UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
METROPOLITAN EDISON COMPANY	)	Docket No. 50-289
	)	(Steam Generator Repair)
(Three Mile Island Nuclear Station, Unit 1)	)	
	)	

TMIA'S FIRST SET OF INTERROGATORIES AND REQUEST FOR PRODUCTION OF DOCUMENTS TO NRC

Pursuant to 10 CFR § 2.720(h)(ii), TMIA hereby requests the NRC Staff to answer separately and fully in writing, and under oath or affirmation, each of the following interrogatories. Answers must be signed by the person making them. These interrogatories are intended to be continuing in nature and the answers should be supplemented or amended as appropriate, should the NRC Staff or any individual acting on its behalf obtain any new or differing information responsive to these interrogatories.

Definitions and Instructions

The following definitions are applicable to each interrogatary and are incorporated by reference in each interrogatory. The interrogatories must be read in the light of these definitions and your answers must be responsive to the interrogatories as so defined.

1. "Document": The term "document" means any written, recorded, printed, typed or other graphic matter of any kind or nature, however produced or reproduced, whether sent or received or neither, including drafts or copies bearing meaning,

notations or marks not found on or in the original, and includes but is not limited to:

(a) all letters or other forms of correspondence or communication, including envelopes, notes, telegrams, cables, telex messages, messages (including reports, notes, notations and memoranda of or relating to telephone conversations or conferences.)

(b) all memoranda, reports, test results, notes, transcripts, tabulations, studies, lists, comparisons, charts, graphs, summaries, extracts, statistical records, compilations

(c) all desk calendars, appointment books, diaries

(d) all books, articles, booklets, bulletins, notices, instructions, manuals

(e) all photographs, microfilms, tapes or other records, punch cards, magnetic tapes, discs, data cells, print-outs and other data compilations from which information can be obtained.

2. "Communication": The term "communication" means not only oral communications but also any "documents" (as such term is defined in paragraph 1. above), whether or not such document or the information contained therein was transmitted by its to any other person.

3. "Identify", "Identity", or "Identification":

(A) When used in reference to a natural person, the terms "identify", "identity", or "identification" seek the following information:

(i) full name;

(ii) present or last known business adress;

(iii) present or last known business affiliation; and

(iv) present or last known business position (including job title and a description of job functions, duties and responsibilities).

(B) When used with reference to any entity other than a natural person, the terms "identity", "identify", or "identification" require:

(i) its full name;

(ii) the address of its principle place of business;

(iii) the jurisdiction under the laws of which it has been organised or incorporated and the date of such organisation or incorporation, if known;

(iv) the identity of all individuals who acted or who authorised another to act on its behalf in connection with the matters referred to;

(v) in the case of a corporation, the names of its directors and principle officers; and

(vi) in the case of an entity other than a corporation, the identities of its partners or principles or all individuals who act on its behalf in connection with matters referred to.

(C) When used in reference to a document, the terms "identify", "identity", or "identification" mean to provide the following information:

(i) the nature of the document (e.g., letter, contract, memorandum) and any other information (i.e., its title, index or file number) which would facilitate in the identification thereof;

(ii) its date of preparation;

(iii) its present location and identity (as defined in paragraph 3(A) hereof) of its present custodian or, if its present location and custodian are not known, a description of its last known disposition;

(iv) its subject matter and substance or, in lieu thereof, annex a legible copy of the document to the answers of those interrogatories;

(v) the identity (as defined in paragraph 3(A) hereof) of each person who performed any significant function or had any role in connection therewith (i.e., author, contributor of information, recipient, etc.) or who has any knowledge; and

(vi) if the document has been destroyed or is otherwise no longer in existence or cannot be found, the reason, if known, why such document no longer exists, the identity (as defined in paragraph 3(A) hereof) of the person responsible for the document no longer being in existence and of its last known custodian.

(D) When used in connection with an oral communication , the terms "identify", "identity", or "identification" mean to provide the following information:

(i) its general nature (i.e., conference, telephonic communication, etc.);

(ii) the time and place of its occurrence;

(iii) its subject matter and substance;

(iv) the identity (as defined in paragraph 3(A) hereof) of each person who performed any function or had any role in connection therewith or who had any knowledge thereof; and

(v) the identity (as defined in paragraph 3(B) hereof) of each document which refers thereto or which was used, referred to or prepared in the course or as a result thereof.

(E) When used in connection with a statute, regulation, or any other legal requirement, the terms "identify", "identity", or "identification" mean to provide the complete legal citation, by section and subsection, or where no such citation exists, any information necessary to facilitate its location.

4. "Describe" or "Description:

(A) When used with respect to any act, action, accounting, activity, audit, practice, process, occurrence, occasion, course of conduct, happening, negotiation, relationship, scheme, communication, conference, discussion, development, service, transaction, instance,

incident, or event, the terms "describe" or "description" mean to provide the following information:

(i) its general nature;

(ii) the time and place thereof;

(iii) a chronological account setting forth each element thereof, what such element consisted of and what transpired as part thereof;

(iv) the identity (as defined in paragraph 3(A) hereof) of each person who performed any function or had any role in connection therewith (i.e., speaker, participant, contributor of information, witness, etc.) or who has any knowledge thereof;

(v) the identity (as defined in paragraph 3(B) hereof) of each document which refers thereto or which was used, referred to or prepared in the course or as a result thereof; and

(vi) the identity (as defined in paragraph 3(C) hereof) of each oral communication which was a part thereof or referred thereto.

(B) When used in connection with any test data the terms "describe" or "description" mean to provide the following information:

(i) all calculations, computer printouts and any other documentation used to obtain stated test results, including sequence of testing;

(ii) an explanation of its meaning (including the nature, source and meaning of each component part thereof);

(iii) an explanation of the manner in which it was derived;

(iv) the identity (as defined in paragraph 3(A) hereof) of each person who performed any function with respect thereto;

(v) the identity of each document (as defined in paragraph 3(B) hereof) which refers thereto or which was used, referred to or prepared in the course or as a result thereof; and

(vi) the identity (as defined in paragraph 3(C) hereof) of each oral communication which occurred in the course of the preparation thereof or which referred thereto.

5. "Factual Basis": The term "factual basis" means; (A) set forth each item of information upon which the allegation, contention, claim or assertion to which it pertains is based, and (B) with respect to each such item of information identify each person having knowledge thereof and identify and describe (as defined in paragraphs 3 and 4 hereof) each source thereof, including but not limited to each document oral communication, act, action, activity, accounting, negotiation, practice, process, occurrence, occasion, course of conduct, happening, relationship, scheme, conference, discussion, development, service, instance, incident, event, calculation and computation upon which you rely with respect thereto.

6. "Relates to": The term "relates to" or "relating to" when used in connection with any act, action, activity, accounting, practice, process, occurrence, occasion, course of conduct, contractual provision or document, happening, relationship, scheme, conference, discussion, development, service, instance, incident, event, etc., means used or occurring or referred to in the preparation thereof, or in the course thereof, or as a consequence thereof, or referring thereto.

7. "Person": The term "person" means all natural persons, corporations, partnerships or other business associations, public authorities, municipal corporations, state governments, local governments, all governmental bodies, and any other legal entities..

8. Answer by reference to Documents: Identify each and every document which you claim supports each fact set forth in your answers to the Interrogatories. With respect to each answer, identify (as defined in paragraph 3(C) hereof) the specific document, documents, or portions thereof identified by page and paragraph number within the page, containing the requested information, or attach a copy to the answer hereto.

9. For each interrogatory answer, identify each person who participated in the preparation of the answer, and who provided information to you upon which you relied in preparing answer, and precisely what information was provided by each such person.

10. "Licensee": "Licensee" includes Metropolitan Edison Company and GPU Nuclear Corporation, and all present and former officers, employees, agents, and all other persons, engineering or consulting firms or companies acting or purporting to act on behalf of Met Ed, GPU Nuclear, and/or any kind and all parent and predecessor entities.

11. "You" means any member or members of the NRC Staff, its employeess, agents, and all other persons acting or purporting to act on its behalf.

12. "State the basis" includes the factual, legal and other bases for the relevant assertion, and includes the terms "factual basis," "identify," and "describe" as defined herein.

13. These interrogatories shall be deemed to be continuting so as to require supplemental answers if the NRC obtains additional information after service of the initial answers. Such additional answers shall be served from time to time, but no later than fourteen(14) days after such additional information is received by the NRC.

Interrogatories for NRC Staff

1. Describe all tests (including a description of which tubes were tested in the TMI-1 steam generator, and their location within the tube bundle), test data (as defined in ¶4B, supra), and analyses developed and performed by or relied upon by the NRC, including a description of the loading conditions and an explanation as to how the tests took into account the load time history effects on the tubes, to determine the fatigue life of TMI-1 steam generator tubes:

(a) before kinetic expansion repairs were performed; and

(b) after kinetic expansion repairs were performed.

2. Describe all tests, (including a description of which tubes were tested in the TMI-1 steam generator, and their location within the tube bundle), test data, (as defined in ¶4B, supra), and analyses developed and performed by or relied upon by the NRC, including a description of the loading conditions and an explanation as to how the tests took into account the load time history effects on the tubes, to determine the stress levels on the TMI-1 steam generator tubes:

(a) before kinetic expansion repairs were performed, and

(b) after kinetic expansion repairs were performed.

3. Describe all tests, (including a description of which tubes were tested in the TMI-1 steam generator, and their location within the tube bundle), test data, (as defined in ¶4B, supra), and analyses developed and performed by or relied upon by the NRC, including a description of the loading conditions and an explanation as to how the tests took into account the load time history effects of the tubes, to determine the effects of the corrosive contaminant on:

(a) stress levels on the TMI-1 steam generator tubes, and

(b) the the fatigue life of TMI-1 steam generator tubes.

4. Describe all tests, (including a description of which tubes were tested in the TMI-1 steam generator, and their location within the tube bundle), test data, (as defined in ¶4B, supra), and analyses developed and performed by or relied upon by the NRC, including a description of the loading conditions and an explanation as to how the tests took into account the load time history effects of the tubes, to determine the effects of the changed strength and dimensions of tubes which have been kinetically expanded, on:

(a) stress levels on the TMI-1 steam generator tubes, and

(b) the the fatigue life of the TMI-1 steam generator.

5. Has the NRC determined or quantified the specific load tranfer for testing purposes? If the answer is "yes", describe and state the basis for determining the load transfer under:

(a) ideal conditions; and

(b) service conditions.

6. Describe all tests, (including a description of which tubes were tested in the TMI-1 steam generator, and their location within the tube bundle), test data, (as defined in ¶4B, supra), and analyses developed and performed by or relied upon by the NRC, to test plasticity failures, including a description of which tubes have been tested for plasticity failures, and a description of the plasticity failure analysis for all sections of the tubes. If only certain tubes were tested, state the basis for selecting the tubes which were tested, and for failing to select others.

7. Describe all tests, (including a description of which tubes were tested in the TMI-1 steam generator, and their location within the tube bundle), test data, (as defined in ¶4B, supra), and analyses developed and performed by or relied upon by the NRC, to test elasticity, including a description of which tubes have been tested for elasticity. If only certain tubes were tested, state the basis for selecting the tubes which were tested, and for failing to select others.

8. Describe all tests, (including a description of which tubes were tested in the TMI-1 steam generator, and their location within the tube bundle), test data, (as defined in ¶4B, supra), and analyses developed and performed by or relied upon by the NRC, to determine the effects of a simltaneous rupture in both steam generators,

including a simltaneous rupture in both steam generators occurring in conjuction with a LOCA.

9. Do you claim that in the course of corrosion, some tubes failed earlier than others? State the basis for your answer.

If your answer to the above interrogatory is "yes":

(a) Describe all tests, (including a description of which tubes were tested in the TMI-1 steam generator, and their location within the tube bundle), test data, (as defined in ¶4B, supra), and analyses developed and performed by or relied upon by the NRC to determine why some tubes failed earlier than others.

(b) Describe precisely how pre and post-repair testing and analyses of the TMI-1 steam generator took account of the fact that certain tubes had failed earlier than others.

10. Do you claim that the repaired tubes have been returned to the original design basis?

(a) If the answer is "no", state the basis for determining this, and explain precisely why this is or is not safety significant.

(b) If the answer is "yes," state the basis for this determination.

11. Describe all tests, (including a description of which tubes were tested in the TMI-1 steam generator, and their location within the tube bundle), test data, (as defined in ¶4B, supra), and analyses developed and performed by or relied upon by the NRC, including a description of the loading conditions and an explanation as to how the tests took into account the load time history effects of the tubes, to determine the hardness property of the tubes before expansion repair.

12. Describe all tests, (including a description of which tubes were tested in the TMI-1 steam generator, and their location within the tube bundle), test data, (as defined in ¶4B, supra), and analyses developed and performed by or relied upon by the NRC, including a description of the loading conditions and an explanation as to how the tests took into account the load time history effects of the tubes, to determine the"toughness" or "fracture toughness" property of the tubes before expansion repair.

13. Describe all tests, (including a description of which tubes were tested in the TMI-1 steam generator, and their location within the tube bundle), test data, (as defined in ¶4B, supra), and analyses developed and performed by or relied upon by the NRC, including a description of the loading conditions and an explanation as to how the tests took into account the load time history effects of the tubes, to determine the hardness property of the tubes after expansion repair.

14. Describe all tests, (including a description of which tubes were tested in the TMI-1 steam generator, and their location within the tube bundle), test data, (as defined in ¶4B, supra), and analyses developed and performed by or relied upon by the NRC, including a description of the loading conditions and an explanation as to how the tests took into account the load time history effects of the tubes, to determine the"toughness" or "fracture toughness" property of the tubes after expansion repair.

15. Describe the "lead test" program, including an explanation as to whether the tube samples being used for the lead test program have been expanded prior to the testing sequence.

16. State the basis for determining that the "lead test" program will detect tube degradation.

17. Describe and state the basis for deciding not to use non-linear fracture mechanics theory and analysis for testing and analyzing the residual tube properties in the TMI-1 steam generators, including the properties of those tubes which were circumferentially cracked?

18. If you claim that non-linear fracture mechanics analysis is inappropriate for testing and analyzing the residual tube properties in the TMI-1 steam generators, including the properties of circumferentially cracked tubes, describe and state the basis for this determination.

19. Describe the empirical data which exists to support the fracture mechanics calculations relied upon by the NRC to test the residual tube properties in the TMI-1 steam generators, including the properties of circumferentially cracked tubes.

20. Describe all tests, (including a description of which tubes were tested in the TMI-1 steam generator, and their location within the tube bundle), test data, (as defined in ¶4B, supra), and analyses developed and performed by or relied upon by the NRC, including a description of the loading conditions and an explanation as to how the tests took into account the load time history effects of the tubes, to analyze the loss of tube pre-tension, including a determination of the cause of the loss pretension

21. Describe all tests, (including a description of which tubes were tested in the TMI-1 steam generator, and their location within the tube bundle), test data, (as defined in ¶4B, supra), and analyses developed and performed by or relied upon by the NRC, including a description of the loading conditions and an explanation as to how the tests took into account the load time history effects of the tubes, to determine the effects of kinetic expansion on tube sheet ligaments and welds.

22. Describe all tests, (including a description of which tubes were tested in the TMI-1 steam generator, and their location within the tube bundle), test data, (as defined in ¶4B, supra), and analyses developed and performed by or relied upon by the NRC, including a description of the loading conditions and an explanation as to how the tests took into account the load time history effects of the tubes, to determine the effects of high-cycle flow induced

23. Describe all tests, (including a description of which tubes were tested in the TMI-1 steam generator, and their location within the tube bundle), test data, (as defined in ¶4B, supra), and analyses developed and performed by or relied upon by the NRC, including a description of the loading conditions and an explanation as to how the tests took into account the load time history effects of the tubes, to determine the maximum crack size that would remain stable during a main steam line break.

24. Describe all tests, (including a description of which tubes were tested in the TMI-1 steam generator, and their location within the tube bundle), test data, (as defined in ¶4B, supra), and analyses developed and performed by or relied upon by the NRC, including a description of the loading conditions and an explanation as to how the tests took into account the load time history effects of the tubes, to verify the leakage rates for various axial loadings, including those tubes which have lost pre-tension.

25. Describe all tests, (including a description of which tubes were tested in the TMI-1 steam generator, and their location within the tube bundle), test data, (as defined in ¶4B, supra), and analyses developed and performed by or relied upon by the NRC, including a description of the loading conditions and an explanation as to how the tests took into account the load time history effects of the tubes, to demonstate that the 6 inch qualification zone can provide the necessary leak tightness and load carrying capabilities required for operation.

26. Describe all tests, (including a description of which tubes were tested in the TMI-1 steam generator, and their location within the tube bundle), test data, (as defined in ¶4B, supra), and analyses developed and performed by or relied upon by the NRC, including a description of the loading conditions and an explanation as to how the tests took into account the load time history effects of the tubes, which are used as a basis to conclude that the increased length of the transition zone will cause a corresponding decrease in strain.

27. Describe all tests, (including a description of which tubes were tested in the TMI-1 steam generator, and their location within the tube bundle), test data, (as defined in ¶4B, supra), and analyses developed and performed by or relied upon by the NRC, including a description of the loading conditions and an explanation as to how the tests took into account the load time history effects of the tubes, to determine that the tensile preload on individual tubes was not altered as a result of expansion.

28. Describe all pullout tests, (including a description of which tubes were tested in the TMI-1 steam generator, and their location within the tube bundle), pullout test data, (as defined in ¶4B, supra), and analyses developed and performed by or relied upon by

the NRC, including a description of the loading conditions and an explanation as to how the tests took into account the load time histor. effects of the tubes.

29. Describe all tests, (including a description of which tubes were tested in the TMI-1 steam generator, and their location within the tube bundle), test data, (as defined in ¶4B, supra), and analyses developed and performed by or relied upon by the NRC, including a description of the loading conditions and an explanation as to how the tests took into account the load time history effects of the tubes, to demonstrate that the expansion process has a minimal effect on the overall longitudinal tube strain and as-fabricated preload induced strain.

30. Describe all tests, (including a description of which tubes were tested in the TMI-1 steam generator, and their location within the tube bundle), test data, (as defined in ¶4B, supra), and analyses developed and performed by or relied upon by the NRC, including a description of the loading conditions and an explanation as to how the tests took into account the load time history effects of the tubes, to determine that the tensile preload on individual tubes not altered as a result of expansion.

31. If during operation, leakage exceeds the baseline leakage rate by the established minimum increase, describe the precise method presented by Licensee to the NRC Staff to determine where the tube defects causing increased leakage are located. For defects determined to be in areas other than the tube free span, describe the precise action required to stop the increased leakage.

32. Explain presicesly what the Staff means by "unanticipated mechanism" in NUREG-1019, Supp. 1, page 13. Does this include any occurrences which are beyond the design basis?

33. Does the NRC Staff allege that a simultaneous tube rupture in both steam generators could not result in core damage? Describe any probalistic risk assessment performed by the NRC Staff or the ACRS to determine this.

34. On the cover letter to TDR 388 and 417, there is a description of a meeting held on September 15, 1983, (dated November 22, 1983,) which contains the statement that the loss of pretension occurred on some tubes prior to expansion. Explain how this is reconciled with the NRC Staff position that loss of pre-tension occurred during the expansion process.

35. Describe and state the basis for determining how TMI-1 tube history effects were factored into the tests conducted at the Mt. Vernon facility, relied upon by the NRC Staff.

36 Describe all mechanical tests (including a description of which tubes were tested in the TMI-1 steam generator, and their location within the tube bundle), test data (as defined in ¶48, supra), and analyses developed and performed by or relied upon by the NRC Staff, including a description of the loading conditions and an explanation as to how the tests took into account the load time history effects on the tubes, to qualify the repair process.

37. Describe all tests, (including a description of which tubes were tested in the TMI-1 steam generator, and their location within the tube bundle), test data, (as defined in ¶4B, supra), and analyses developed and performed by or relied upon by the NRC to determine the effects plugging 1,500 tubes will have on load distribution.

38. Describe all tests, (including a description of which tubes were tested in the TMI-1 steam generator, and their location within the tube bundle), test data, (as defined in ¶4B, supra), and analyses developed and performed by or relied upon by the NRC to determine the revised load for an individual tube after it has been plugged.

39. Describe and state the factual basis for determining how the new load distribution referred to in the preceeding interrogatory affects the fatigue life of an individual tube.

40. Describe all tests, (including a description of which tubes were tested in the TMI-1 steam generator, and their location within the tube bundle), test data, (as defined in ¶4B, supra), and analyses developed and performed by or relied upon by the NRC to determine how this new load distribution referred to in the preceeding interrogatory affects the fatigue life of an individual tube.

41 Describe precisely how pre and post-repair testing and analyses of the TMI-1 steam generator took account of the new load distibution identified in the preceeding interrogatory.

42. Describe all tests, (including a description of which tubes were tested in the TMI-1 steam generator, and their location within the tube bundle), test data, (as defined in ¶4B, supra), and analyses developed and performed by or relied upon by the NRC to determine the integrity of plugged tubes prior to having been expanded.

43. Describe all tests, (including a description of which tubes were tested in the TMI-1 steam generator, and their location within the tube bundle), test data, (as defined in ¶4B, supra), and analyses developed and performed by or relied upon by the NRC to determine the integrity of plugged tubes after having been expanded.

44. Describe all tests, (including a description of which tubes were tested in the TMI-1 steam generator, and their location within the tube bundle), test data, (as defined in ¶4B, supra), and analyses developed and performed by or relied upon by the NRC to determine the plug retention capability of tubes which suffered corrosion damage and had been expanded before plugging.

45. Describe and state the basis for determining acceptable leakage for plugged tubes.

46. Describe the number and location of plugged tubes which were identified as leaking unacceptibly, requiring further repairs, during post-repair testing.

47. Describe and state the factual basis for determining which tubes had unacceptable leakage identified during post-repair testing.

48. Describe all tests, (including a description of which tubes were tested in the TMI-1 steam generator, and their location within the

tube bundle), test data, (as defined in ¶4B, supra), and analyses developed and performed by or relied upon by the NRC to determine the cause of the lack of integrity of these leaking plugs.

49. Describe all tests, (including a description of which tubes were tested in the TMI-1 steam generator, and their location within the tube bundle), test data, (as defined in ¶4B, supra), and analyses developed and performed by or relied upon by the NRC to determine whether plugged tubes which have undergone the kinetic expansion repair process will interfere with the plant's ability to respond to transients and accidents.

50. Describe mechanistically your definitions of safety and safety significant as they relates to steam tube repairs and failures.

51. Describe all tests, (including a description of which tubes were tested in the TMI-1 steam generator, and their location within the tube bundle), test data, (as defined in ¶4B, supra), and analyses developed and performed by or relied upon by Licensee to determine if a turbine trip a maximum power could result in stresses sufficient to cause a rupture of the repaired portion of a steam generator tube.

52. Describe all tests, (including a description of which tubes were tested in the TMI-1 steam generator, and their location within the tube bundle), test data, (as defined in ¶4B, supra), and analyses developed and performed by or relied upon by Licensee to determine if thermal shock from an inadvertent actuation of emergency feedwater at high power could result in stresses sufficient to cause a rupture of the repaired portion of a steam generator tube.

53. Describe all tests, (including a description of which tubes were tested in the TMI-1 steam generator, and their location within the tube bundle), test data, (as defined in ¶4B, supra), and analyses developed and performed by or relied upon by Licensee to determine if rapid cooldown following a LOCA could result in stresses sufficient to cause a rupture of the repaired portion of a steam generator tube.

54. Describe all tests, (including a description of which tubes were tested in the TMI-1 steam generator, and their location within the tube bundle), test data, (as defined in ¶4B, supra), and analyses developed and performed by or relied upon by Licensee to determine if restart could result in stresses sufficient to cause a rupture of the repaired portion of a steam generator tube.

55. Describe and state the basis for determining that the corrosive environment has been eliminated.

56. Do you claim that the concerns raised by Mr. Dillon with respect to fears that the clean up process may cause the corrosion which damaged the steam generators to reinitiate, have any continuing relevancy now that the clean up has been completed?

(a) If the answer is "yes", describe the relevancy, state the basis for your detemination, and explain precisely why this is or is not safety significant.

(b) If the answer is "no," state the basis for this determination.

57. Do you claim that the sulfur contamination remaining after the cleaning process poses no risk of reinitiation of IGSCC?

(a) If the answer is "yes", describe the effect, state the basis for your detemination, and explain precisely why this is or is not safety significant.

(b) If the answer is "no," state the basis for this determination.

58. Do you claim that an inventory of 0.1 ppm sulfate in solution would have no corrosive effect on the steam generator tubes or the RCS?

(a) If the answer is "yes", describe the effect, state the basis for your detemination, and explain precisely why this is or is not safety significant.

(b) If the answer is "no," state the basis for this determination.

59 Do you claim that the release of the 20-50% of the sulfur remaining in the oxide corrosion film will have any corrosive effect on the steam generator tubes or the RCS?

(a) If the answer is "yes", describe the effect, state the basis for your detemination, and explain precisely why this is or is not safety significant.

(b) If the answer is "no," state the basis for this determination.

60. State the basis for determining that the chemical composition of contaminants which remains in the steam generators after cleaning is acceptable.

61. State the basis for determining that the explosive residue remaining in the steam generators after cleaning is acceptable.

62. Describe all tests, (including a description of which tubes were tested in the TMI-1 steam generator, and their location within the tube bundle), test data, (as defined in ¶4B, supra), and analyses developed and performed by or relied upon by the NRC, including a description of the loading conditions and an explanation as to how the tests took into account the load time history effects of the tubes, to demonstrate that the expanded tubes are less susceptible to SCC.

63. Describe all tests (including a description of which tubes were tested in the TMI-1 steam generator, and their location within the tube bundle), test data (as defined in ¶4B, supra), and analyses developed and performed by or relied upon by the NRC Staff, including a description of the loading conditions and an explanation as to how the tests took into account the load time history effects on the tubes, to determine the acceptability of Licensee's flushing only pipes > 1 inch in diameter.

64. Describe all post clean up tests, post clean up test data, (as defined in ¶4B, supra), and analyses developed and performed by or relied upon by the NRC, on the TMI-1 coolant.

65. Describe and state the basis for determining the total volume capacity of pipes with < 1 inch diameter which were not flushed by the Licensee.

66. Describe and state the basis for determining the total volume capacity of pipes with > 1 inch diameter which were flushed by the Licensee.

67. Has Licensee reported to NRC that sodium thiosulfate, or other sulfur-bearing species resulting in residual sodium thiosulfate, was introduced into the reactor coolant system at TMI-1 in:

(a) July, 1980;

(b) May, 1981;

(c) September 1981;

(d) any other date in TMI-1 history.

68. Describe any steps taken by Licensee, as reported to the NRC, to determine if damage had occurred within the reactor coolant system as a result of introduction of sodium thiosulfate, or other sulfur-bearing species resulting in residual sodium thiosulfate, referred to in the preceeding interrogatory.

69. Describe the precise circumstances, as reported to the NRC, of each introduction of sodium thiosulfate, or other sulfur-bearing species resulting in residual sodium thiosulfate, referred to in the preceeding interrogatory, and state the factual basis for determining these circumstances.

70. Describe steps taken by Licensee, as reported to the NRC, to determine the extent of damage, and to rid the system of contamination, in response to the instances of introduction of sodium thiosulfate, or other sulfur-bearing species resulting in residual sodium thiosulfate .

71. To your knowledge, has Licensee received NUREG - 0691?

72. Describe any thiosulfate residual remaining in the system as a result of any previous introduction of sodium thiosulfate, or other sulfur-bearing species resulting in residual sodium thiosulfate, at the start of September, 1981. State the basis for arriving at this determination.

73. Describe, and state the basis for determining:

(a) how cracking occurred at the lower portion of the tubes in the steam generator.

(b) how cracking terminated.

74. Do you disagree with the conclusion of NRC Staff consultant Dr. Digby D. MacDonald that a volatile polysulfur species besides thiosulfate must be present in the RCS?

75. Describe all methods used by the Licensee to rid the RCS of the polysulfur species identified by Dr. MacDonald.

76. Describe all tests (including a description of which tubes were tested in the TMI-1 steam generator, and their location within the tube bundle), test data (as defined in ¶4B, supra), and analyses developed and performed by or relied upon by the NRC Staff, including a description of the loading conditions and an explanation as to how the tests took into account the load time history effects on the tubes, to determine the effects which the desulfuiztion method had on tube integrity.

77. With respect to contaminants other than sulfur (in its various forms and compounds) describe each such contaminant which could cause or contribute to corrosion.

78. Do you claim that cracking in the weld area occurred at heat up phase? State the basis for your answer.

79. Do you claim that cracking in the transition zone occurred at heat up phase? State the basis for your answer.

80. Does the Staff allege that cracking could only have occurred during the cooling period or cold shutdown conditions? State the basis for this determination?

81. Does the Staff allege that cracking could only occur in the future during the cooling period or cold shutdown conditions? State the basis for this determination?

82. Describe and state the basis for determining what precise radiological health and safety consequences, in terms of both radioacitve releases into the environment, and exposure to the population, would result from

(a) a single tube rupture; and

(b) a simultaneous rupture in each steam generator.

83. Do you allege that TDR 406 requires that in the event of a simultaneous rupture in each steam generator, the greater OTSG leak is isolated? State the basis for your answer.

84. Describe precisely what modifications the Staff will require in TDR 406 before restart.

85. Explain precisely what the Staff means by "take action consistent with overall safety to minimize offsite releases" in the Final Determination of No Significant Hazards Consideration, Encl. 1 (response to Commmonwealth Comments), page 9.

86. Has the optimum OTSG cooldown/depressurization rate been determined? If so, describe and state the basis for determining this rate.

87. Has the optimum OTSG pressure control scheme been determined? If so, describe and state the basis for determining this scheme?

88 Have you enquired of B&W their reason for not endorsing the training program referred to in TDR 406. If so, state to the best of your knowlegde the basis for B&W's failure to endorse the training program referred to in TDR.

89. Have you interviewed, or otherwise have knowledge of Licensee operators who have found the training and procedures referred to in TDR 406 of dubious value? If so, identify such operators, and state the basis for each operator's complaints regarding the training and porcedures referred to in TDR 406.

90. In the event of a steam generator tube rupture, do you allege that reducing the subcooling margin risks the formation of steam bubbles in the reactor and reactor coolant piping which could block the circulation of cooling water through the core?

(a) If no, state the basis for your answer.

(b) If yes, state the safety significance of this result, and explain how this conforms to past safety limits.

91. In the event of a steam generator tube rupture, do you allege that reducing the subcooling margin effects the fuel compression limit which may ^cause fuel rods to swell or ballon?

(a) If no, state the basis for your answer.

(b) If yes, state the safety significance of this result, and explain how this conforms to past safety limits.

92 In the event of a steam generator tube rupture, do you allege that the limits on the required pressure/temperature limits for RCP operation could be effected?

(a) If no, state the basis for your answer.

(b) If yes, state the safety significance of this result, and explain how this conforms to past safety limits.

93. Does TMI-1 have instruments to measure the tube/shell temperature difference, which meet NRC criteria?

(a) If the answer if yes, describe them, and describe precisely how they work.

(b) If the answer if no,

(1) how will operators determine this measurement?

(2) if reliance in placed on the plant computer, must it be operable during plant operation?

94. By what amount will reducing the limit to 70 degrees delta T from that needed with a 100 extend the time needed to cool the plant degrees delta T limit?

95. Do you allege that a 70 degree delta T limit makes the operator's job more difficult than if the limit were 100 degrees delta T because he must control the delta T within a tighter limit? State the basis for your answer.

96. Describe what other plants are being or have been reviewed by the NRC for steam generator tube degradation? Describe the results of

97. State whether you agree or disagree with, and state the basis for doing so, GPU's Third Party Review Group (TPR) statement in its February 18, 1983 report, "[S]afe operation of the TMI-1 plant after repair of the steam generators will be dependent on ...

(a) [c]ompletion of analyses including ...the contingency of multiple tube rupture.

(b) [t]ranslation of analytical work such as leak before break and multiple tube rupture into useable plant guidance, procedures, and training.

(c) a conservative approach of power escalation after completion of repairs."

98. State whether you agree or disagree with, and state the basis for doing so, the TPR's recommendation in its February 18, 1983 report, "[A]lthough sufficient operating experience with other once-thru steam generators (OTSGs) would justify allowing the OD indications less than 40 percent through-wall to remain in service, the ID indications are most probably stress corrosion cracks and should be plugged."

99. State whether you agree or disagree with, and state the basis for doing so, the TPR's recommendation in its February 18, 1983 report, "[t]ubes within three rows of the lane region and in the wedge-shaped region at the periphery which have OD indications at the 15th support plate or above, should be plugged as has been done in other OTSG's."

100. State whether you agree or disagree with, and state the basis for doing so, TPR's finding in its May 16, 1983 supplement that Licensee's response to Recommendations A.3 and A.4 is satisfactory.

101. State whether you agree or disagree with, and state the basis for doing so, the TPR's recommendation in its February 18, 1983 report, "[w]e recommend that GPU Nuclear implement corrective measures or verify their exising programs for minimizing ingress of all impurities (not just sulfur) into the reactor coolant system".

102. State whether you agree or disagree with, and state the basis for doing so, TPR's finding in its May 16, 1983 supplement, B. Recommendation 1, that "GPU Nuclear actions are considered adequate for safety."

103. State whether you agree or disagree with, and state the basis for doing so, the TPR's decision to recommend additional actions in its May 16, 1983 supplement, (Further comments B.1-6).

104. State whether you agree or disagree with, and state the basis for doing so, the TPR's comment in its February 18, 1983 report, "[cracking in the rest of the reactor coolant system]... tend to be very tight and are indeed very difficult to detect."

105. State whether you agree or disagree with, and state the basis for doing so, the TPR's comment in its February 18, 1983 report, "GPU Nuclear should remain alert to the possibility that small cracks may, in fact, be present in susceptible components of the reactor coolant."

106. State whether you agree or disagree with, and state the basis for doing so, the TPR's comment in its February 18, 1983 report, "[t]he analysis which led to [the conclusion that steam generator tube defects below a certain size range will not propagate due to flow-induced vibrations] depends on a large extrapolations of a limited crack-propagation-rate data base. This makes its hard to substantiate a firm conclusion."

107. State whether you agree or disagree with, and state the basis for doing so, the TPR's comment in its February 18, 1983 report, "a flow-induced vibration type of loading ... could make a significant non-conservative difference in the results once a crack is initiated."

108. Do you agree with GPU Nuclear's conclusion that "flow-induced vibrations may not play any role in propagating steam generator cracks?" State the basis for your answer.

109. State whether you agree or disagree with, and state the basis for doing so, the TPR's recommendation of long-term corrosion tests which include a simulated flow-induced vibrations loading.

110. State whether you agree or disagree with, and state the basis for doing so, the TPR comment C.4 in the May 16 report, "there is much about reactions between peroxides and system materials which is not understood, so that (in spite of testing) there remains a risk that the process could be detrimental."

111. State whether you agree or disagree with, and state the basis for doing so, the TPR's comment in its February 18, 1983 report, "[t]he explosive expansion of the tubes could affect the stress levels, if the process would change the strength or some dimensions of the tubes."

112. State whether you agree or disagree with, and state the basis for doing so, the TPR's comment in its February 18, 1983 report, "the tubes probably have some small defects that were not detected by the eddy current tests and were not eliminated by the repair."

113. State whether you agree or disagree with, and state the basis for doing so, the TPR's comment in its February 18, 1983 report, "[t]hese defects present the potential for leaving the tubes in a weaker condition than in a normal OTSG."

114. State whether you agree or disagree with, and state the basis for doing so, the TPR's comment in its February 18, 1983 report, "among the undetected defects there may be some that are large enough to break through to the OD and propagate along the circumference in a stable manner, with the potential of breaking the tube when the crack becomes unstable."

115. State whether you agree or disagree with, and state the basis for doing so, the TPR's comment in its February 18, 1983 report, that there is a "low probability that [a maximum total leak rate of 1 lb/hr.] will obtained in these steam generators."

116. The May 19, 1982 MEMORANDUM FOR: Thomas Novak, FROM: William V. Johnston, SUBJECT: STAFF EVALUATIN OF TMI #1 STEAM GENERATOR CORROSION PROBLEM, states on page 1 of the Attachment thereto, "1. Eddy current test requirements in the plant technical specifications and in the ASME code are by themselves inadequate to assure that a meaningful inspection will be performed, given the nature of the corrosion mechanism which exists at TMI-1." State the basis for this statement.

117. The May 19, 1982 MEMORANDUM FOR: Thomas Novak, FROM: William V. Johnston, SUBJECT: STAFF EVALUATIN OF TMI #1 STEAM GENERATOR CORROSION PROBLEM, states on page 2 of the Attachment thereto, "3. Because the expansion joint seal will function as the primary pressure boundary for as many as 20,000 tubes, leakage characteristices under normal and postulated accident conditions should be established by test. Testing should include expansion into dirty crevices."

(a) Describe the "normal and postulated accident conditions contemplated in the above memorandum.

(b) Describe "dirty crevices"

(c) State the basis for this statement.

118. The May 19, 1982 MEMORANDUM FOR: Thomas Novak, FROM: William V. Johnston, SUBJECT: STAFF EVALUATIN OF TMI #1 STEAM GENERATOR CORROSION PROBLEM, recommends on page 3 of the Attachment thereto, as a possibly prudent program, frequent shutdowns to test for the progression of degradation.

(a) State the basis for this recommendation.

(b) State the basis for the Staff's failure to impose this recommendation as a license condition.

119. State the basis for each of the following statements contained in the February 18, 1982 Policy Issue, SECY-82-72, OVERALL STEAM

GENERATOR PROGRAM, at pages 2 to 3 of the attachment thereto, and describe and state the basis for determining the relevance of each statement to the TMI-1 steam generators:

(a) "Rapid degradation between inspections of a large number of tubes could create the potential for multiple tube failures in the event of a plant transient or failure of a single tube and the accompanying jet impingement and tube whip could cause failure of additional tubes."

(b) "[T]he potential for complicating circumstance involving multiple equipment failures such as the stuck open PORV during the Ginna incident and possible steam bubble formation in the primary system hve not been evaluated."

(c) "Another concern is ruptures in multiple S.G.'s. In this event, unless the plant can be rapidly depressurized and brought onto Residual Heat Removal, there is the potential to continuously lose emergency core cooling water outside of containment."

(d) "In summary, the consequences of S.G. tube ruptures under normal operating conditions have been small; however, such events can present a significant challenge to plant operators and safety systems."

(e) (at page 3): "These loads increase the potential for failure of degraded S.G. tubes which loads increase the potential for failure of degraded S.G. tubes which could exacerbate the accident sequence."

(f) "In the event of a LOCA, the core reflood rate could be retarded by steam binding."

(g) "S.G. tube failures would create a secondary to primary leak path which aggravates the steam binding effect and could lead to ineffective reflooding of the core."

Interrogatories for NRC Staff regarding NUREG - 1091.

N- 1. State the educational and professional qualifications (including a complete list of publications) of person who contributed to the production of NUREG-1019, including all revisions and supplements thereto.

N- 2. Describe the precise expertise of each person who contributed to the production of NUREG-1019, including all revisions and supplements thereto, in the area of fracture mechanics.

N- 3. Describe the precise expertise which each person who contributed to the production of NUREG-1019, including all revisions and supplements thereto, has in the area of stress analysis of steam generator tubes at nuclear power plants.

N- 4. Identify all those who attended or participated in NRC Staff discussions or meetings regarding the Staff position on and evaluation of Licensee's steam generator tube repairs, and state the educational and professional qualifications (including a complete list of publications) of each such person.

N- 5. Identify all those who acted as employees, agents, advisors, or consultants to the NRC Staff in evaluating Licensee's steam generator tube repairs, and state the educational and professional qualifications (including a complete list of publications) of each.

N- 6. Describe procedurally how conensus was reached on all interim and final findings, and conclusions, contained in NUREG-1019, including all revisions and supplements thereto.

N- 7. For each of the following statements or conclusion within NUREG-1019:

(a) Describe and state the basis for determining each statement or conclusion including a description of all tests (including a

description of which tubes were tested in the TMI-1 steam generator, and their location within the tube bundle), test data (as defined in ¶4B, supra), and analyses developed and performed by or relied upon by the NRC Staff, including a description of the loading conditions and an explanation as to how the tests took into account the load time history effects on the tubes.

(b) identify all those members of the NRC Staff, their consultants, employees, agents, or advisors who agreed with each statement or conclusion, and their basis for doing so; and

(c) identify all those members of the NRC Staff, their consultants, employees, agents, or advisors who disagreed with each statement or conclusion, and their basis for doing so.

(1). NUREG-1019 at page 4 -- Some additional comments by the TPR which the staff has determined are not related to safety issues area being considered by the licensee. However, resolution of these comments will not have a negative effect on public health and safety.
(2). NUREG-1019 at page 4 -- The licensee and its consultants conducted extensive microstructural and fractographic examinations on Inconel 600 tubing specimens taken from the TMI-1 OTSG.
(3). NUREG-1019 at page 7 -- The staff concludes that sodium

thiosulfate at concentrations of 4-5 ppm is the contaminant which most likely caused the OTSG tube degradation.

(4). NUREG-1019 at page 7 -- The staff is of the opinion that cracking of the sensitized Inconel 600 OTSG tubing was most likely caused by absorption of elemental sulfur or some highly active form of sulfur species, formed by dissociation of the thiosulfate.

(5). NUREG-1019 at page 7-8 -- We are of the opinion that irrespective of the exact scenarios, the thiosulfate contaminant has been removed from the system. (Include the basis for concluding that determing the exact scenario is not important to this conclusion.)

(6). NUREG-1019 at page 8 -- The intermediate states which may have contributed to the degradation of the components are not germane to the staff's final conclusion that at TMI-1 thiosulfate contamination combined with the presence of oxygen was the main cause of the OTSG tube degradation.

(7). NUREG-1019 at page 10 -- Normal sensitivity of the ultrasonic (UT) examination method is sufficient to detect indications having a depth of 20% of the diameter of bolts.

(8). NUREG-1019 at page 10 -- Based on the above examiniations, the staff has reasonable assurance that the remainder of the RCS has not been subjected to sulfur-induced corrosion and is therfore acceptable for continued power operation.

(9). NUREG-1019 at page 14 ¶2 -- These indications ... are not considered to be of safety significance...

(10). NUREG-1019 at page 14 ¶5 --(Entire paragraph).

(11). NUREG-1019 at page 16 -- The joint should be able to sustain the original design basis tensile load of 3140 pounds with no slippage between the expanded area and the tubesheet at an axial strain corresponding to this load.

(12). NUREG-1019 at page 16 -- The goal for the repaired joint is to maintain its load carrying and leak-right capabilites for the remaining plant design life of 35 years.

(13). NUREG-1019 at page 18 -- Because of the conservatism of testing at 70°F, the above test date indicate that adequate margin in the pull-out strength is available at a normal operating temperature of 600°F.

(14). NUREG-1019 at page 16 -- Leak rates were determined at normal operating pressures as well as simulated accident conditions.

(15). NUREG-1019 at page 19 -- If significant residual stresees had been introduced by the expansion repair process, this test would have initiated SCC. The test results indicate that there is no detectable increased SCC susceptibility of expanded tubing over unexpanded tubing.

(16). NUREG-1019 at page 19 -- If it can be assured that the tubes are under insignificant compression or even in tension under cold conditions, then buckling will not occur at design basis conditions.

(17). NUREG-1019 at page 19 - 20-- The problem of buckling is resolved by installing the tubes under tension; i.e., they are stretched and seal welded in the stretched or pretensioned position. As a result, subsequent elongation of the tube is not sufficient to cause buckling.

(18). NUREG-1019 at page 22 -- (Findings 1, 2, 3, and 4, at the top of the page.)

(19). NUREG-1019 at page 25 -- A 3-inch kinetic expansion joint below the defect will assure that the tube is still retained tightly within the tubesheet under the most severe transient during normal operation. On this basis, it was concluded that there is not need to stabilize these tubes.

(20). NUREG-1019 at page 66 -- Because of the "thumbnail" shape of the

inside diameter cracks found at TMI-1, this means that the average arc length of the largest two-coil ECT crack would be about 0.26 inch.

(21). NUREG-1019 at page 27 -- In this concentration range [of less than 0.1 ppm], sulfate ion does not have a significant corrosive effect.

(22). NUREG-1019 at page 27 -- These negative results, however, do not provide adequate assurance that some untested combination of exposure conditions would not liberate aggressive species.

(23). NUREG-1019 at page 29 -- [T]he staff does not agree that an additional corrosion test in a cold, high oxygen, and high concentration sulfate (10ppm) environment is needed, as suggested by a staff consultant (Attachment 3).

(24). NUREG-1019 at page 29 -- [T]he staff concludes that the chemical factors causing corrosion of the steam generator tubes have been identified and that the corrosion-causing contaminants in the coolant and on the RCS surfaces will be removed to an acceptable extent.

(25). NUREG-1019 at page 30 -- [E]ven if additional sulfur is released during operation, no significant corrosion will occur.

(26). NUREG-1019 at page 16 -- [T]he staff concludes that the above listed measures [which have been implemented to prevent re-introduction of contaminants to the RCS] provide reasonable assurances that sulfur-containing contaminants will not be reintroduced to the RCS.

(27). NUREG-1019 at page 31 -- Cracking can be prevented by keeping the lithium concentration ten times that of sulfur.

(28). NUREG-1019 at page 32 (c) -- introduction of sodim hydroxide into the RCS will not cause additional corrosion.

(29). NUREG-1019 at page 32 (e) -- these measurements are effective and reliable in detecting ingress of foreign chemicals ....

(30). NUREG-1019 at page 35 -- For transients and accidents not discussed below, we concur with the licensee's assessment that the FSAR analysis will remain bounding, or that the OTSG repair will have no bearing on plant response to those transients and accidents.

(31). NUREG-1019 at page 36 -- Operating data indicate that the TMI-1 primary flow rate was 109% of design flow prior to the tube repairs.

(32). NUREG-1019 at page 36 -- Data from the last TMI-1 cycle also indicate that "A" looop typically had about 3% more flow than "B" loop.

(33). NUREG-1019 at page 36 -- The following accidents and transients have not been evaluated in detail because steam generator tube plugging would not significantly affect them and the FSAR analyses remain bounding: steam line break, steam generator tube rupture, moderator dilution, cold water accident (pump startup), loss of forced coolant flow, locked rotor, and loss of load.

(34). NUREG-1019, Supp. 1, at page 4 -- While some tubes were plugged as a preventive measure as a result of the baseline inspection, it is generally concluded that small arc length partial through-wall cracks existing in the tubing are not growing nor are new cracks occurring. (Include a description of the tubes which were plugged, and the precise reason they were plugged.)

(35). NUREG-1019, Supp. 1, at page 4 -- [T]he losss of pre-tension will not significantly alter the vibrational characteristices of the tubes nor reduce the capability to detect through-wall cracks by primary-to-secondary leakage beca use the change in total tube tensin is small.

(36) NUREG-1019, Supp. 1, at page 11 -- The increase in transition length will cause a corresponding decrease in strain in the transition zone.

(37). NUREG-1019, Supp. 1, at page 12 -- During heatup, stress in bowed tubes will remain compressive and, therefore, the loading will not accelerate crack propagation.

(38). NUREG-1019, Supp. 1, at page 18 -- [T]he actual concentrations of sulfur should remain at less than 0.1 ppm.

(39). NUREG-1019, Supp. 1, at page 19 -- monitoring of pH and conductivity 5 times per week is sufficient to provide information on the chemistry conditions of the primary coolant system.

(40). NUREG-1019, Supp. 1, at page 23 -- We find that the measurement technique and equipment used are consistent with the licensing basis of the plant and therefore are acceptable.

(41). NUREG-1019, Supp. 1, at page 24 -- The staff believes that for the interim, the flexibility available to the licensee's Emergency Director through the provisions of the Emergency Plan is acceptable.

(42). NUREG-1019, Supp. 1, at page 26 -- The staff finds this guidance acceptable for SG shell to tube differential limit control.

Request for Production of Documents

1. Provide all documents and studies, and the particular parts thereof, including all calculations, computer printouts, and any other documentation used to obtain stated test results, including sequence of testing, performed by the NRC Staff or its consultants, concerning TMI-1 steam generator failures and repairs.

2. Provide any all studies, memoranda, reports, notes, letters or other documents (including but not limited to internal memoranda between NRC Staff, SECY papers, and memoranda or briefing papers for the NRC Commissioners) which discuss, evaluate, which concern the TMI-1 steam generator failures and repairs, excepting such documents which have already been supplied to TMIA through Freedom of Information Act requests.

3. Provide any all studies, memoranda, reports, notes, letters or other documents (including but not limited to internal memoranda between NRC Staff, SECY papers, and memoranda or briefing papers for the NRC Commissioners) which discuss, evaluate, which concern steam generator degradation at plants other than TMI-1.

4. Provide all documents or portions thereof which have been withheld from the parties, or from the intervenors, or from the Public Document Room, on the basis of the "proprietery" or "trade or commercial secret" information claimed to have been within the documents.

5. Provide any written documentation, or record of any oral communication between or among any member of the NRC Staff, its consultants, agents, and any other persons, regarding TMI-1 steam generator failures or repairs.

Pursuant to 10 CFR Section 2.741, TMIA hereby requests that the NRC respond in writing to the above request for production of documents (as defined in paragraph 1 hereof) relative to the above interrogatories and produce the original or best copy of each requested document at or to: Louise Bradford, 1011 Green St., Harrisburg, PA 17102. Documents shall also mean copies of documents even though the originals are not in the possession, custody, or control of the NRC.

Respectfully submitted,
THREE MILE ISLAND ALERT, INC.

By: Joanne Doroshow

Louise Bradford
Joanne Doroshow

Dated: January 16, 1983

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
METROPOLITAN EDISON COMPANY	)	Docket No. 50-289
	)	
(Three Mile Island Nuclear Station, Unit No. 1)	)	

CERTIFICATE OF SERVICE

I hereby certify that copies of the attached TMIA'S FIRST SET OF NTERROGATORIES AND REQUEST FOR PRODUCTION OF DOCUMENTS TO THE NRC dated January 16, 1984, were served this 16th day of January, 1984, by deposit in the U.S. Mail, first class, postage prepaid, or hand delivered where possible, to those on the attached service list.

Joanne Doroshow

JOANNE DOROSHOW