

SHOLLY, 8/27/80

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board



In the Matter of

METROPOLITAN EDISON COMPANY, ET AL.

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

Docket No. 50-289
(RESTART)

INTERVENOR STEVEN C. SHOLLY REQUEST TO
LICENSEE FOR SUPPLEMENTATION OF DISCOVERY
REQUESTS AND DISCOVERY REQUESTS BASED ON
NEW INFORMATION CONTAINED IN ARTICLE IN
"TMI TODAY" RECEIVED 8/26/80

The Board, in the First Special Prehearing Conference Order,
accepted for litigation Sholly Contention #15 which states as follows:

"It is contended that the design of the Unit 1 control room, instrumentation, and controls is such that operators cannot maintain system variables and systems within prescribed operating ranges during feedwater transients and LOCA's. It is further contended that this violates the provisions of GDC 13 regarding instrumentation and controls. It is contended that in view of the numerous operating difficulties encountered with Unit 2, and the similarities in design and construction between Units 1 and 2, a thorough human factors engineering review of Unit 1's Control Room is called for in order to provide assurance that the operator-instrumentation interface is such that the operators can exercise adequate control over the reactor and prevent off-site consequences from anticipated operational occurrences and postulated accidents. It is further contended that in order to assure maximum protection for the public health and safety, the human factors engineering review and any necessary changes recommended as a result of this review be completed prior to restart."

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Sholly Contention was accepted by the Board without objection. Intervenor Sholly has entered into substantial discovery with respect to Contention 15, submitting 76 interrogatories under general discovery and two additional "follow-on" discovery requests. In addition, a portion of a day was spent in the TMI-1 Reactor Control Room taking photographs which will be introduced into evidence during the litigation of Contention 15.

Central to the pursuit of Contention 15 is the issue of the need for a human factors engineering review of the TMI-1 Control Room. Several discovery requests on this matter were directed to the Licensee.

On August 26, 1980, Intervenor Sholly received a publication from the Licensee called "TMI Today". According to the publications information on page 2 of the August 1980 issue, the publication is published by "TMI Communications Services" and its editor is Dave Klusick who is known by the Intervenor to be a member of Licensee's staff. Contained in the August 1980 edition of TMI Today is an article entitled, "Human Factors Analyzed." The article begins on page one and continues on to page eight. (SEE attached copy of the article)

This article contains information which requires supplementation of certain prior discovery requests as per 10 CFR 2.740(e). These discovery requests, in the form of interrogatories, are repeated below.

Further, the article contains information which is "new information" and is therefore subject to discovery requests upon leave of the Board. The discovery requests which require supplementation will be specified, followed by a motion for leave from the Board to submit specific discovery

requests based on new information contained in the August 1980 issue of "TMI Today", received by Intervenor Sholly on August 26, 1980.

The following interrogatories were posed to the Licensee, and which now require supplementation as a result of the "TMI Today" article:

15-001--Provide copies of all documents, including tapes, letters, memoranda, transcripts, and files relating to human factors review of the design of the Unit 1 reactor control room.

COMMENT: Licensee's response indicated that at least portion of its response to this interrogatory would be presented in direct testimony. I indicated that this was unacceptable. There now exists no reason why this material should not be made available to me prior to the date for submission of direct case. The information is apparently now available as to the specifics of how the control room mockup in the Turbine Building was created, who performed the mockup, what procedures are being tested with the mockup, and what if any deficiencies have been discovered by the use of the mockup.

15-005--Has Licensee or its contractors ever asked TMI operators to evaluate the design adequacy of the control room?

COMMENT: Apparently, a significant component of the recently revealed control room mockup is the evaluation of both control room design and procedures as they relate to the control room design. New information developed thus far should be provided, with further supplementation as required while additional evaluations proceed.

The following interrogatories are based on new information contained in the "TMI Today" report on Licensee's human factors review of the TMI-1 Control Room. I hereby request leave from the Board to pose

15-077--Identify by name and position all persons employed by Licensee or any of its contractors who have participated in and/or are participating in the human factors review of the TMI-1 Control Room by the development and use of the mockup in the Unit 1 Turbine Building as described in "TMI Today".

15-078--Do any of the individuals identified in response to Interrogatory 15-077 above possess any formal training in any specific area of human factors engineering? If so, identify each such person by name and provide a description of the training, including where the training was obtained and when it was obtained (during what year or years).

15-079--According to the article in "TMI Today", "key operational and emergency procedures are being 'walked through' to develop a clear understanding of how displays, controls and communications channels are used in the Control Room." Identify by name and procedure number which procedures are being evaluated by this method. Identify by name and position the persons who are performing the so-called "walk through" and the persons who are evaluating the results of the walk through and recommending procedural changes.

15-080--The article in "TMI Today" contains a statement by Gary Broughton which states: "we want to match the capabilities of the operators to absorb information with the capabilities of control displays to

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provide information." With regards to this statement, identify specifically by what means Licensee has determined the "capabilities of the operators to absorb information". Further, quantify the capabilities of the operators to absorb information, and how this data is being related to how much information is generated by the current Control Room design.

From the point of view of this Intervenor, because of the past history on the part of the Licensee in attempting to avoid reasonable interrogatories on this contention, the Board may, in the event that the Licensee objects to any of these new interrogatories, treat this as a motion to compel discovery on these interrogatories. The reasons why Licensee should be required to respond to these interrogatories are as follows:

15-077--This interrogatory could not have been posed before I knew about the existence of the mockup in the Turbine Building, knowledge of which would have been revealed had Licensee timely supplemented its responses to earlier interrogatories. Such information is crucial to determine the credibility of the review being performed.

15-078--Same as for 15-077. The knowledge about each such person's formal training in human factors engineering is very important to assessing the relevance of the mockup

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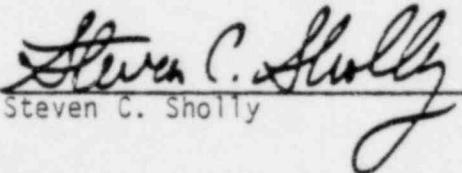
to the need for a thorough human factors review of the design of the TMI-1 Control Room which is the basis of Contention 15. The degree to which this activity on the part of the Licensee may meet part of the concern embodied in Contention 15 can only be determined if this information is provided.

15-079--This information is needed to assess the bounds of procedures which are being tested on the walk through basis. Key procedures have been identified by other reviewers, and I wish to determine if these procedures are being evaluated in this program.

15-080--This information is very central to the issues embodied in Contention 15. One of the key questions which would be answered by a human factors review of the TMI-1 control room would be if there is too much information presented for operators to handle, or do there exist mechanisms by which display of information to operators in a different format could improve the ability of the operator to absorb operational and control information, so as to reduce the chances of human error.

DATED: 27 August 1980

RESPECTFULLY SUBMITTED,


Steven C. Sholly

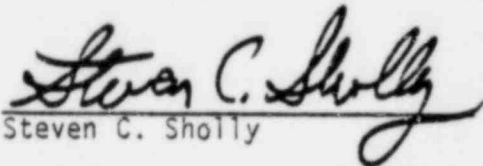
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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Docket No. 50-289(RESTART)

CERTIFICATE OF SERVICE

I hereby certify that single copies of INTERVENOR STEVEN C. SHOLLY REQUEST TO LICENSEE FOR SUPPLEMENTATION OF DISCOVERY REQUESTS AND DISCOVERY REQUESTS BASED ON NEW INFORMATION CONTAINED IN ARTICLE IN "TMI TODAY" RECEIVED 8/26/80 were served on those persons below by deposit in the United States mail, first class, postage prepaid, this 27th day of August 1980.


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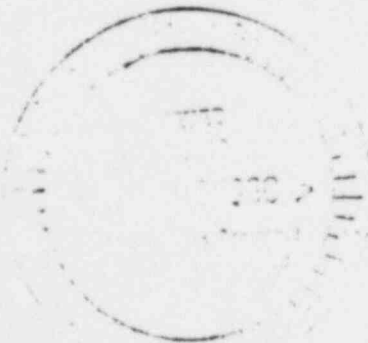
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TMI today

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DL 1, NO. 2

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AUGUST, 1980

Human factors analyzed

A full-scale Control Room mockup has been in use in the Unit 1 turbine floor to evaluate Unit 1 Control Room design and analyze potential "human factors" problems in the arrangement and design of controls and displays in the main Control Room.

According to Gary Broughton, GPU control and safety analysis manager, the Control Room mockup is designed for several uses. "What we're trying to accomplish is the right display of information that reduces the likelihood of operator error."

The mockup consists of panel fronts reproduced by a combination of photographic and photocopy enlargements.

On the model control panels, key operational and emergency procedures are being "walked through" to develop a clear understanding of how displays, controls and communications channels are used in the Control Room. Studies of these procedures should indicate what if any changes would be desirable.

Broughton explains that "we want to match the capabilities of the operators to absorb information with the capabilities of control displays to provide information. This should make it easier for Control Room operators to assimilate data.

"In effect," he says, "we're trying to accommodate the workings of a human being with the workings of instrumentation."

The operating procedures which are being exercised on the mockup include plant heatup and startup (including operations at power), shutdown and cooldown and refueling.

A variety of emergency procedures are being exercised, including reactor trips from several causes, turbine trips, losses of feed-water flow and several cases where reactor coolant would be lost.

Displays and controls on the principal panels and consoles are being reviewed one by one, separate from

Continued on page 8

Human factors under study in Unit 1

Continued from page 1

the walk-through. The object of this review is to ensure that items such as readability are evaluated.

GPU plant analysis manager Pat Walsh adds that a review of alarm systems is also being performed to evaluate the usefulness of the information presented to the operator in both normal and unusual situations.

Broughton and Walsh point out that Unit 1 has had an excellent availability record during its five years of commercial operation. "It had very few operational problems during this period and very few, if any, which can be attributed with any certainty to human factors problems in the arrangement and design of the main control room," Walsh notes.

Nevertheless, because of the criticisms which have been made of human factors design aspects of nuclear power control rooms generally, a closer look at the Unit 1 control room design was undertaken, Broughton adds.

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