b. TP256/3 - Instrument and Control Air System Functional Test

- (1) Deficiency - This test procedure is not approved by the TWG (Test Working Group) as required by Test Instruction No.18, which defines the methods for preparing, reviewing, modifying, and approving the various test procedures.

Licensee Comment - Mr. Toole stated that this test procedure was one of the test procedures prepared by Met Ed prior to GPUSC assuming responsibility for the technical content of the TMI-1 test program. He indicated that this procedure will be revised to conform to the present administrative procedures.

- (2) Deficiency - There are no sign-off requirements for verification that required prerequisites have been satisfied. There are also no sign-off requirements for verification that the required plant status has been established.

Licensee Comment - Mr. Toole stated that the test procedure will be modified to include sign-off for prerequisites and

required plant status.

- (3) Deficiency - There are no acceptance criteria for such items as:

Unloader operation
Loaded compressor current
Exit air temperature
Safety valve set point
Dryer regeneration temperature

Licensee Comment - Mr. Toole stated that the procedure would be modified to include appropriate acceptance criteria.

- (4) Deficiency - It is not apparent that the licensee plans to conduct the following tests of the instrument air system:

Compressor capacity
System design flow
Plant response to a loss of instrument air

Licensee Comment - Mr. Toole stated that this test procedure will be modified to include a test of compressor capacity. He stated that consideration would be given to conducting a system design flow test and a plant response to a loss of instrument air test. He indicated that the latter two tests, if conducted, would be included in a different test procedure since they would be run later in the test program.

Inspector's Comment - The inspector stated that it was his position that these tests must be run in order to adequately verify system performance. He indicated that failure to run these tests would represent a deficiency in the licensees program.

c. TP273/3 - Emergency Feed Water System Functional Test

- (1) Deficiency - This test procedure is not approved by the TWG (Test Working Group) as required by Test Instruction No. 18, which defines the methods for preparing, reviewing, modifying, and approving the various test procedures.

Licensee Comment - Mr. Toole stated that this test procedure was one of the procedures prepared by Met Ed prior to GPUSC assuming responsibility for the Technical Content of the TMI-1 Test program. He indicated that this test procedure would be revised to conform to the present administrative procedures.

1412 135

- (2) Deficiency - The procedure does not contain appropriate acceptance criteria. Examples are as follows:

Turbine overspeed trip setting
 Turbine driven pump capacity
 Valve operating times

Licensee Comment - Mr. Toole stated that the procedure will be revised to include appropriate acceptance criteria.

- (3) Deficiency - The procedure does not test the performance of a number of motor operated valves whose functioning is essential to the capability of the unit to perform its design safety function.

Licensee Comment - Mr. Toole stated that the procedure would be revised to include tests of these valves.

d. TP401/3 - Station Battery Discharge and Charge Tests

- (1) Deficiency - The test does not verify the function of the battery charger trouble and the dc voltage low alarms.

Licensee Comment - Mr. Toole stated that these alarms will be tested.

- (2) Deficiency - The test data sheets for the charge test do not record individual charger output currents.

Licensee Comment - Mr. Toole stated that the data sheets will be modified to record individual charger currents.

- (3) Deficiency - Battery chargers 1E and 1F are not tested.

Licensee Comment - Mr. Toole stated that these chargers will be tested in another procedure.

7. Preoperational Test Index

The inspector reviewed the Master Test Index (MTX) relative to the preoperational testing procedures. The deficiencies noted and the inspector's and licensee's comments were as follows:

Deficiency - The inspector stated that the RO:I review had identified 42 test procedures which are not apparently scheduled to be reviewed

1419 136

by the TWG, but which appear to be safety related. He stated that TWG review and approval of these test procedures and the test data would appear to be appropriate and in accordance with the licensee's administrative controls for the test program and FSAR commitments.

Licensee Comment - Mr. Toole stated that this list would be presented to TWG for their review and that consideration would be given to providing TWG review for those procedures. Mr. Toole stated that he would advise the inspector of the results of this index review by TWG. He also stated that if TWG declined to review any tests, he would indicate to the inspector the basis for that decision.

1419 137