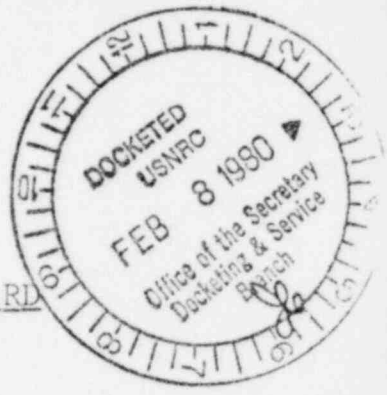
RELATED CORRESPONDENCE



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, Unit 1)	)	

INTERVENOR STEVEN C. SHOLLY RESPONSE
TO LICENSEE'S FIRST SET OF INTERROGATORIES

Licensee served interrogatories upon Intervenor Steven C. Sholly on 18 January 1980. Preliminary responses to those interrogatories are supplied herein; supplemental information will be supplied to Licensee as it becomes available and is developed into appropriate form for response.

Interrogatory 1-1

Section 2.1.1.5 of the "Restart Report" (Containment Isolation Modifications) is not fully responsive to Contention #1 for a number of reasons. To begin with, there is no indication that new experience available as a result of the TMI-2 accident in terms of defining accident phenomena and containment response has been taken into account in the proposed modifications to the containment isolation system. General Design Criterion 50 requires that the containment structure, including access openings, penetrations, and the containment heat removal system shall be designed so that the containment structure and its internal compartments can accomodate, without exceeding the design leakage rate and

 434

with sufficient margin, the calculated pressure and temperature conditions resulting from any loss-of-coolant accident. This margin is to be based upon, among others, ". . . the limited experience and experimental data available for defining accident phenomena and containment responses . . .". The new data which is available and which can be generated as a result of the TMI-2 accident constitute new and significant information in this critical area of containment design and containment isolation requirements and must be included within the evaluation of the proposed containment isolation system modifications. Neither the "Restart Report" nor the NRC Status Report on the Restart Report (11 January 1980) provide any indication that this new information has been taken into consideration in determining the needs for modifications to the containment isolation system at Unit 1.

Secondly, substituting the reactor trip signal as a basis for containment isolation in place of SFAS signals is not satisfactory in that this will result in clearing of the isolation signal when the low pressure condition (1800 psig) is not present, but when HPI may still be in progress. SFAS signals must be utilized as a diverse containment isolation signal.

Third, the proposed modifications are not acceptable because the high radiation isolation provision described in the Restart Report is not single-failure proof, and as a result there is not sufficient assurance that the system

will perform its safety function when required. The high radiation isolation must be made single-failure proof. In the event of a single failure in the high radiation isolation system as proposed in the Restart Report, large quantities of radioactively contaminated water could still be transferred to the Auxiliary Building, thus defeating the primary purpose of the Containment--preventing the release of radioactivity to the environment as a result of accident conditions in the reactor. This could still result in doses off-site which exceed 10 CFR 20.105, 10 CFR 20.106, and Appendix I of 10 CFR 50. This situation is not responsive to the contention as admitted.

There are numerous procedures governing the by-pass of isolation signals which have yet to be developed by Licensee. A few examples of this are the procedures governing the by-pass of high radiation signals for the Reactor Building Sump and and procedures governing by-pass of high radiation signals for the RCS Letdown line. Until these procedures are developed for review by the Intervenor, it is impossible to evaluate fully the responsiveness of Section 2.1.1.5 to this Contention. By-pass procedures are extremely important to this Contention in that inadequate procedural requirements for by-pass of containment isolation could lead to effective defeat of this system if inappropriately by-passed.

Documents utilized in preparation of the response to Interrogatory 1-1 are the following:

1. "Supplement to Petition to Intervene Containing Final Contentions and Bases Set Forth with Specificity, Steven C. Sholly, Petitioner", 22 October 1979.

2. "TMI-2 Lessons Learned Task Force Status Report and Short-Term Recommendations", NUREG-0578, USNRC, July 1979, pages 6 and A-13 through A-15.

3. "Status Report on the Evaluation of Licensee's Compliance with the NRC Order Dated August 9, 1979, Metropolitan Edison Company, Et Al., Three Mile Island Nuclear Station, Unit 1, Docket No 50-289," USNRC, 11 January 1980, pages C8-21 through C8-25, and B-4, and C2-6.

4. "Restart Report," Metropolitan Edison Company, pages 2.1-11 through 2.1-16, and Table 2.1-1.

Interrogatory 4-1

The basis for this claim is adequately stated in the basis for Contention #4. To amplify briefly, NUREG-0600 at page II-3-95 identifies the basis for Licensee to assess doses received via the principal pathway during the Unit 2 accident, in part, as deriving from 15 indicator and 5 background locations from the routine monitoring program. Under certain conditions, i.e., under the conditions present during the Unit 2 accident, the plume centerline will be between TLD locations. In fact, the proportion of the time during the first 68 hours of the accident in which winds blew steadily into a given sector for several hours at a time is given in NUREG-0600 at page II-3-95 as less than or equal to 30%. Such conditions cause exposure rates to fluctuate considerably at any given point.

The TLD's utilized by Licensee for the above-described purpose are special TLD's which must be sent to either Teledyne Isotopes or Radiation Management Corporation to be read. Therefore, an unnecessary and unwarranted delay exists between the time when

TLD's are collected from offsite locations and when they can be read and have the exposure information relayed to the Licensee. This constitutes the "significant impairment" alleged in Contention #4. Such delays are not acceptable considering the rapidity with with which major releases can begin following the initiating incident (cited in NUREG-0396 quoting from the RSS as being as soon as 30 minutes).

Licensee has the capability of making calculated estimates of exposure rates based on measured plant parameters. However, given the facts of the situation described in NUREG-0600 from page II-3-71 through II-3-79, there is serious question as to whether this represents a valid means of exposure rate determination. Lack of on-site facilities for environmental TLD processing therefore represents a significant impairment to the Licensee's ability to provide dose assessments to off-site authorities with emergency response responsibilities.

Interrogatory 4-2

Health Physics Procedure 1670.6, "Off-Site Radiological Monitoring," requires in section 2.1.15(d) the placement of sufficient TLD's at either the continuous air monitor or at a convenient representative location in the designated area to permit reading TLD's every four hours during the emergency. NUREG-0600 quite clearly at page II-3-96, as stated in the basis for Contention #4, gives evidence that Licensee is unable to carry out this provision because of the lack of on-site TLD processing facilities. Under conditions addressed above in

response to Interrogatory 4-1, this clearly leads to erroneous information or incomplete information regarding off-site exposure rates to radiation in the event of an emergency. This contention addresses no other portion of the referenced procedure.

Interrogatory 4-3

Because of the lack of on-site TLD processing capability, unnecessary delay exists between the time when TLD's are collected in the field and when they are processed and exposure information is relayed to Licensee. Under conditions where major radiation releases from a nuclear power plant can start within 30 minutes of the initiating event, and under given meteorological conditions present at TMI wherein winds are highly variable in speed and direction. the presumption of a well-defined plume in the area of an existing TLD location lacks basis. Therefore, Licensee must rely on the placement of additional TLD's by personnel dispatched from the plant. Because these TLD's cannot be processed at the TMI site, and because Licensee is relying upon these TLD readings to provide radiation exposure information for transmission to off-site authorities, lack of on-site TLD processing facilities for these TLD's dose not adequately protect public health and safety, which requires timely and accurate radiation exposure information in the event of an off-site release of radiation.

Interrogatory 4-4

As described above, Licensee is not prepared to implement section 2.1.15(d) of Health Physics Procedure 1670.6; thus,

what TLD's are available are the ones in the Licensee's Environmental TLD program. As listed on page II-1-48 of NUREG-0600, there are only five of these sites outside of five miles (in fact, outside of 2.6 miles from the plant). These TLD's are not distributed throughout the radial area around the plant and do not exist in sufficient number to give reliable estimates of radiation exposure rates. It is not part of the procedure which places the quoted limit on TLD data but the lack of preparedness by Licensee to implement part of the procedure.

Interrogatory 4-5

I am unable to respond to this question. Pages 7-13 and 7-14 of the Restart Report do not contain the referenced material (i.e., the REMP), but rather contains testing requirements for the filtration system of the Fuel Handling Building exhaust. I am unable to locate the REMP within the Restart Report, but will gladly respond to this interrogatory at such time as Licensee provides me with a copy of the REMP. In the event that pages 7-13-14 purport to be the REMP, there is not such plan and that is in itself a sufficient description of its inadequacies.

Interrogatory 5-1

Intervenor has no quarrel with the number or location of the radiation monitoring instruments which are the subject of this contention. It is the ranges of those instruments which it is alleged is inadequate. The last sentence of the contention is perhaps unclear on this point -what is alleged in this contention is that there is not now a sufficient number of

radiation monitoring instruments which can yield on-scale readings under certain conditions. According to NUREG-0578 at page A-37, it can be shown that the potential releases from postulated accidents may be several orders of magnitude higher than was encountered at TMI-2. Intervenor takes this to indicate releases of at least 100 times those from the accident at Unit 2 (100 being two orders of magnitude). This would, in the example of the Unit 2 vent monitor, place the releases nearly 10,000 times the maximum scale reading on the device at the time of the accident.

Having reviewed Licensee and NRC documents on this subject, Intervenor will limit pursuit of this contention to those radiation monitoring instruments in effluent discharge paths. These devices must be capable of providing on-scale readings during the highest release rate conditions of the Class 9 accident scenarios proposed by Intervenor in Contention #17. Intervenor advises Licensee that based on the document NUREG/CR-1219, Analysis of the Three Mile Island Accident and Alternative Sequences, and the document Technical Staff Analysis Report on Alternative Event Sequences published by the President's Commission on the Accident at Three Mile Island, it appears that at least one of the scenarios advanced in Contention #17, scenario B, involves a core melt with breach of containment. Therefore, the radiation release monitors in the effluent discharge paths must be capable of providing on-scale readings during the highest

release rate conditions which would take place during such a sequence of events, i.e., core melt with breach of containment.

Interrogatory 5-2

The answer to this question is yes. The scenarios are described in Contention #17 advanced by this Intervenor. Keep in mind that at least one of these scenarios involves a core melt with containment breach.

Interrogatory 10-1

This interrogatory is inappropriate for the following reasons. This Contention simply requires that the impact of activities at Unit 2 on the waste handling and storage capacity at Unit 1 be evaluated prior to Restart to determine if there exists reasonable assurance that Unit 1 can be safely operated while Unit 2 is decontaminated. This evaluation would be performed by NRC, not by this Intervenor. Once an Intervenor party has identified such an issue, this is sufficient to trigger a Staff review of the situation. It is not up to the Intervenor to identify the requested accidents, but rather up to NRC Staff. Therefore, this interrogatory is objected to and will not be further addressed except at the Order of the Board.

Interrogatory 10-2

I do not contend that Unit 1 waste handling and storage capacity will be used to assist in the Unit 2 decontamination and cleanup activities, but rather may be used. Such use can be ordered by the Commission to protect the public health and safety. Specification of the portion of such capacity is not

possible until it is identified what procedures will be utilized in the decontamination and cleanup of Unit 2.

Interrogatory 10-3

This interrogatory is not germaine to this contention and is objected to and not answered for the same reasons as Interrogatory 10-1 above.

Interrogatory 10-4

To the extent that the separation of fuel handling areas is not yet described in the Restart Report except to say that "an approved environmental barrier system will be functional" prior to Restart, this physical separation plan is inadequate to comply with GDC 5 and resolve the concerns identified in Contention #10. One cannot evaluate compliance of a non-existent barrier plan with GDC 5. This topic is discussed in the Restart Report on page 7-3, amendment 4.

Interrogatory 10-5

The "Status Report" referred to by Licensee is not a safety evaluation. I am informed by NRC Staff Counsel that the SER will not be issued until mid-April 1980. At that time Licensee may seek discovery on the safety evaluation subject to the ruling of the Board regarding such discovery. Nonetheless, the identifed pages of the "Status Report" do not contain a "safety evaluation" of the environmental barrier for the fuel handling areas. Therefore, the "Status Report" evaluation of physical separation of Units 1 and 2 is inadequate. The document and pages are the referenced pages of the "Status Report."

Interrogatory 10-6

Inasmuch as the methods to be utilized in decontaminating and cleanup of Unit 2 have not been identified, it is impossible at this time to determine if the referenced storage capacities and capabilities are sufficient to resolve this Contention.

Interrogatory 10-7

There has not been issued a safety evaluation of the Unit 1 and 2 storage capacities. When such an evaluation is issued, discovery may be sought on the same.

Interrogatory 14-1

Intervenor is in the process of evaluating LER Reports and Inspection Reports for Units 1 and 2 and is not able at this time to respond to this Interrogatory. When this review is completed, the answer to this Interrogatory will be provided.

Interrogatory 14-2

(a)Safety-related functions are those functions performed by Licensee which could have an impact on the public health and safety.

(b)Intervenor is in the process of reviewing Licensee actions during the Unit 2 accident to make determinations related to non-timely execution of safety-related functions. To date the following have been identified:

(1) Late declaration of Site Emergency and General Emergency. This occurred on 28 March 1979. Actual declaration of Site Emergency occurred at 0655, actual declaration of General Emergency occurred at 0724. The Site Emergency should have been declared at 0415 at which time Condition "c" of Table 1 of Section 2.1 of the TMI Emergency

Plan was satisfied. General Emergency should have been declared at 0635 when Condition "e" of the TMI Emergency Plan was satisfied. (see NUREG-0600, pages II-F-5 and II-F-6, and II-2-1 through II-2-7).

(2) Failure to maintain adequate control over access to vital areas in the plant. This should have been maintained throughout the accident. At approximately 1015 hours on 28 March 1979, the site security force shut down the security console, thereby defeating security controls for vital areas in the plant. Control over vital area access was resumed between 6 and 7 April 1979. (see NUREG-0600, pages II-2-18 through II-2-21; NUREG-0616, pages 152 through 156; Pre- and Post-Accident Security Status at Three Mile Island, Donald G. Rose, LASL, 1979, pages 2-7).

(3) Non-timely confirmation survey of 40 R/hr predicted dose in Goldsboro on 28 March 1979. Prediction completed at 0710, confirmatory survey not made until 0748 at onsite location GE-8. A survey to confirm such an alarming dose rate should have been implemented immediately to determine the need for emergency evacuation or other appropriate protective action. (see NUREG-0600 page II-3-94).

(4) Failure to perform radiation surveys in a timely manner in well-established plumes in off-site areas on 28 and 29 March 1980. These plumes were:

a. 1700-2238 (when first measurement was made) on 28 March 1979--a 13mR/hr reading was obtained at Kunkel School, 5.6 miles from TMI.

b. 0340-0540 on 29 March 1979.

Radiation surveys should have been performed as soon as the plumes were identified. (see NUREG-0600, pages II-3-83 through II-3-85, and pages II-F-11 through II-F-12).

Interrogatory 14-3

Intervenor is engaged in a review of LER's, Inspection Reports, and other documentation which has been received in order to define the items which collectively demonstrate lack of managerial and administrative control. When this review is complete, this Interrogatory will be fully answered. To date, the following items have been identified:

(1) Lack of adequate corrective action to prevent recurrence of problems with plant maintenance, quality assurance, and radiation controls. The subject of this allegation is or will be the subject of interrogatories to the NRC Staff and receipt of answers to those interrogatories is a necessary precondition to being able to provide specifics which are requested. This allegation is made by the Special Review Group of I & E in NUREG-0616, page 48.

(2) Failure to randomly or routinely inspect by independent methods operations surveillance activities required by 10 CFR 50 Appendix B and ANSI N18.7. The same explanation as given in (1) above applies here. This allegation is made in NUREG-0616 at page 51.

(3) Failure to require QA/QC supervisors to participate in exit interviews involving NRC inspections. The explanation in (1) applies ere also. This allegation is made in NUREG-0616 at page 52.

(4) Permission of radiation protection and health physics supervisor to perform his/her own audit of responsibilities. Explanation in (1) above applies. Allegation made in NUREG-0616 at page 52.

(5) Failure to require adequate maintenance be performed on portable radiation dose rate instruments. Explanation in (1) applies. Allegation based on events described on page 55 of NUREG-0616.

(6) Failure to timely correct recognized deficiencies identified during emergency drills. Explanation in (1) applies. Allegation made in NUREG-0616 at page 135.

(7) Failure to maintain adequate control over access to vital areas during the period 28 March through 6-7 April 1979. Details given in response to Interrogatory 14-2 on page 12.

Interrogatory 14-4

Intervenor is engaged in a review of LER's, Inspection Reports, and other relevent documents which have been received. When such review is completed, this interrogatory will be answered.

Interrogatory 14-5

The following records have been lost by Licensee or Licensee's staff during the period of the Unit 2 accident. All information is taken from NUREG-0600 at the referenced pages.

(1) Alarm Typer and Utility Typer output, 0515:59 through 0648:08 on 03/28/79. Operator "dumped" alarm status printout memory by actuating alarm suppress function at about 0648 hours. To best of my knowledge, maintenance of this record is not required, but lack of this record hampered I & E investigation of the accident. NUREG-0600 at page I-4-46.

(2) Alarm Status Printout, 1848:59 through 1910:29 on 03/28/79. Alarm Typer jammed (apparently). It is not known whether the missing records were lost, thrown away, or otherwise disposed of. I & E alleges that loss of these records did not hamper the investigation; Intervenor considers this statement speculative. NUREG-0600 at page I-4-46.

(3) Utility Typer Output, 0000:00 through 0324:24, on 03/28/79. Records were not found by I & E. NUREG-0600 at page I-4-46.

(4) Analog Trend Recorder Number 2, 03/28/79. This strip chart has never been found. NUREG-0600 at page I-4-47.

Interrogatory 14-6

None.

Interrogatory 15-1

This item is under intensive review by Intervenor, especially having just received the Human Factors analysis of the TMI-2 control room performed by the Essex Corporation for the NRC Special Inquiry Group. This study will be the subject of discovery with both Licensee and NRC Staff. At this point, the following inadequacies in the operator-instrumentation interface have been identified:

(1) Human factors engineering is the science of applying behavioral principles to systems. The province of human factors engineering lies in two major areas, these being human engineering design and evaluation and human resources development. The overall objective of human factors engineering is to prevent human error. It is obvious from a preliminary review of causes listed in TMI-1 and TMI-2 LER's that personnel error accounts for a large percentage of reportable occurrences. This evidences a general lack of human factors engineering involvement in the design of the TMI-1 control room. This in itself is a major inadequacy in the control room design.

(2) Licensee emergency procedures, according to NUREG-0585, page 2-6, do not show evidence of compatibility with the design bases of the systems involved.

(3) Instrument readings which are ambiguous and fail to provide direct indications can lead the most highly-skilled and well-trained operators into errors, especially in fast-moving emergency situations. Personnel in the control room must be trained in the capabilities and limitations of control room instrumentation.

Intervenor has proposed a site visitation for the purposes of, among other things, measurement, inspection, and photography in the Unit 1 control room. This will facilitate the ability of Intervenor to answer this question. This question will be the subject of soon-to-be-submitted interrogatories. The stage of Intervenor's review of human factors in the Unit 1 control room at this time does not lend itself to detailing problems. The review is at the stage of identifying criteria, reviewing existing human factors reviews of other plants, and eventually applying these principles in a review of the Unit 1 control room with a view toward proving the need for a full-scale human factors review perior to Restart.

Interrogatory 15-2

As in the answer to Interrogatory 15-1, the status of Intervenor's human factors review of Unit 1 is such that a detiled, definitive listing of proposed alterations is not possible. To the extent that current information permits, the following alterations have been identified as necessary for the Unit 1 control room:

(1) Installation of a video and voice recorder system in the control room to record operator response to emergency situations. Such a system would be actuated by certain key occurrences, such as reactor trip, turbine trip, HPI initiation, containment isolation, etc. This would provide a source of continuing information on which to base reviews of incidents and with which to assess the need for future improvements in the design and layout of the Unit 1 control room.

(2) Complete reworking of the alarm display system into functional groupings, with alarms located near to the controls with which they are associated.

(3) Implementation of a more professional appearance among operating personnel in the control room. This could take the form of uniforms or more formal attire. This will help eliminate the casual attitude and "air" which I found to exist in the control room during two visits to the site in late 1979. It should foster a more "professional" attitude in the control room.

(4) Replacement of the computer and display and printing systems with state-of-the-art systems whose capabilities are more consistent with the functions of these items. The speed of these systems must be such that the maximum data which is generated during an accident such as the Unit 2 accident could be handled without loss of function.

Respectfully submitted,

DATED: 31 January 1980

Steven C. Sholly

AFFADAVIT OF STEVEN C. SHOLLY

State of Pennsylvania)
: ss:
County of Cumberland)

Before me the subscriber personally appeared Steven C. Sholly, who being duly sworn according to law, doth depose and say that the information contained in the responses to the attached interrogatories are true and correct to the best of his knowledge and belief and further sayeth not.

Steven C. Sholly

Sworn to and subscribed before me this

4th day of February 1980

Notary Public

CERTIFICATE OF SERVICE

I hereby certify that a single copy of INTERVENOR STEVEN C. SHOLLY RESPONSE TO LICENSEE'S FIRST SET OF INTERROGATORIES, dated 31 January 1980, was hand delivered to the TMI Observation Center, addressed to the Attention of Mr. John Wilson, on the 5th of February 1980, for service to the other parties of this proceeding according to the Licensee's provisions for such service.

DATED: 5th February 1980

Steven C. Sholly