

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

UNION OF CONCERNED SCIENTISTS
SECOND SET OF INTERROGATORIES TO NRC STAFF

Please apply the same instructions as in UCS's first set of interrogatories. Unless otherwise noted, the page references are to the "Status Report on the Evaluation of Licensee's Compliance with the Order, Dated August 9, 1979."

190. Page C1-10 contains the staff's evaluation of the environmental qualification of EFW pump motors and control valves.

a. Identify the specific regulations, Regulatory Guides, Branch Technical Positions or other documents containing the standards used, or to be used, as the basis for this evaluation.

b. Is it the staff's position that testing in a simulated adverse environment is not required for these components? If so, explain the basis for that position.

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191. With respect to the discussion of Item 1d, "Analysis of Small Breaks" on pp. Cl-11 to Cl-14, please answer the following:

a. Define "adequate core cooling" as used on line 13 of page Cl-12.

b. Describe the operator actions needed during heat removal by the steam generators and high pressure injection system, as discussed on lines 9-13 of page Cl-12.

c. What is the basis for expecting that the operator would terminate HPI before the PORV or safety valves lift? (line 34 on page Cl-12)

d. What are the consequences if the operator fails to terminate HPI before the PORV or safety valves lift?

e. Has the staff analyzed a small break with loss of all main feedwater, an isolated PORV and a safety valve stuck open to determine whether this would result in uncovering the reactor core? If so, what were the results? If not, why not?

f. Identify the specific operator actions that are required for a small break accident, distinguishing between the immediate and follow-up actions. (line 24 on page Cl-13)

g. For each of the action described in the answer to subpart (f) above, identify the specific "circumstances" during which the action is required. (line 25 on page Cl-13)

h. The staff states on line 27 of page C1-13 that immediate operator action is required "as soon as the problem is diagnosed." Is it the staff's position that the amount of time required to diagnose the problem has no bearing on the consequences?

i. For each operator action identified in the answer to subpart (f), above, specify the earliest and latest times after the break during which the operator action must be performed. In other words, give the "window" of time after the break during which the operator action must be taken.

j. Of the time available to accomplish each necessary operator action, how much of the time is available for diagnosis and how much is available to actually accomplish the action?

k. For each of the required operator actions, specify the information available to the operator to make the diagnosis and to confirm that the action has been accomplished.

l. In assessing whether it is reasonable to expect the operators to take the actions identified and discussed above at the correct time, has the staff considered the other events occurring in the plant which could distract the operator or otherwise demand his attention?

m. If the answer to subpart (1.) above is "yes," identify all other actions the operator may be required to take on other systems and the alarms that can reasonably be expected to occur during that time.

192. With respect to IE Bulletin 79-05A, Item #2 (p. C2-2), what was the staff's basis for requiring review of only those transients similar to the Davis-Besse event which occurred at TMI-1 rather than a review of all similar transients at all B&W facilities?

193. Is it the staff's position that a design (as distinguished from procedures or training) which permits operators to override automatic actions of engineered safety features before the safety function goes to completion meets the commission's regulations. If the answer is "yes", explain the basis for that position. For example (this is only an example), does the staff take the position that a design which permits operators to prevent a core cooling system from going to completion meets the regulations?

194. Pages C2-5 and C2-6 contain a discussion of the procedures to be used to assure that safety-related system valves are in the correct position. Does the staff take the position that conformance with this part of the Order will provide a degree of protection to the public equivalent or superior to what would be provided if the design of TMI-1 met Regulatory Guide 1.47?

195. The staff notes the "extreme seriousness and consequences" of the simultaneous blocking of all auxiliary feedwater trains. (p. C2-8) Describe the "extreme seriousness and consequences" referred to.

196. Describe the events that could lead to "RCS void formation that could interrupt natural circulation flow."
(line 35 of page 2-9)

197. With respect to the discussion on page C2-10 , please answer the following:

a. Describe the circumstances under which continued operation of engineered safety features would threaten reactor vessel integrity.

b. Describe the range of consequences to the public that are possible if reactor vessel integrity is lost.

c. Does the staff take the position that reliance on operator action to prevent loss of reactor vessel integrity meets the Commission's regulations? If so, reference the specific regulations that permit this.

198. With respect to NUREG-0623, please answer the following:

a. Identify the non-LOCA transients for which the consequences are aggravated by reactor coolant pump trip and describe the extent of the aggravation?

(NUREG-0623, p. 1)

b. Has the staff evaluated the effect of reactor coolant pump trip during a large break LOCA with respect to the probability of pump (and flywheel) overspeed? If so, provide the analysis and conclusions.

199. NUREG-0623 states that "small break LOCA's with the pumps operational or with delayed trip can result in more severe consequences than when the pumps are tripped early in the accident." (p. 1) In contrast, the staff states on page C2-18 of the Status Report that "the proposed logic [the automatic pump trip] is intended to preclude pump trip during . . . very small breaks where maintenance of forced cooling is desirable." Please answer the following:

- a. Specify the spectrum of break sizes and locations where maintenance of forced cooling is desirable and those where pump trip is desirable.
- b. Discuss the means by which the operator will be able to determine whether the pump should be tripped or forced cooling should be maintained.

200. In Section C8, the staff lists the "positions" taken in NUREG-0578. Following each "position" is a section entitled "clarification." Is it the staff's position that compliance with the items in the "clarification" sections are necessary and sufficient to demonstrate compliance with the "positions?"

201. Page C8-6 contains seven items of "clarification" with regard to the NUREG-0578 position on power supply for pressurizer heaters. Please answer the follow:

a. What is the basis for item 3?

b. With respect to item 4, what is the basis for requiring change-over of the heaters to emergency power to be accomplished manually rather than automatically? Identify the regulations, if any, which require this.

c. Is it the staff's position that the safety-grade circuit breakers referenced in "clarification" item #6 can be made to conform to the requirement for an isolation device set forth in Reg. Guide 1.75?

202. On page C8-14, the staff states:

The similarities between the instruments used at Three Mile Island Units 1 and 2 lead us to conclude that the detection of reduced coolant level or the existence of core voiding in TMI-1 can be readily determined with the existing plant instrumentation, provided the operator is aware of the available information and interprets its correctly.

Is it the staff's position that this meets IEEE 279, §4.8, as incorporated in 10 CFR 50.55(a)(h)? If so, specify what "the desired variables" are and explain how the existing instrumentation provides direct measures of those variables.

203. In several instances including for example, primary coolant saturation meters and feedwater flow meters, the staff is requiring and/or has found acceptable the use of only two indicators.

a. Explain how the operator is expected to discern which is correct if the two give differing readings.

b. Is it the staff's position that such designs conform to the requirement contained in IEEE 279 that "the design shall minimize the development of conditions which would cause meters, annunciators, recorders, alarms, etc., to give anomalous indications confusing to the operator?"

204. On page C8-22, the staff states that it "has determined that post-accident operation of the reactor coolant pumps is highly desirable." Please answer the following:

a. Identify the particular accidents for which reactor coolant pump operation is "highly desirable."

b. Describe in quantitative terms the difference in consequences for each of the accidents identified above assuming first that the reactor coolant pumps are operating and second that they are not operating. If no detailed evaluation has been done for the case where the pumps are operating, provide you best estimate.

c. Has the staff evaluated whether classifying the reactor coolant pumps as safety-related

and providing an on-site power supply (or any other means of providing forced cooling of the core following an accident) would provide substantial, additional protection for the public? If so, what were the results of the evaluation? If not, why not?

205. With respect to the discussion of isolation of the reactor coolant pump seal injection lines on pages C8-22 and C8-23, please answer the following:

- a. Describe the evaluations the staff has done to determine whether the health and safety of the public is better protected by not automatically isolating the seal injection lines or by isolating them.
- b. What is the staff's judgment concerning the probability of a loss-of-reactor-coolant if the seal injection lines are isolated? Consider in your answer the probability of loss of off-site power, the new procedure for the operators to trip the reactor coolant pumps and the addition of a means to automatically trip the reactor coolant pumps.
- c. What information is available to the operator to indicate the need to manually isolate the seal injection lines?
- d. In approving a design which does not provide for automatic isolation of the seal

injection lines, did the staff consider the financial consequences of damage to the reactor coolant pumps?

206. The staff states on page B-1:

In our evaluation, each item or sub-item covered by the Order has been reviewed for conformance with the requirements of the Order. Where existing standards remain valid, they are used as the basis for assessing such conformance. In some areas, existing standards have been judged inadequate since the TMI-2 accident; in others, formal acceptance standards do not exist. In these cases, new acceptance criteria have been or are being developed. Where these are available, they have been used. Where new criteria are not available, judgment of the staff has formed the basis for assessing conformance with the Order, considering such factors as comparison with other plants, degree of improvement over previous implementation, and expert opinion. In each case, when new criteria or standards become available, we will evaluate the items against those criteria and report our findings in a supplement to this evaluation.

Please identify each "item or sub-item" as to which "existing standards have been judged inadequate" or "formal acceptance standards do not exist."

207. Provide a list of the staff members who performed the technical review and prepared the inputs to the Status Report.

208. Provide a list of the staff management personnel who reviewed and approved the inputs to the Status Report.

209. With respect to both groups, of persons identified in the two previous answers, provide a statement of their educational background, training, and qualifications.

210. With respect to both groups, provide their time and attendance cards for the period since the TMI-2 accident until the present time. A computer printout of this data is acceptable

if accompanied by an explanation of the program and activity codes.

211. Provide the staff inputs to the Status Report.

212. With reference to the staff's answer to UCS interrogatory #46, does the staff agree that a break in the top of the pressurizer (or the pipes connected thereto) could have the same effect as an unisolated, stuck-open PORV? If the answer is "yes," identify which of the short and long-term measures are addressed to mitigation of that postulated event.

UNION OF CONCERNED SCIENTISTS

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DATED: February 1, 1980

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NUCLEAR REGULATORY COMMISSION

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Docket No. 50-289
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CERTIFICATE OF SERVICE

I hereby certify that a copy of "Union of Concerned Scientists Second Set of Interrogatories to NRC Staff" was mailed postage prepaid first class this 1st day of February 1980 to the following parties:

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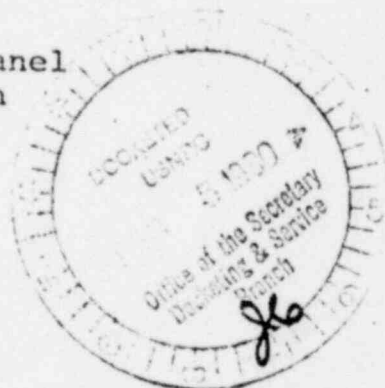
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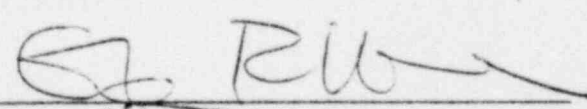
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