TERA

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

November 21, 1979

Docket No. 289

POOR ORIGINAL

Mr. R. C. Arnold
Senior Vice President
Metropolitan Edison Company
100 Interpace Parkway
Parsippany, New Jersey 07054

Dear Mr. Arnold:

In accordance with the schedule confirmed in our letter of November 16, 1979, the enclosed request for additional information documents the questions discussed by our representatives at Bethesda and TMI on November 14 through November 16, 1979. Several new items not previously discussed are also included. References to questions in the enclosure are to items in the request for additional information transmitted with our letter of October 26, 1979.

Questions on Lessons Learned items 2.1.6.a & b and 2.1.8.a, b, and c are not included in the enclosure. Discussions on these items were held at TMI during last week and additional information identified during those discussions should be provided with your responses to the enclosure. Submit schedules for provision of any information which cannot be submitted at that time.

As further noted in our November 16 letter, your response to these requests is required by November 28, 1979, in order to avoid further delay in our review.

Sincerely,

Original signed by
Richard H. Vollmer

Richard H. Vollmer, Director
Three Mile Island Support

Enclosure:

Request for Additional Information

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TMurphy
JNehemias
RWeller

cc: Applicant's Attorney of Record
Parties to Proceeding

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REQUEST FOR ADDITIONAL INFORMATION
TMI-1

1. Your response to Questions 1 and 10k. are not complete.

   A. Provide design drawings for the automatic EFW initiation modifications and provide "as-built" electrical drawings of the present EFW initiation system design.

   B. Provide the test plan (procedure) and results for the proposed EFW initiation functional test.

   C. Update Section 8.2.1 of the Restart Report to clarify what automatic EFW initiation signals will be control grade and what signals will be upgraded to safety grade requirements. It is our position that you have not adequately demonstrated that installation of safety-grade automatic EFW initiation signals (including low steam generator level) is not practicable prior to restart.

2. Your response to Question 9 is not complete. Answer the indicated concerns. In addition;

   A. Provide design drawings of the modified instrument air system.

   B. Provide the test plan (procedure) and results for the proposed EFW control valve failure mode verification test.

   C. Provide the B&W evaluation on the consequences of overfilling the steam generator.

   D. Provide the calculations which indicate that operator action is required within 7 to 15 minutes to prevent potentially adverse steam generator overfill conditions. Include sufficient information to allow us to identify the allowable time delay beyond which the consequences would produce unacceptable effects. Describe each manual action required.

   E. Provide the revised procedures for preventing steam generator overfill conditions, and indicate that adequate operator training in these procedures has been completed.

3. Your response to Question 8 is not complete. Provide the B&W study on transients such as loss of feedwater and loss of offsite power which verify that minimum EFW flow requirements meet the 550 gpm technical specification commitment. Provide the revised TMI-1 Technical Specifications for our review prior to restart. Justify the applicability of the B&W study to TMI-1.

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4. Your response to Question 4 is not complete. Provide "as-built" drawings and qualification documentation for the existing steam generator level instrumentation.

5. Your response to Question 6 is not complete. Provide qualification documentation for the new "safety related" control on EFW flow measuring devices.

6. Provide design drawings for the modifications which provide for control room annunciation of all automatic start conditions of the EFW system.

7. Your response to Question 10b. is not complete. Provide the test plan (procedure) for the proposed 72-hour endurance test on all EFW pumps, including your acceptance criteria.

8. Your response to Question 10e. is not complete. Provide the revised procedures as indicated for assuring an EFW water supply.

9. Your response to Question 10g. is not complete. Provide "as-built" drawings and a description in the Restart Report for the existing design for terminating EFW flow to a steam generator when low steam line pressure is revised.

10. You have committed to modify the EFW system by providing automatic loading of the motor driven EFW pumps on their respective diesel generators during a loss of offsite power with coincident ESAS actuation condition. You have not provided sufficient justification to support this coincident logic. It is our position that adequate emergency feedwater flow for postulated accident conditions can best be assured if the motor driven EFW pumps are automatically loaded to the diesel generator on all loss of offsite power conditions.

11. You have committed to provide a new Limiting Condition for Operation (LCO) in the plant technical specifications requiring an EFW flow path to each steam generator be available at 100% capacity. Your commitment states:

> "If a flow path becomes unavailable or if capacity drops below 100% to each steam generator, the plant shall be shutdown within 48 hours . . ."

To meet the intent of IE Bulletin 79-05A, Item 8, it is our position that the word "each" be changed to the word "either" for this part of the LCO.

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12. We have noted that the EFW pump discharge line cross tie contains two normally open motor operated valves. Upon loss of offsite power or loss of main feedwater, a single passive failure, such as a pipe rupture in one EFW discharge line, could render both EFW trains inoperable. Provide the necessary modifications and/or procedural revisions to correct this condition and mitigate its potential adverse effects to plant safety.

13. Your response to Question 10a. provided in Amendment 5 is not complete. You have not indicated whether the redundant condensate storage tanks level indication and alarms are powered from separate power supplies nor have you indicated that the low level set point provides at least 20 minutes for operator action to assure an EFW water supply assuming that the largest capacity EFW pump is operating.

14. Your response to question 10j. provided in Amendment 5 is not complete. Provide legible arrangement drawings for the EFW system showing the location of all system pumps, piping and valves. Provide qualification documentation which assures that the motor driven EFW pumps will start and remain operational under the environmental conditions (humidity and temperature) resulting from a postulated break in the main steam supply line to the turbine driven EFW pumps. Further, verify that the EFW control valves and actuators are qualified to function under these environmental conditions. Also, provide an analysis which justifies the environmental conditions (323°F) assumed as a result of the postulated steam line break.

15. Provide your evaluation of anticipatory reactor trip parameters (feedwater pump turbine control oil rather than feed flow or other parameters). Include your evaluation of the need for a low steam generator level trip addressing various power levels. Discuss those transient scenarios that may not initiate anticipatory reactor trip for certain loss of feedwater/condensate events (rather than high pressure reactor trip).

16. Your response to Question 33 is not complete. Provide or reference a schedule for submitting the necessary analyses, operator guidelines and revised emergency procedures required by Bulletin 05C. In addition, demonstrate that installation of a safety-grade automatic pump trip is not practicable prior to restart.

17. Your response to Question 34 does not provide sufficient information for our evaluation. Provide:

    A. Effects of liquid relief on the pressurizer electromatic relief valve following reactor trip no. 11. Include results of any inspections conducted of the valve and discharge piping. Address valve performance and operability since this reactor trip.

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B. Corrective action for main steam safety valves failure to reseat following reactor trip no. 12.

C. Corrective action for improper operator control of feedwater prior to reactor trip no. 11.

18. Your response to Question 14 does not provide sufficient information for the staff to make an evaluation. Provide the calculations, assumptions and test data which justify the adequacy of 126 kw pressurizer heater capacity for maintaining natural circulation in the hot standby condition.

19. As required by our October 30 letter, provide a description and schedule of the safety and relief valve test program. Verify that the program is applicable to TMI-1.

20. Your response to Question 13 does not provide sufficient information for the staff to make an evaluation. Provide Appendix 2A to the Restart Report which contains the calculations and test data for the PORV and safety valve flow indicators under various conditions. With respect to the seismic and environmental qualification, the staff requirements are provided in the Lessons Learned clarification letter of October 30, 1979, pages 7 and 8.

21. Bulletin 79-05A, Item 5

Your response to Question 53 addresses safety related valve position checks. IE Bulletin 79-05A, Item 5, also requires a review of the positioning requirements on all safety related valves. State your intent to compare the valve positions noted in your procedures (normal and maintenance lineups, checklists, etc.) with the process flow diagrams to ensure the procedures establish the proper flow path.

22. Bulletin 79-05A, Item 5

Although IE Bulletin 70-05A, Item 5, does not specifically address an independent (second operator) valve alignment verification (reference Question 54), it is our position that such a check is necessary to ensure proper positioning after necessary manipulation. State your intent to perform an independent valve alignment verification when returning the emergency feedwater system to operability after maintenance or surveillance testing. Also, submit your revised procedures reflecting this independent check.

23. Bulletin 79-05A, Item 7

Your response to Question 58 (reference IE Bulletin 79-05A, Item 7) omits reference to operating procedure 1106-6, EFW System. State your intent to review this procedure and the others identified in your original response for proper positioning of the EFW system valves (i.e., verify valve lineups).

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24. Bulletin 79-05A, Item 9

    Your response to Question 59 (reference IE Bulletin 79-05A, Item 9) did not include operator guidance for resetting of containment isolation caused by a reactor trip or a spurious actuation signal. State your intent to provide this operator guidance.

25. Your submittal on the Lessons Learned requirements on Shift Supervisor Responsibilities (NUREG-0578, Section 2.2.1.a, as clarified in our letter of October 30, 1979) is not complete since only Position 2 is addressed. Provide the details of the management directive (Position 1), training program (Position 3), and review policy (Position 4) used to implement this item.

26. The Shift Technical Advisor discussion in NUREG-0578, Section 2.2.1.b (as clarified in our letters of September 13, 1979, and October 30, 1979) addresses accident assessment and operating experience assessment. Your submittal identifies the Shift Technical Engineer (STE) as providing the accident assessment function. State how you intend to accomplish the operating experience assessment function.

27. Your submittal includes a proposed two year training program for the STE. This is not in agreement with the NUREG-0578 requirement for completion of STE taining by January 1, 1981. State your intention to complete STE training in accordance with the NUREG-0578 requirement.

28. Your submittal indicates that shift maintenance turnover procedures will be developed in accordance with NUREG-0578, Section 2.2.1.c, Position 2. Provide your schedule for development and implementation of these procedures.

29. Position 3 of Section 2.2.1.c in NUREG-0578 requires that a system be established to evaluate the effectiveness of the shift turnover procedure. Describe the system you intend to use.

30. The October 30th clarification letter concerning the Lessons Learned requirements identified two new items under Emergency Power Supplies. The first item requires that the pressurizer heater be able to be switched to the emergency power supplies from the control room. The second item requires that the PORV and PORV Block Valve be powered from separate divisions. Provide either modified designs or justification for the acceptability of your existing designs.

31. Provide full details of the GE model CR-2940 switch to be used to isolate the EFW manual control station from the ICS.

32. Provide the electrical elementary drawings associated with the containment isolation modifications so that we may complete our review of this aspect of your design.

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33. It appears from GAI drawing SS-208-203 Rev. IA-1 that the manual and automatic initiation circuits are not arranged to prevent adverse interactions between them. If this is the case, provide justification for your design or modify it accordingly.

34. Question 12 has not been fully answered. A listing of all new loads and bus assignments is required to provide an independent evaluation of whether the emergency power trains have maintained their independence.

35. Provide the basis for selecting 20% and 10% reactor power as the bypass setpoints for main turbine and main feedwater pump anticipatory reactor trip, respectively.

36. Provide a detailed description of the backup capability provided for determining the position of the PORV and pressurizer safety valves beyond the differential pressure transmitters.

37. Provide detailed electrical drawings on the PORV and pressurizer safety valves position indication systems.

38. With regard to a recent event at Oconee Unit 3 in which certain indications in the control room became unavailable, discuss the vulnerability of TMI-1 to a similar malfunction. Also, consider modifications which would reduce the potential for this type of event.

39. Section 8 of the Restart Report indicates that additional transient and accident analyses will be performed using the RETRAN computer model. The connection of these RETRAN calculations to the previously reviewed B&W calculations (Restart Report, Section 8, Reference 2) is not clear. Explain the connection and provide a list of all calculations currently planned using RETRAN. For each analysis, indicate the reason for the calculation. The concern is that RETRAN may be replacing previously accepted analyses, or may be used to support a design modification to a safety related system of interest to the staff. If so, the staff would require supporting documentation to justify use of this computer model. For example, benchmark comparisons to data and accepted models similar to RETRAN would be necessary.

Emergency Plans

40. (1.7*) Specify airborn activity levels for a clean area.

41. (1.2.1) Specify the ingestion EPZ.

42. (2.1.3) Provide a figure showing locations of schools, hospitals in the EPZ.

43. (Table 3) Provide distance from site to hospitals.

44. (3.) Provide Tables similar to NUREG-0610 to indicate emergency classifications and their relationship to the participating authorities.

45. (4.1) Define adverse meteorology

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46. (4.1) Describe precautionary measures that may be taken in a General Emergency prior to a significant release.

47. (4.1(3)) Describe the classification system used by PEMA and the counties.

48. (4.1(6)) Describe the methods of early warning of the public and the prompt initiation of protective actions within the EPZ.

49. (5.4) Provide a specific cross reference to the information in State/Local plans requested in this section.

50. (5.3) Describe the manning of the offsite EOC by Local and State authorities.

51. (5.3) Provide the previously requested information for the following sections:

Regulatory Guide 1.101

5.2(1)
5.2.1(2)
5.3.1(3)
5.3.1(4)
6.4(1)
6.4(2)
6.4.1
6.4.3.2
6.5.1(2)
6.5.4(1), (2), (3)
7.2(1)
7.3.2
7.5(2)
8.1.2(7)
10(1)2

Review Guideline No. 1

IA6
IB4
IB5
IIAB
IIA4
IIB4
IIB5
IIB6
IIA7
IIIA1
IVA1
VB2
VB3

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*Emergency Plan Section Numbers/Regulatory Guide 1.101 Section Numbers/Review Guideline No. 1 Section Numbers.

Decontamination and Radwaste

52. Provide detailed design features of Fuel Handling Building environmental barrier.

53. For solid Radwaste Systems, provide the following:

    A. Description

    B. Capacity

    C. Process Control Program

    D. On-Site Storage Facility

    E. Expected amounts of solid wastes per year

54. Provide information confirming that the TMI-2 decontamination and restoration operations will neither depend upon the TMI-1 radwaste systems nor will be interconnected with the TMI-1 radwaste system.

55. Provide the TMI-1 sump pumping and sampling procedure (SOP Z-33) for industrial waste treatment facilities.

56. Provide revised Figure 7-1 "Station Discharge" indicating sample points, in-line radiation monitors, and applicable unit numbers on the equipment.

57. Demonstrate conformance of the plant ventilation systems with NUREG-1.52 and NUREG-1.140 and provide leak-tight testing procedures for the ventilation systems.

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Management and Technical Capability

58. Does the Senior Vice-President - Met-Ed, Vice-President GPUSC have other responsibilities than TMI-1 and TMI-2? If so, describe the proportion of his time allocated to these other duties.

59. Please clarify whether or not the position of Vice-President Nuclear Operations is a full-time onsite position.

60. Describe the specific responsibilities any functional block of the Station Organization shown in Figure 5.3-1 has for TMI-2; and if so, the time normally allocated to these responsibilities.

61. Figure 5.2-1 appears not to be consistent with the description on page 5-2 with regard to Rad Chem and H.P. functions. Please clarify.

62. Sections 5.2.12 and 5.2.13, Station Organization and Maintenance Description, are shown in Figure 5.3-1 as Station Support Organization. Please clarify this apparent inconsistency. In addition, clarify the distinction between preventive and corrective maintenance.

63. Expand Figure 5.2-1 to show details down to the technician level. Include qualification requirements for all functional blocks except those in the Manager Support Services and Logistics.

64. Show the number of persons assigned to each of the functional blocks shown in the "revised" Figure 5.2-1.

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65. Clarify the meaning of /c/ notation in Figure 5.2-1. If it is not a minimum requirement, delete it and any other reference such as "preferred" that is not a minimum.

66. Describe the function of each of the functional blocks reporting to the Director, Technical Support; Supervisor, Preventative Maintenance; and Superintendent, Radiological Controls and Chemistry.

67. There appears to be no committment that the Superintendent, Radiation Controls and Chemistry needs any qualification requirements in chemistry and radiochemistry. Please clarify.

68. In Section 5.2.15 you state that the Aux Operator performs the function of radiation protection monitor. The Emergency Plan Section 4 states there will be a rad/chem technician assigned to each shift. Please clarify.

69. Describe the onsite fire protection organization including the reporting requirements for the Tech Analyst SR 1.

70. Describe the delegation of authority for overall station management in the event of unexpected contingencies of a temporary nature.

71. Provide greater detail on the personnel resumes already submitted (include relevent job assignments, education, and training, including dates for each). Include resumes of Lead Engineers reporting to the Director, Technical Support.

Station Support Organization

72. Does the Director, Technical Function have any responsibility for any plant other than TMI-1 and TMI-2? If so, describe the extent of these

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responsibilities and the time normally allocated to these responsibilities.

73. Please clarify the description of the functions of the Director - TMI-2 recovery in the fifth paragraph of Section 5.3. It appears to be in error.

74. Provide the number of persons assigned to each of the functional blocks shown in Figure 5.3-1.

75. Describe the qualification requirements in terms of education and experience backgrounds for each of the functional blocks shown in Figure 5.3-1 except for TMI-2 recovery. The breakdown should include each discipline you consider necessary to provide support for the operations staff.

76. Provide resumes of the managers and lead engineers for each of the functional blocks shown in Figure 5.3-1 (except TMI-2 Recovery and Director Environmental Health and Safety) and summary information regarding educational and experience background on the staffing of each of the functional blocks shown in this figure.

77. Describe the specific responsibility any of the functional blocks shown in Figure 5.3-1, other than Director TMI-2 Recovery, has for other plants than TMI-1 and the proportion of time they will be assigned to these other plants.

78. Is it intended that the station support organization be permanently assigned to the site?

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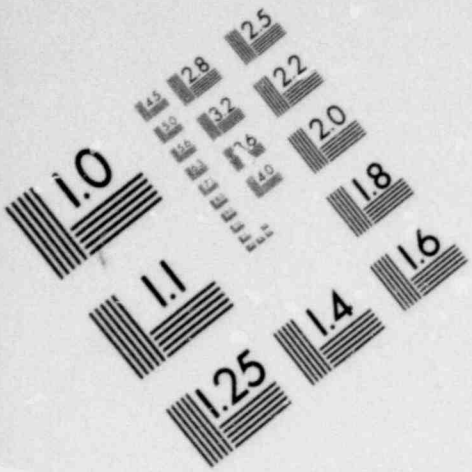
Emergency Organizations

79. Describe the regular assignment of all persons who will be assigned to the Emergency Organization shown in Figures 12 and 13 of Section 4.



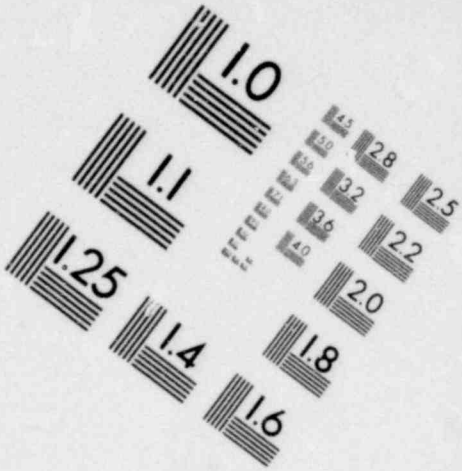
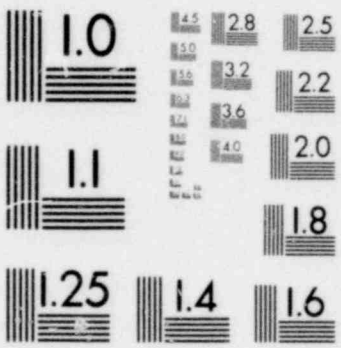
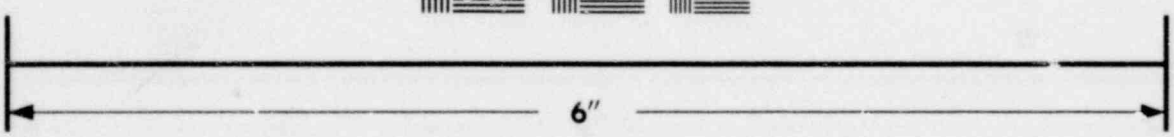
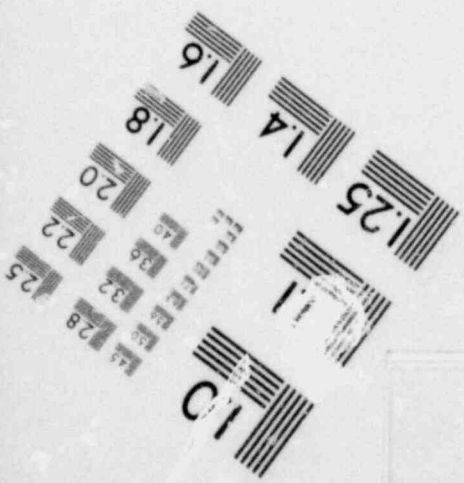
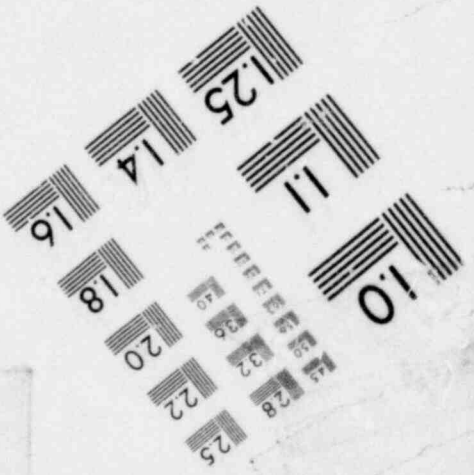


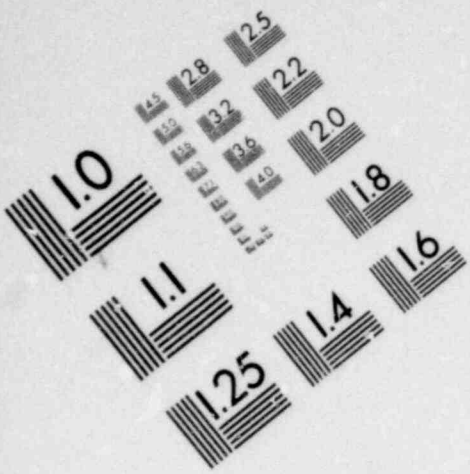
IMAGE EVALUATION TEST TARGET (MT-3)











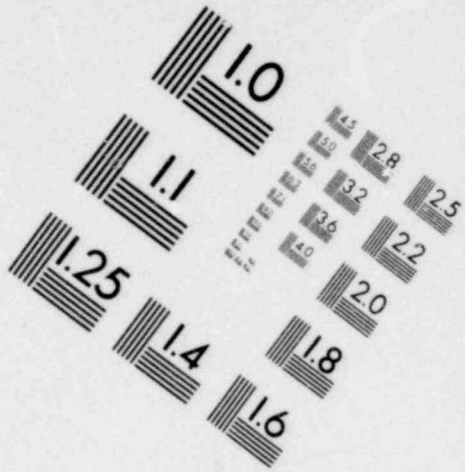
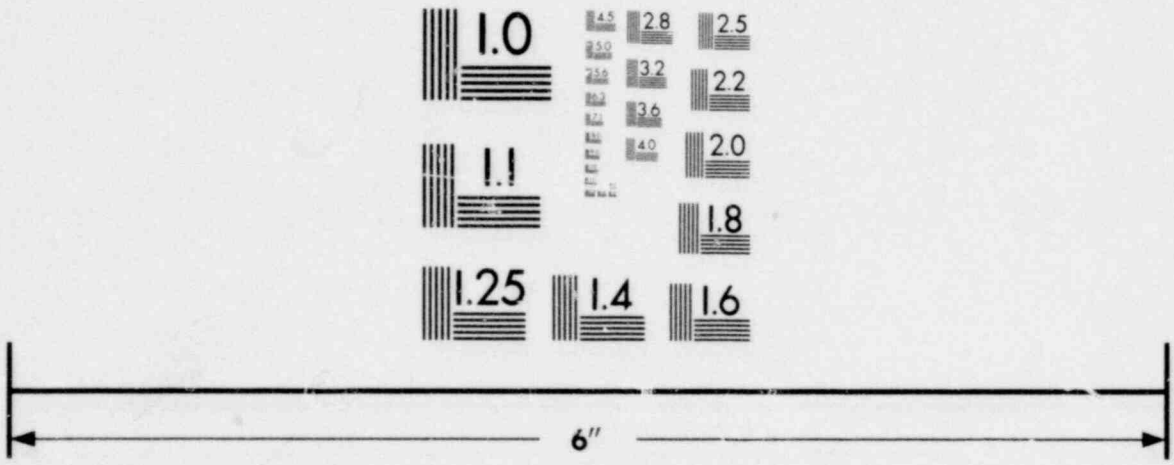
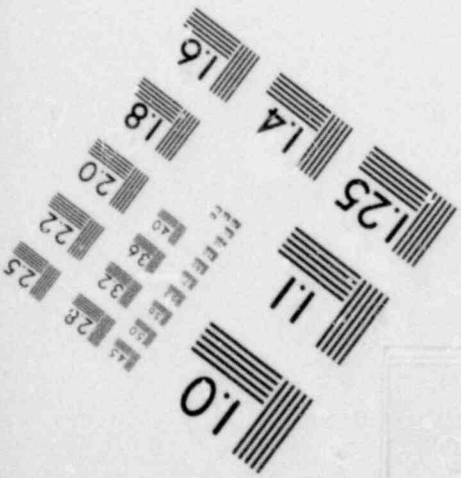
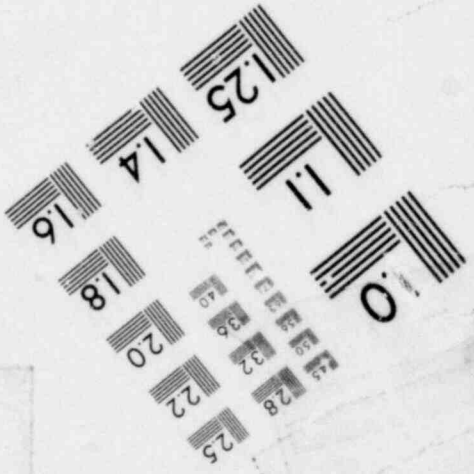
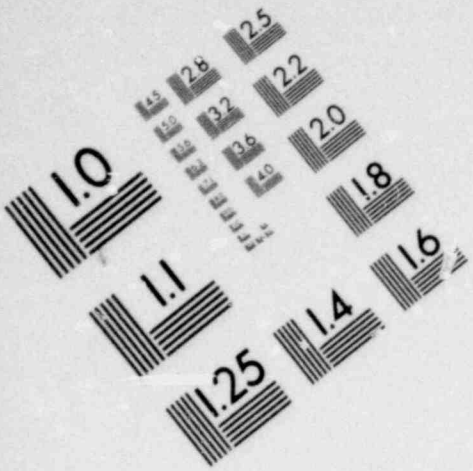


iMAGE EVALUATION
TEST TARGET (MT-3)









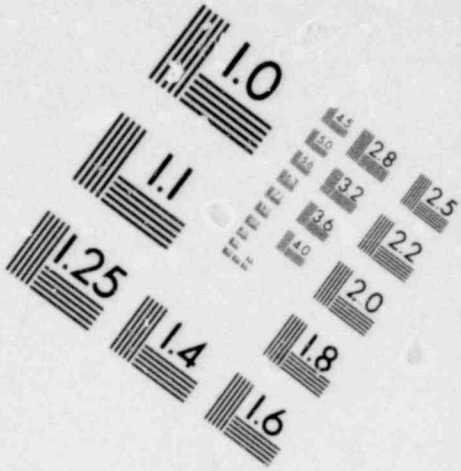
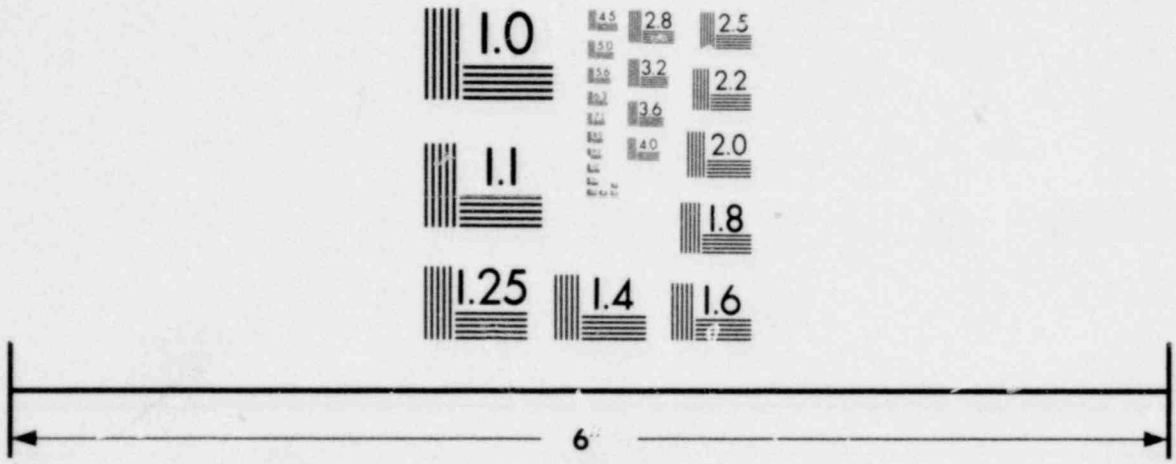
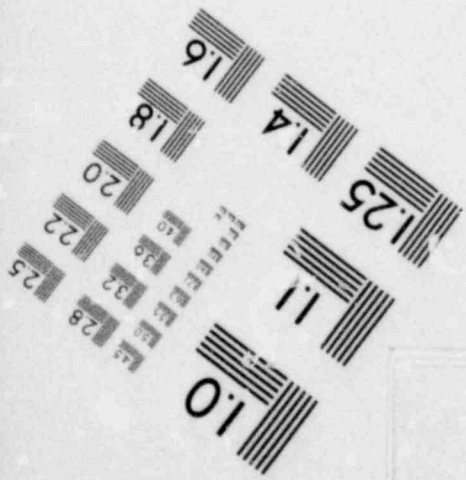
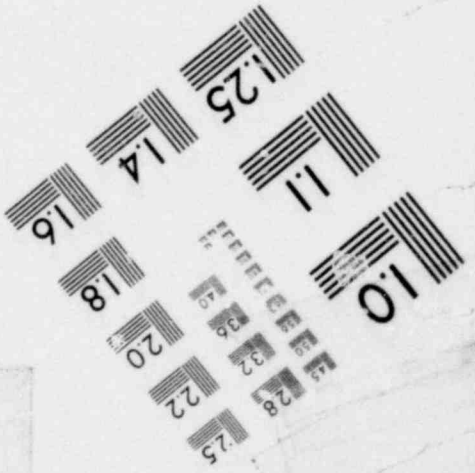


IMAGE EVALUATION
TEST TARGET (MT-3)







80. Describe the extent of mobilization of your Emergency Organization shown in Figures 12 and 13 for each class of emergency; i.e., (1) Unusual Events, (2) Alert, (3) Site Emergency, and (4) General Emergency.

81. The description of the responsibilities of the Manager, Support Services and Logistics, Section 4.5.1.1.d (page 4-50) appears to conflict with that described in Section 5. Please clarify.

82. Describe the number of persons you plan to assign to each of the functional blocks shown in Figures 12 and 13.

83. Describe, for each of the functional blocks shown in Figures 12 and 13, the qualification requirements in terms of education background (discipline), experience, and training.

84. Describe any interfaces between the Onsite Emergency Organization shown in Figure 12 and the Offiste Emergency Organization shown in Figure 13.

85. Describe the maximum time it will take from notification of those persons assigned to the emergency organizations (Figures 12 and 13) until they have been mobilized, and are performing their assigned duties.

86. Describe the Duty Sections referred to in Section 4.6.1.3 (pages 4-87 and 4-88).

87. Describe the training to be received by other than the station organization in regard to their duties in the Emergency Organization. Note Section 4.8.11, page 4-134.

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88. Describe in greater detail your plans for the long-term recovery organization. This information should include the following:

A. The maximum number of persons you plan to staff each functional block shown.

B. The minimum qualification requirements in terms of disciplines (education background) and experience.

C. The source of personnel to staff this organization.

D. The proposed assignment of management personnel for each functional block.

E. The time frame to activate this organization and have them functioning.

89. Describe your provisions for keeping your emergency plans up to date, including assignments of personnel, their availability, and training programs, as necessary.

Lessons Learned*

90. Assure that your definition of "Safety Grade" in Section 1.4 of the Restart Report, which identifies "redundancy" as a required feature, meets NRC single failure criteria including separability.

91. The following additional information is required concerning NUREG-0578 item 2.1.5.c, Hydrogen Recombiners:

A. You indicate that you have performed hydrogen generation rate calculations in accordance with Regulatory Guide 1.7 inorder to verify that adequate time is available following an accident to install the second recombiner and still maintain the containment atmosphere hydrogen concentration within acceptable limits. Submit these calculations for our review. Indicate where the second hydrogen recombiner is to be stored prior to being used, and verify that adequate procedures are available and training performed to assure that the second recombiner can be properly and expediously installed.

B. You indicate that you will perform an evaluation to demonstrate that potential leakage and discharge to the atmosphere of the Intermediate Building air used for recombiner cooling will not result in off-site dose releases in excess of 10 CFR 100 limits. Submit this evaluation for our review.

92. The Met-Ed response to Question 17 (Supplement 1 to the TMI-1 Restart Report) identifies loss of natural circulation due to loss of heat sink as a condition to be analyzed for inadequate core cooling response. This analysis meets the requirements of NUREG-0578 but does not correspond to the analysis (DNB transient at power) proposed at the September 13, 1979 B&W Owner's Group meeting. Please identify those analyses of inadequate core cooling which will be performed independently, or in verification, of the generic analyses to be provided by B&W.

*Additional items dealing with Lessons Learned are initiated elsewhere in this enclosure.

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93. As requested by Question 18 (Supplement 1 to the TMI-1 Restart Report), please identify those emergency procedures which require the explicit use of a) in-core thermocouples, b) wide range reactor outlet temperature measurement, c) reactor coolant saturation temperature margin, and c) other instrumentation identified in the response to Question 17 of the Supplement. Identify each instrument class separately

94. As requested by Question 20 (Supplement 1 to the TMI-1 Restart Report), please complete the description of the proposed subcooling meter. Include:

    A. Overall display uncertainty

    B. Display qualification

    C. Information from page 2 of Table 20-1 (omitted from Submittal)

    If the device utilizes an analog steam table approximation as stated, describe the process in sufficient detail to verify the applicability of the method. Include range and accuracy of the process.

95. Paragraph 2.1.3.b of NUREG-0578 requires a description of further measures and supporting analyses that will yield more direct indication of low reactor coolant level and inadequate core cooling such as reactor vessel water level instrumentation. Section 2.1.1.6 of the Restart Report does not address further measures (to be implemented by January 1, 1981), nor does it address the question of reactor vessel water level instrumentation. Provide a conceptual description of what additional measures will be taken to detect inadequate core cooling. Provide an implementation schedule for these changes.

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