

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
)	(Restart)
(Three Mile Island Nuclear)	
Station, Unit No. 1))	

LICENSEE'S RESPONSE TO FIRST SET OF INTERROGATORIES
OF CHESAPEAKE ENERGY ALLIANCE

INTERROGATORY NO. 5-1

Summarize and explain Licensee's position on the contention. Identify any and all documents relied on by Licensee in reaching that position.

RESPONSE

Licensee has objected to this interrogatory.

INTERROGATORY NO. 5-2

Identify those aspects of the contention that Licensee considers to be matters of controversy. For each such aspect, summarize briefly the opposing positions on the controversy as perceived by Licensee. Identify and summarize any and all documents in support of either position.

RESPONSE

Licensee has objected to this interrogatory.

INTERROGATORY NO. 5-3

Identify and briefly summarize any and all documents known to Licensee that would tend to provide evidence and/or support for this contention.

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RESPONSE

Licensee has objected to this interrogatory.

INTERROGATORY NO. 5-4

Identify any and all persons that Licensee intends to have testify on this contention; state the qualifications of each person; and present a summary of the testimony that person is expected to provide.

RESPONSE

Witnesses have not yet been selected by Licensee and testimony stating Licensee's position has not been drafted, reviewed or finalized.

INTERROGATORY NO. 5-5

Identify any and all present or former members of Licensee staff who dissent from the overall Licensee position on this contention, and for each such person, provide a summary of his/her dissenting position on the contention.

RESPONSE

See Licensee's response to Interrogatory No. 5-4.

INTERROGATORY NO. 5-6

Identify the critical or central parameters of this contention as it is perceived and understood by Licensee, and briefly summarize Licensee's position on, and evaluation of the importance of, each such parameter.

RESPONSE

Licensee has objected to this interrogatory.

INTERROGATORY NO. 5-7

Provide a complete and accurate description of the present storage of radioactive water from the TMI-2 accident, specifying where all that water is being stored, and providing an estimate of the radioactivity levels (by isotope) of the water.

RESPONSE

Radioactive water is stored in various locations in TMI-2 as follows:

<u>Location</u>	<u>Volume (Gallons)</u>	<u>Principal Radioisotopic Concentrations (uc/ml)</u>				
		H ³	Cs137	Cs134	Sr 89	Sr 90
Reactor Building Sump	620,000	1.0	180	40	41	3
Reactor Coolant System	90,000	0.2	42	8	33	27
Reactor Coolant Bleed Tanks	158,920	0.5	26	6	2	1
Miscellaneous Tanks in Auxiliary and Fuel Handling Buildings	113,792	0.03	15	3	2	1

INTERROGATORY NO. 5-8

Provide a detailed description of the proposed methods for decontaminating the radioactive water from TMI-2. Identify and describe any and all documents, based on actual previous operating experience with those methods, that demonstrate that the proposed clean-up methods are both effective and free from risk.

RESPONSE

There are three main methods proposed for decontaminating the water: filtration, ion exchange, and evaporations. The systems incorporating these techniques are:

Epicor II Radwaste System

Submerged Demineralizer System

Liquid Radwaste Evaporation-Crystallizer and

Solidification System

Experience and documentation related to these methods are exhaustive. No single reference was used for selecting these methods. Each method is well documented as being effective in accomplishing decontamination as proposed.

INTERROGATORY NO. 5-9

Describe in detail any and all evidence that demonstrates that the EPICOR-II system being used for decontaminating TMI-2 intermediate level radioactive water has operated less effectively or safely than LIC had projected. Describe the present expected schedule for decontaminating the intermediate level water with EPICOR-II, and compare that schedule with the schedule initially projected by LIC. Provide full justification for any revisions that have been made in the schedule. Identify any and all documents relied on in the answer to this interrogatory.

RESPONSE

The Epicor II Radwaste System has operated as projected. Decontamination of intermediate level water has proceeded as originally scheduled. Decontamination of this water is projected to be complete by the end of 1980. The Water Processing Plan as documented and forwarded to the Nuclear Regulatory Commission by letter TLL 043 dated February 5, 1980, was used in responding to this interrogatory.

INTERROGATORY NO. 5-10

Describe the expected schedule for decontaminating the high level water presently in the TMI-2 containment building. Also provide an estimated overall schedule for the completion of all the major steps in the TMI-2 clean-up.

RESPONSE

The decontamination of the high level water is expected to commence no earlier than November 1, 1980. The overall schedule is as documented in the "Summary Technical Plan for TMI-2 Decontamination and Defueling" dated December 12, 1979.

INTERROGATORY NO. 5-11

Identify and describe any and all accident scenarios at TMI-2 during the clean-up that could generate additional quantities of radioactive waste water; describe the probabilities of each such accident scenario, demonstrating the basis and justification for these probability estimates; for each such accident scenario, estimate the quantity of radioactive waste water generated and the levels of radioactivity of the water, describing the mechanism by which the radioactive waste water will be generated; and for each such accident, identify the available storage space that would be used for the waste water.

RESPONSE

Licensee has objected to this interrogatory insofar as it calls upon Licensee to provide mathematical probability estimates of accidents or other occurrences, and insofar as it requires Licensee to identify any and all conceivable accident scenarios.

The accident scenarios thus far developed for TMI-2 cleanup activities have been associated with systems and operations considered to date. The major remaining activities outlined in the "Summary Technical Plan for TMI-2 Decontamination and Defueling" will be reviewed for potential accident scenarios.

Copies of analyses performed to date will be placed in Licensee's Discovery Reading Room.

INTERROGATORY NO. 5-12

Identify and describe any and all potential accidents at TMI-2 during clean-up that might impact on the operation of TMI-1, including but not limited to those accidents that would require site evacuation of Three Mile Island; for each such accident, describe the probability of its occurrence, showing the basis and justification for the probability estimate; for each such accident, describe the impact it would have on the operation of TMI-1; identify any and all documents and persons relied on in identifying the accident scenarios and estimating the probabilities of each accident.

RESPONSE

Licensee has objected to this interrogatory insofar as it calls upon Licensee to provide mathematical probability estimates of accidents or other occurrences, and insofar as it requires Licensee to identify any and all conceivable accident scenarios.

The accident scenarios thus far developed for TMI-2 cleanup activities have been associated with systems and operations considered to date. The major remaining activities outlined in the "Summary Technical Plan for TMI-2 Decontamination and Defueling" will be reviewed for potential accident scenarios.

Copies of analyses performed to date will be placed in Licensee's Discovery Reading Room.

INTERROGATORY NO. 6-1

See Interrogatory No. 5-1.

RESPONSE

See Licensee's response to Interrogatory No. 5-1.

INTERROGATORY NO. 6-2

See Interrogatory No. 5-2.

RESPONSE

See Licensee's response to Interrogatory No. 5-2.

INTERROGATORY NO. 6-3

See Interrogatory No. 5-3.

RESPONSE

See Licensee's response to Interrogatory No. 5-3.

INTERROGATORY NO. 6-4

See Interrogatory No. 5-4.

RESPONSE

See Licensee's response to Interrogatory No. 5-4.

INTERROGATORY NO. 6-5

See Interrogatory No. 5-5.

RESPONSE

See Licensee's response to Interrogatory No. 5-5.

INTERROGATORY NO. 6-6

See Interrogatory No. 5-6.

RESPONSE

See Licensee's response to Interrogatory No. 5-6.

INTERROGATORY NO. 6-7

Identify the rate, in gallons per minute, at which radioactive water is being discharged, or is leaking, from the primary coolant system of TMI-2. Describe the source and location of each such leak or discharge in the primary coolant system; for each leak/discharge, describe in detail the measures that are being planned or implemented to correct the leak/discharge. Identify any and all documents and persons relied on to answer this interrogatory.

RESPONSE

Radioactive water is leaking from the Primary Coolant System of TMI-2 at a rate less than 0.5 gallons per minute. The precise location of the leakage sources has not been determined because of the inability to gain access to all system components and piping. Radiological conditions have thus far prevented full access for inspection purposes. This response was prepared by individuals on the staff of Recovery Operations and Engineering Departments.

INTERROGATORY NO. 6-8

Identify and describe the probabilities of any further leaks from the TMI-2 primary coolant system, with particular reference to any possible corrosion of seals, and/or embrittlement of valves, and/or embrittlement or corrosion of pipes; provide justification and basis for the estimates of probability of leaks from corrosion and embrittlement, citing any and all documents and research pertaining to embrittlement and corrosion under continued conditions of radioactivity as prevail in the primary coolant system of TMI-2, and identify the author(s), and their professional qualifications, of the cited documents. Identify and describe the measures that are being taken or planned to reduce or eliminate the probability of such corrosion or embrittlement.

RESPONSE

Licensee has objected to this interrogatory insofar as it calls upon Licensee to provide mathematical probability estimates of accidents or other occurrences. Furthermore, without having full access to all portions of the primary coolant system it is impossible to determine the probability of further leaks. Once access is gained, the condition of the system will be evaluated, and maintenance performed as required. Meanwhile, no measures can be taken to reduce or eliminate the possibility of corrosion or embrittlement.

INTERROGATORY NO. 6-9

Identify, and estimate the probabilities of, any and all leaks from the TMI-2 containment building, with particular reference to any possible corrosion and/or embrittlement caused by the radioactive water in the containment building. Identify the basis and justification for the probability estimates, citing any and all documents relied upon. Identify and describe the measures that are being planned or implemented to prevent such corrosion or embrittlement.

RESPONSE

Licensee has objected to this interrogatory insofar as it calls upon Licensee to provide mathematical probability estimates

of accidents or other occurrences. Furthermore, it is impossible to evaluate the probability of leakage without gaining access to the Containment Building to evaluate conditions. There is no indication the TMI-2 Containment Building is leaking radioactive water. To the extent possible, steps have been and continue to be taken not to alter the present conditions in the building.

INTERROGATORY NO. 6-10

Identify any and all sequences of events at TMI-2 that could result in substantial loss of reactor coolant. Distinguish between those sequences that are predicated on operator error and those that are predicated on equipment and/or instrumentation error or malfunction. Estimate the probabilities of each such sequence, showing the basis and justification for each such probability estimate.

RESPONSE

Licensee objected to a series of interrogatories, including Interrogatory No. 6-10, insofar as they call upon Licensee to provide mathematical probability estimates of accidents or other occurrences, and insofar as they require Licensee to identify all conceivable accidents or other scenarios. Interrogatory No. 6-10 is limited to the two areas to which Licensee objected.

INTERROGATORY NO. 6-11

Describe any and all presently unused storage tanks that are available to receive major additional quantities of radioactive water from TMI-2 if needed, giving the capacity of all such storage tanks. If any storage tanks presently assigned to TMI-1 could be required to hold such radioactive water, describe the mechanism by which the radioactive water could be transferred from TMI-2 to TMI-1 in an emergency.

RESPONSE

The following tanks are available to receive major additional quantities of radioactive water in TMI-2:

<u>Tank</u>	<u>Volume Available (Gallons)</u>
Reactor Coolant Bleed Holdup Tank (1A)	72,830
Miscellaneous Waste Hold up Tank	19,610
Tank Farm Tanks	14,002
Neutralizer Tanks	16,920

At the present time, water can be transferred to Unit I by installed piping and pumps to:

Reactor Coolant Bleed Holdup Tanks (1A and 1C)	155,000
Miscellaneous Waste Storage Tank	19,000

As a result of the Unit I Restart Program, these transfer lines will be placed out of service to satisfy separation criteria.

Additional tankage exists for the storage of processed water as follows:

Unit II Borated Water Storage Tank (As of 4/10/80)	220,000
Process Water Storage Tanks (As of 9/1/80)	1,000,000
EPICOR II System Tanks	130,000

INTERROGATORY NO. 7-1

See Interrogatory No. 5-1.

RESPONSE

See Licensee's response to Interrogatory No. 5-1.

INTERROGATORY NO. 7-2

See Interrogatory No. 5-2.

RESPONSE

See Licensee's response to Interrogatory No. 5-2.

INTERROGATORY NO. 7-3

See Interrogatory No. 5-3.

RESPONSE

See Licensee's response to Interrogatory No. 5-3.

INTERROGATORY NO. 7-4

See Interrogatory No. 5-4.

RESPONSE

See Licensee's response to Interrogatory No. 5-4.

INTERROGATORY NO. 7-5

See Interrogatory No. 5-5.

RESPONSE

See Licensee's response to Interrogatory No. 5-5.

INTERROGATORY NO. 7-6

See Interrogatory No. 5-6.

RESPONSE

See Licensee's response to Interrogatory No. 5-6.

INTERROGATORY NO. 7-7

Specify and describe in detail any and all potential radioactive pathways for which the monitoring provisions described in the TMI-1 Restart Report and reviewed in the NRC Status Report would be incapable of discriminating between TMI-1 and TMI-2 effluents.

RESPONSE

Potential radioactive pathways are subdivided into two categories: liquid and air. The ability to discriminate effluents between Units I and II is as follows:

AIR: Both units have essentially independent air handling systems. The effluent of each is monitored and released via separate stacks. The Fuel Handling Buildings of Units I and II are interconnected posing a potential path for air mixing. As discussed in the TMI-1 Restart Report, this pathway is being separated to eliminate possible mixing and thereby achieve full separation of plant systems and effluents.

LIQUID: The release of processed water from Unit I and Unit II buildings is through separate and distinct pipes. Each piping system contains monitoring equipment so as to distinguish activity from each unit. Prior to leaving the station, the two piping systems are joined and the effluent liquid is mixed with river water from the mechanical draft cooling towers. This combined liquid leaves the station from one pipe. This pipe contains a radiation monitor to determine net activity release from TMI Units I and II.

INTERROGATORY NO. 7-8

Specify and describe in detail any and all sequences of events at either TMI-1 or TMI-2 that could lead to a breakdown of the ability to distinguish between the radioactive effluents of TMI-1 and TMI-2. For each such sequence of events, describe the estimated probability of its occurrence, and the basis and justification for deriving the probability estimate.

RESPONSE

Licensee has objected to this interrogatory insofar as it calls upon Licensee to provide for mathematical probability estimates of accidents or other occurrences. The inability to distinguish Unit I and II radioactive effluent due to specific events is unlikely. The only air systems that have a potential for mixing are the connecting fuel handling building systems. Separation walls and/or doors would have to fail prior to the occurrence of intermixing. Piping systems would have to fail in order for an indistinguishable liquid effluent release to occur. Technical Specifications require monitors to be operational prior to and during releases. Therefore, by procedural and administrative controls, a release could not occur without proper monitoring instrumentation. No release commences without the review and approval of site management personnel.

INTERROGATORY NO. 8-1

See Interrogatory No. 5-1.

RESPONSE

See Licensee's response to Interrogatory No. 5-1.

INTERROGATORY NO. 8-2

See Interrogatory No. 5-2.

RESPONSE

See Licensee's response to Interrogatory No. 5-2.

INTERROGATORY NO. 8-3

See Interrogatory No. 5-3.

RESPONSE

See Licensee's response to Interrogatory No. 5-3.

INTERROGATORY NO. 8-4

See Interrogatory No. 5-4.

RESPONSE

See Licensee's response to Interrogatory No. 5-4.

INTERROGATORY NO. 8-5

See Interrogatory No. 5-5.

RESPONSE

See Licensee's response to Interrogatory No. 5-5.

INTERROGATORY NO. 8-6

See Interrogatory No. 5-6.

RESPONSE

See Licensee's response to Interrogatory No. 5-6.

INTERROGATORY NO. 8-7

Identify, and provide a detailed summary of, any and all documents that have been prepared or commissioned by or for LIC concerning its management strength and capability. For each such document, identify the author(s) and their professional qualifications.

RESPONSE

Licensee has objected, in part, to this Interrogatory. See Licensee's objection dated March 14, 1980. In its objection, Licensee stated that it would limit its response to documents

relating to Licensee's management of TMI-2 and its capability to clean up TMI-2. The following documents, which are being placed in Licensee's Discovery Reading Room, fall into this category:

1. Radiation Safety Program Report - Management Plan for the TMI Unit 2 Radiological Control Program (February 8, 1980). Prepared by Metropolitan Edison Company.
2. Determination of Technical and Organizational Readiness for Placing Three Mile Island Unit 2 Into Commercial Operation (October 26, 1978). Prepared by Metropolitan Edison Staff.
3. Unit 2 Nuclear Plant Management Review (January 18, 1979). Prepared by Metropolitan Edison staff.
4. General Review of The Health Physics Program At The Three Mile Island Nuclear Station (NUS-3364, March 20, 1979). Prepared by NUS Corporation.
5. Radiological Control Review of Three Mile Island (BETA-101) (November 12, 1979). Prepared by Basic Energy Technology Associates, Inc. (BETA).
6. Final Report of TMI-2 Accident Assessment Documentation - Training Programs and Procedure Review (May 16, 1979). Prepared by Personnel Qualification Services, Inc. (PQS).
7. Review of The Three Mile Island - Unit 2 Construction Project (October 25, 1978). Prepared by Touche Ross & Company.

8. Review of Operating Efficiency and Management Effectiveness of GPU Service Management. (May, 1978). Prepared by Booz-Allen & Hamilton.
9. TMI-2 Final Safety Analysis Report, Section 13.
10. Management and Technical Resources. (August 6, 1979). Prepared by Metropolitan Edison Company.
11. TMI-1 Restart Report, Section 5.
12. Report and Recommendations Concerning TMI Organization. (March 30, 1979). Prepared by Fred Cox.
13. Three Mile Island Management Audit (January 9-20, 1978). Auditors: J. L. Shirk, A. Tsaggaris, J. J. Colitz, G. J. Troffer.

INTERROGATORY NO. 8-8

Identify any and all aspects of LIC's management capability, in respect of which LIC, NRC, or any other party has uncovered evidence of inadequacy or deficiency. For each such aspect, describe in detail what measures have been taken, or are planned, to remedy the inadequacy or deficiency, providing a full and complete justification as to how LIC can demonstrate that the remedial action will indeed correct the management inadequacy or deficiency that has been identified.

RESPONSE

For the reasons stated in Licensee's objections to Interrogatory No. 8-7, Licensee's response is limited to the identification of criticisms which have been made as to Licensee's management of TMI-2 and capability to clean up TMI-2.

In addition to documents listed in the Response to Interrogatory No. 8-7, other documents describing deficiencies in Licensee's management of TMI-2 include the following:

1. Three Mile Island, Unit 2, Radiation Protection Program - Report of the Special Panel (NUREG-0640, December 1979).
2. Staff Report To The President's Commission On The Accident At Three Mile Island - The Role Of The Managing Utility And It's Suppliers (October 1979).
3. Investigation Into The March 28, 1979 Three Mile Island Accident By Office of Inspection and Enforcement (NUREG-0600, published August 1979).
4. Report Of The Governor's Commission On Three Mile Island. (February 26, 1980).
5. Report by NRC Special Inquiry Group (Rogovin Report - January 1980)

INTERROGATORY NO. 8-9

Identify, and provide a detailed summary of, any and all documents pertaining to any investigation of the perceptions and attitudes of LIC's employees (present and former) of its management capability and practice. Include both documents that are specifically concerned with LIC's management of the TMI-2 accident, as well as those concerned with LIC's overall management capability and practice. For each such document, identify the author(s) and their qualifications.

RESPONSE

Licensee has objected to parts of this Interrogatory, and will limit its response to investigations of perceptions and attitudes relevant to the management and cleanup of TMI-2.

Perceptions and attitudes of Licensee's employees are discussed in Licensee's Employee Attitude Survey Report, a copy of

which has been placed in the Discovery Reading Room. The documents listed in Responses to Interrogatory Nos. 8-7 and 8-8 also reflect input from interviews with Licensee's employees.

INTERROGATORY NO. 8-10

Has LIC conducted, or caused to be conducted, any systematic investigation(s) into the attitudes towards, and perceptions of, LIC by persons who have left the employment of LIC since March 28, 1979? If so, provide a detailed summary of the conclusions of such investigation(s), and identify and describe the professional qualifications of the persons conducting such an investigation. If no such investigation has been conducted by, or for, LIC, provide a thorough justification as to why such investigation would not provide needed insight into LIC's management ability and practice.

RESPONSE

See response to Interrogatory No. 8-9 and Licensee's objections dated March 14, 1980.

INTERROGATORY NO. 8-11

Are the employees of LIC affiliated with any Labor Union(s)? If so, (a) identify the Union(s), describe the grievance process, and provide a summary of the disposition of those grievances; (b) identify and provide minutes of any meetings between union representatives and management; (c) if LIC's employees are not represented by Labor Union(s), describe in detail any formal or informal grievance procedure available to LIC employees to current management and/or safety problems, and provide a summary of the grievances that have been filed under this procedure.

RESPONSE

Licensee has objected to this interrogatory, and limits its response to the identification of any labor unions with which Licensee's employees are affiliated.

Some of the Licensee's employees are members of the International Brotherhood of Electrical Workers. There are no other unions representing employees of Licensee.

INTERROGATORIES NO. 9-1 through 9-6

See Interrogatories No. 5-1 through 5-6.

RESPONSE

See Licensee's response to Interrogatories 5-1 through 5-6.

INTERROGATORY NO. 9-7

Identify and provide a detailed summary of, any and all documents prepared or commissioned by or for LIC since March 28, 1979, concerning the adequacy of LIC's financial resources. For each such document, identify the author(s) and describe their professional qualifications.

RESPONSE

Licensee objected on March 14, 1980, to the scope of this interrogatory but did agree to provide CEA with a copy of its latest financial statement and other information on financial status and projections. The 1979 Annual Report will be placed in the Discovery Reading Room. The GPU System's projected financial resources are referenced in the response to Interrogatory 9-8.

INTERROGATORY NO. 9-8

Provide a summary of LIC's present financial status, with projections of income and expenditure for the next 12 months. Identify the principal assumptions incorporated in those projections, including the clean-up costs for TMI-2, replacement power costs for TMI-1 and TMI-2, decisions of PaPUC and NJBPU concerning rates and rate base, and the estimated date of re-start (if any) for TMI-1. Provide a detailed justification and basis for the assumptions.

RESPONSE

The testimony and exhibits of Mr. John G. Graham submitted in the Pennsylvania Rate Proceeding Docket No. I-79040308 detail the present financial status of the GPU System (GPU Corp., Jersey

Central, Metropolitan Edison and Pennsylvania Electric).

Mr. Graham's testimony is identified as Met-Ed/Penelec Statement A-1, Supplement No. 1. The relevant exhibits are identified as Met-Ed/Penelec Exhibit A-23, 24, 25, 26, 27, 28, 29, 35, 36, 37, 38, 39, 45, 46, 49, 57, 60, 61 and 72. A copy of Mr. Graham's testimony will be placed in Licensee's Discovery Reading Room.

The principal assumptions incorporated in those forecasts are described on pages 6, 7 and 8 of Mr. Graham's testimony and specifically address "clean-up costs for TMI-2", "decisions of PaPUC and NJBPU concerning rates and rate base", and "the estimated date of restart for TMI-1". With respect to "replacement power costs for TMI-1 and TMI-2", those estimated costs for 1980, net of savings from various purchase power agreements that have been made since the accident, are as follows:

Estimated Monthly TMI Replacement Energy
Costs for 1980

Million Dollars Per Month

	<u>TMI-1</u>	<u>TMI-2</u>	<u>Total</u>
Met-Ed	\$ 6.4	\$ 4.2	\$10.6
Penelec	2.7	2.7	5.4
Jersey Central	<u>4.9</u>	<u>6.2</u>	<u>11.1</u>
Total	<u>\$14.0</u>	<u>\$13.1</u>	<u>\$27.1</u>

INTERROGATORY NO. 9-9

Describe in detail any and all action LIC has taken, or plans to take, to remedy any financial weakness of LIC. In particular, describe in detail any proposed corporate reorganization plans that are being considered in order to remedy LIC's financial status, and demonstrate how such reorganization would in fact remedy LIC's financial status.

RESPONSE

Since the TMI-2 accident, the GPU System has sold \$147.5 million of the first mortgage bonds (\$97.5 of Jersey Central Power & Light and \$50 million of Pennsylvania Electric). Additionally, the GPU System entered into a Revolving Credit Agreement with a group of 45 banks. This agreement currently makes available to the GPU System \$292 million of credit with an additional \$120 million upon approval of an 85% majority (in dollars) of the participating banks. A summary of the terms of this agreement are included in the testimony of Mr. John G. Graham as Exhibit A-1-1 (Pennsylvania Rate Proceeding Docket No. I-79040308). Mr. Graham's testimony also addresses possible future financings. A copy of Mr. Graham's testimony will be placed in Licensee's Discovery Reading Room.

At the present time, there are no proposed corporate re-organization plans in the financial sense of the term, that is, financial merger or consolidation. Met-Ed/Penelec Exhibit A-66 in the referenced rate proceeding addresses the legal impediments to such a financial merger.

INTERROGATORY NO. 9-10

Describe the financial impact on LIC that would result if PaPUC were (a) to revoke Met-Ed's standing as a public utility, (b) to exclude TMI-1 from its rate base until such time, if any, that TMI-1 is permitted to restart. Describe in detail the effect on LIC's financial ability to operate TMI-1 that (a) and (b) above would have.

RESPONSE

Licensee objected on March 14, 1980, to the scope of this interrogatory but did agree to furnish information as to the portion of Licensee's current base revenues attributable to TMI-1. This information is summarized in the following Table and the exhibits referenced in the Table will be placed in the Discovery Reading Room. The TMI-1 expenses and returns allowed in the last retail rate case are:

	<u>\$ Millions</u>	<u>Details contained in Pennsylvania Docket No. I-79040308, Exhibit</u>
Jersey Central	14.	-
Met-Ed	26.9	A-16
Penelec	11.7	A-32

INTERROGATORIES NO. 12-1 through 12-6

See Interrogatories no. 5-1 through 5-6.

RESPONSE

See Licensee's response to Interrogatories 5-1 through 5-6.

INTERROGATORY NO. 12-7

Provide a detailed explanation of Licensee's criteria for determining, from the realm of possible accidents, which accidents fall within the design basis. If Licensee's criteria is based on the assumption of single failure (of systems or components), provide a full and complete justification for so limiting design basis accidents, and for excluding design basis consideration of multiple failure accidents. If any assumptions are made concerning probabilities, provide full and complete documentation of the basis and justification for computing such probabilities. Identify all documents relied on, and for each such document, identify the principal authors, their professional qualifications, and relevant publications.

RESPONSE

Licensee has objected to this interrogatory.

INTERROGATORY NO. 12-8

Identify any and all known documents that challenge Licensee's justification for refusing to consider multiple failure accidents in developing design basis criteria for nuclear power plant operation. For each such document, identify the principal author(s), their professional qualifications, and relevant publications. Provide a brief, but detailed summary of the arguments advocated in each such document.

RESPONSE

Licensee has objected to this interrogatory.

INTERROGATORY 12-9

Specify, in numerical probability terms per operating reactor year, the probability of an accident below which probability the accident is not considered credible by Licensee. Provide a full and complete justification for the Licensee's selection of that probability level as the cutoff point for accident credibility. Identify any and all documents relied upon in this answer.

RESPONSE

Licensee has objected to this interrogatory.

INTERROGATORY 12-10

Describe in detail the process relied upon by Licensee in computing the probability of any given accident sequence. Provide detailed and thorough justification for this computational method, paying particular attention to the respective determination of the role of human (operator) error as compared to roles of equipment and instrumentation information malfunction. For each of the above-identified three components of error (operator, equipment, and instrumentation-information) demonstrate the extent to which the assumed probabilities are based on past experience or on other estimates. Where past experience is used as a basis for probability estimates, state whether the estimate is based on past experience with identical reactors and control room designs to TMI-1;

if not, state what methods are relied upon to take into the account the specific reactor and control room-dependent characteristics of TMI-1, as well as the quality and effectiveness of operator training and emergency procedures at TMI-1; if there is no such consideration of TMI-1 specific parameters of probability in determining accident probability, provide a full and thorough justification why such consideration is not needed. If estimates other than those based on past experience are utilized in calculating probabilities, provide a detailed justification and basis for those estimates.

RESPONSE

Licensee has objected to this interrogatory.

INTERROGATORY NO. 12-11

Identify any and all experts who were relied upon in providing the answer to 12-10 above; for each expert provide name, address, phone number, and professional qualifications.

RESPONSE

Licensee has objected to this interrogatory.

INTERROGATORY NO. 12-12

Identify and all documents that were relied upon in providing the answer to 12-10 above; for each document, provide author(s), and their professional qualifications.

RESPONSE

Licensee has objected to this interrogatory.

INTERROGATORY No. 12-13

In a document dated Jan. 25, 1980 from Steven A. Varga to All Boards, in reference to Turbine cracking, it is stated that "...the probability values used...may have been too low and may be revised upwards." Identify any and all other circumstances known to Licensee where the probability estimate of any equipment, instrumentation, or operator error or malfunction has had to be revised upwards by NRC or by any Licensee in the light of experience, research, or other new information. Provide, for comparison, identification of any and all circumstances in which such

probability estimates have been revised downward in the light of experience, research, or other information. Do these data provide any evidence of an overall trend towards high or lower overall probability of errors, malfunctions, or transients? Provide justification for your conclusions.

RESPONSE

Licensee has objected to this interrogatory.

INTERROGATORY NO. 12-14

A meeting was held on October 23, 1979 with representatives of the B&W owners' group, B&W, & Oak Ridge National Laboratory (ORNL) to discuss the "Integrated Control System Reliability Analysis" (BAW-1564) and questions raised of this Analysis by ORNL. Question 12 and the response are quoted below:

"Question 12: "Multiple failures are not treated although it is acknowledged by B&W that many failures are not annunciated and therefore may exist until other failures occur, resulting in effective multiple failures. It appears that multiple failure situations may have significant probability of occurrence. How is the omission of multiple failure considerations justified in the analysis? Might Fault Tree Analysis have been a better technique for addressing the concerns and producing the results requested?"

Response: B&W has identified transients that have occurred, in the Operating History Section. Therefore, with respect to multiple failures the report has identified critical areas. Although this is true, an event tree of ICS may highlight other important multiple failures. This type was considered to be too extensive for the time available."

(Summary of meeting, at 7, emphasis added)

- a) Answer fully and completely the two questions posed in Question 12 above.
- b) Provide full and complete description as to any Fault Tree Analysis (FTA) that has been conducted or commissioned by or for

Licensee or B&W to remedy the omission of multiple failure considerations; provide a full justification for the scope of such FTA as had been conducted or commissioned. c) If no FTA has been conducted or commissioned pursuant to the above cited question, provide a full and complete justification as to why such FTA was not considered necessary. d) If the lack of available time is cited as one such justification, provide a full and complete explanation as to why the health and safety of the public would not be more reasonably protected by delaying restart of TMI-1 until there has been sufficient time to conduct such FTA as is required to eliminate or substantially reduce the probabilities of occurrence of multiple failure situations.

RESPONSE

Licensee has objected to this interrogatory.

INTERROGATORIES NO. 13-1 through 13-6

See Interrogatories no. 5-1 through 5-6.

RESPONSE

See Licensee's response to Interrogatories 5-1 through 5-6.

INTERROGATORY NO. 13-7

Describe in detail any and all screening procedures, known to the Licensee to detect the development or existence of an operator "mindset," wherein an operator is so conditioned on the basis of his experience, in conjunction with prevailing management and operating attitudes, to substantially rule out an interpretation of a sequence of alarms, adverse signals, and indications of abnormal transients, as indicative of a major accident with consequences of a partial or full core melt. If any psychological tests are so used as screening procedures, identify such tests, identify the author of such tests, and his/her qualifications and professional background, and summarize any research that has investigated whether the tests provide an accurate indication of the existence of such an operator "mindset."

RESPONSE

Licensee is not aware of any screening procedure in use for nuclear power plant operators specifically aimed at detecting a "mindset" as defined in this Interrogatory.

INTERROGATORY 13-8

Describe in detail any screening procedures that will be used by Licensee to detect the development or existence of an operator "mindset" (as defined above). Summarize any research that has been conducted to evaluate the efficacy of such screening procedures, identifying the principal investigator(s), and providing their professional qualifications.

RESPONSE

See Response to Interrogatory No. 13-7.

INTERROGATORY 13-9

Identify any and all known research investigating the relationship between the development of operator "mindset" and the frequency of alarms or indications of minor abnormal transients, and/or the frequency of false alarms or other false indications of abnormal transients. For each such research, identify the principal investigator(s), describe their professional qualifications, and summarize the findings of the research.

RESPONSE

Licensee is not aware of any research on the relationship between the development of operator "mindset," as defined by the Intervenor in Interrogatory No. 13-7, and the "frequency of alarms or indications of minor abnormal transients, and/or the frequency of false alarms or other false indications of abnormal transients."

INTERROGATORY NO. 13-10

Identify and describe any and all studies that have been developed, commissioned, or planned by Licensee into factors associated with the development of operator mindset. If so such studies have been prepared, commissioned, or planned by Licensee, provide full and detailed justification why such studies are not considered to be necessary.

RESPONSE

Licensee has not developed, commissioned, or planned studies

specifically addressing factors associated with the development of operator "mindset" as the term has been used by Intervenor. Licensee believes that its training and testing standards, together with ongoing performance by management will assure that operators will properly analyze control room information and respond in an appropriate manner.

INTERROGATORY NO. 13-11

Describe in detail any and all communication and dialog that has taken place between Licensee and professionals with experience and research into operator mindset in situations analogous to nuclear power plant Control Rooms, for example, personnel in the NASA Aviation Psychology program. If no such communication and dialogue has taken place, provide a thorough justification as to why that has not been considered necessary or valuable.

RESPONSE

Licensee has objected to this Interrogatory except insofar as it requests that Licensee identify communications and dialogues, if any, between Licensee and professionals with experience and research into operator mindset.

Licensee is not aware of communication and dialogue between Licensee's employees and professionals with experience and research into operator "mindset," as that term has been defined by the Intervenor, in situations "analogous to nuclear power plant Control Rooms, for example, personnel in the NASA Aviation Psychology program." See Licensee's March 14, 1980, partial objection to Interrogatory No. 13-11.

INTERROGATORY NO. 13-12


(a) Does Licensee maintain full and complete records of any and all alarms that have been displayed on the control rooms of TMI-1 and TMI-2? If so, identify any and all documents recording the occurrence and frequency of such alarms and whether such alarms are false alarms. If not, provide a full justification as to why such documentation is not maintained. (b) Has Licensee conducted or caused to be conducted any systematic analysis of the frequency and occurrence of alarms (including false alarms) that have been displayed on the TMI-1 and TMI-2 control panels? If so, identify, and provide a detailed summary of any and all documents describing such analyses. If not, provide a full justification as to why Licensee considered such analysis as not necessary. (c) If Licensee has conducted such analyses, has Licensee conducted, or caused to be conducted, any investigation into the relationship between the frequency of alarms, false alarms, and the development of operator "mindset".

RESPONSE

Licensee has been unable to complete its response to this interrogatory and will supply its response within two weeks.

Respectfully submitted,

SHAW, PITTMAN, POTTS & TROWBRIDGE

By: 
George F. Trowbridge

Dated: March 31, 1980

SHAW, PITTMAN, POTTS & TROWBRIDGE

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*NOT ADMITTED IN D.C.

March 31, 1980

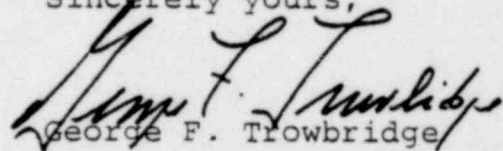
Mr. Robert Q. Pollard
609 Montpelier Street
Baltimore, Maryland 21218

Re: Three Mile Island Unit 1
Docket No. 50-289 (Restart)

Dear Mr. Pollard:

I enclose Licensee's responses to CEA's first set of interrogatories, dated February 25, 1980. Copies of signed affidavits for the enclosed responses are not included, but will be forwarded soon.

Sincerely yours,


George F. Trowbridge

Enclosure

cc: Service List