

April 21, 1980

Note to James P. Murray, OELD

TMI INVESTIGATION

The attached set of 45 questions was given to Stello and Moseley at their meeting with Henry Meyers of Udall's staff last Friday, April 18, 1980. With one or two minor exceptions, the questions duplicate, and add to, those submitted by Meyers in his draft of April 3, 1980. (I have noted the numbers of the questions from the previous set on the current one where they correspond.)

Considering the apparent confusion about the direction of the IE inquiry, I highly recommend that you and I meet with Stello and/or Moseley to sound them out as to their perception of the scope of the investigation. At the time of this writing, there is nothing to show that the IE TMI task force is doing anything more than a reevaluation of the three items of noncompliance omitted from the Met-Ed civil penalty package. I feel we owe it to our clients to suggest they shape this investigation as a response to the Udall questions.



Richard G. Bachmann
Attorney
Rulemaking and Enforcement Division

Rich:

*I think we can make any point
along these lines in the monthly
scheduled meeting on 4/29-30.*

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From Myers

Craig

4/18/80

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1. At what time and to what extent were (1) Gary Miller, (2) off-site senior officials of Metropolitan Edison and/or General Public Utilities and (3) NRC officials informed that for a period of approximately 2 hours and 18 minutes primary coolant had been lost via the open PORV and letdown system and that during this period high pressure injection had been throttled?
2. On March 28, what efforts were made prior to 9:00 a.m. to determine the amount of primary system inventory loss prior to 6:20 a.m.?
3. What was the rationale for initiating high pressure injection at approximately 7:19 a.m. (See Kemeny, TATF Vol. 1, p. 113) throttling it at approximately 7:37 a.m., and initiating sustained flow at approximately 8:26 a.m.?
4. Which of the TMI supervisors present in the control room on March 28 believed that day that the core had been uncovered for some portion of the period between 6:00 a.m. and 9:00 a.m.? Which between 9:00 a.m. and 8:00 p.m.?
5. Was a record kept of data indicated by the extended scale readout device connected to the hot leg RTD? (See E&E, TMI-2, p. 297.)
6. What interpretation was assigned to the rapid hot leg temperature increase that occurred following shutdown of the reactor coolant pumps and which was recorded on a multipoint recorder located in the control room?
7. Which of the supervisors who observed the temperatures indicating superheated conditions in the TMI primary system believed that these temperatures did not necessarily mean the core was or had been uncovered? To the extent that the supervisors did not believe the core was or had been uncovered how did such supervisors explain such high temperatures?
8. Did Ivan Porter direct the technicians to take a second set of thermocouple readings using a digital volt meter?
9. Did the technicians inform Ivan Porter of all or part of the results of the second set of thermocouple readings; e.g. the set made using the digital volt meter?
10. What did Ivan Porter inform Gary Miller as to the reliability of measurements indicating temperatures in excess of 2000 degrees?
11. Did Gary Miller believe prior to 10:00 a.m. on March 28 that in-core temperatures might have been 2500 degrees or higher? (See I&E Tape 159, p. 51-52.)

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12. What inference did Gary Miller draw from the fact that the in-core thermocouples might have gotten sufficiently hot, possibly hot enough that new junctions were formed, but in any case hot enough that their calibration would not be reliable? Did Gary Miller recognize that temperatures of sufficient magnitude to destroy the thermocouples would imply at a minimum that the core was uncovered? Did Gary Miller recognize that temperatures of sufficient magnitude to destroy the thermocouples might imply existence of a chemical reaction between the steam and zirconium cladding?

13. When Gary Miller said that the incores were hot enough that they seared him, that the direct measurements told him why the computer was off scale at 700 degrees, and that he knew "we were superheated and all that sort of thing", was he stating that core temperatures, in his view, were or had been in excess of saturation temperature? In making this statement was he confirming that he believed the core was or has been uncovered? If he did not believe superheated temperatures were synonymous with core uncover, what did he believe to be the source of such temperatures.

14. Ivan Porter told the I&E investigators that he was afraid the thermocouple measurements (e.g. indicating temperatures in excess of 2000 degrees) were real. How is this statement to be reconciled with others made by Porter to the effect that he discounted these measurements?

15. Which of the TMI supervisors present on March 28 were aware on March 28 of direct measurements of the in-core thermocouple voltages?

16. During the period March 28 through May 7 what happened to the sheet on which the March 28 in-core measurements made with the digital volt meter were recorded?

17. Which of the TMI supervisors present on March 28 were aware on March 28 of the in-core thermocouple data printed by the computer at 8:34 a.m., 8:47 a.m., 11:10 a.m., 12:40 p.m., 4:11 p.m., 6:30 p.m., 7:59 p.m., 8:56 p.m., and 9:56 p.m.? How was this data interpreted?

18. Was Gary Miller or any other TMI supervisor aware of Mr. Flint's monitoring the in-core thermocouples during the day on March 28?

19. On March 28 to whom did John Flint report with regard to in-core thermocouple or other data that he observed on that day?

20. On March 28, did any employees of Metropolitan Edison or General Public Utilities make calculations as to the extent of fuel failure based on data from the dome monitor or other instruments? Was any such analysis provided to the NRC?

21. On March 28, did TMI personnel monitor the recorders which displayed containment building temperatures? If so, what interpretation was assigned to the temperature increase that occurred approximately coincident with the reactor building pressure pulse at about 1:50 p.m.?
22. On March 28, did TMI personnel monitor the printer that displayed the alarms received at about 1:50 p.m.? If so, what interpretation was assigned to these alarms?
23. What were the circumstances leading to recording of the 1:50 p.m. reactor building pressure pulse as 4 psi on one log and about 5 psi on another?
24. Was Mr. Frederick in the control room at approximately 1:50 p.m. on March 28 at the time of occurrence of the reactor building pressure pulse and related events?
25. Which of the TMI supervisors present on March 28 was aware of the following which occurred at approximately 1:50 p.m.: pressure pulse, actuation of containment sprays, increase in containment temperatures, negative pressure pulses on instruments that used containment pressure as a reference, and subsequent alarm print out.
26. Which of the supervisors present on March 28 were aware prior to that day that actuation of the containment sprays required detection of a pressure pulse of at least 28 psi by at least 2 pressure sensors?
27. Was Gary Miller informed of the 1:50 p.m. pressure pulse and associated actuation of the containment sprays?
28. Was Mr. Illjes informed of the pressure pulse after arriving in the TMI control room on the afternoon of March 28? Did Mr. Illjes discuss with others in the control room on March 28 the possibility that a hydrogen explosion had occurred on that day? If such discussions did not occur on March 28, on what day and approximately at what hour did they occur?
29. Which TMI employees were instructed that they should not start equipment in the reactor building apparently out of concern that such action might produce an electrical discharge that would cause an explosion? Who issued such instructions? On what day were such instructions issued? What reconciliation can be made between Mr. Chwastyk's recollection that he was not in the shift supervisor's office on March 28 and Ross' contrary recollection?
30. Who instructed Mr. Chwastyk to establish a bubble in the pressurizer which he tried to do sometime after 2:00 p.m. during which effort the pressurizer block valve and/or PORV was closed at approximately 3:10 p.m.?

31. With whom did Gary Miller conduct telephone conversations during the period when he was at the Lt. Governor's office on the afternoon of March 28? What was the substance of such conversations?
32. What was the substance of the telephone discussion between Gary Miller and Lt. Governor Scranton that occurred at approximately 9:00 a.m. on March 28? Did *Miller inform* Scranton that a general emergency had been declared and what was the significance of a general emergency?
33. What was the substance of the discussion that took place when Lt. Governor Scranton was briefed by Messers Herbein and Miller beginning at approximately 2:30 p.m. on March 28?
34. With whom did Mr. Dieckamp confer prior to drafting his statement in a May 9, 1979 mailgram to Mr. Udall that: "There is no evidence that anyone interpreted the 'pressure spike' and the spray initiation in terms of reactor core damage at the time of the spike nor that anyone withheld any information?"
35. Did Mr. Dieckamp's failure to correct the foregoing erroneous statement in the mailgram sent to Mr. Udall and various NRC officials constitute a violation of any explicit or implicit NRC regulations or licensing conditions?
36. Which of the following would have been required on March 28 at TMI-2 by explicit or implicit NRC regulations or licensing conditions:
- Calculation of primary coolant loss.
 - Monitoring and interpretation of incore thermocouple data.
 - Monitoring and interpretation of multi-point recorder data indicating hot-leg temperatures.
 - Monitoring and interpretation of chart recorder indicating reactor building temperatures.
 - Monitoring and interpretation of alarm and utility printer printouts.
 - Calculation of fuel damage based on containment building radiation measurements and other data.
37. What violations of NRC regulations or licensing conditions may have occurred as a result of the failure to take any or all of the actions listed in the previous question?

38. The sheet on which the digital voltmeter measurements of incore thermocouple voltages were recorded was not made available to the NRC until approximately May 7 or later. Did the failure to provide this data to the NRC in a more timely fashion constitute a violation of explicit or implicit NRC regulations or licensing conditions?

39. Is there any indication that data recorded in the control room on March 28 was lost or destroyed, ~~before it was examined by Kemeny staff or NRC investigators?~~ What kinds of data? *in any?*

40. Did the incorrect recording in TMI-2 logs of the magnitude of the pressure pulse (i.e. 4 psi and approximately 5 psi instead of 28 psi) constitute a violation of explicit or implicit NRC regulations or licensing conditions?

41. If Mr. Chwastyk sought in the afternoon of March 28 to establish a bubble in the pressurizer without receiving permission from the station manager or other authority designated by the station manager, would such an action constitute a violation by Mr. Chwastyk of any explicit or implicit NRC regulation or licensing condition?

42. Were Mr. Miller and/or other Metropolitan Edison officials obliged by explicit or implicit NRC regulations or licensing conditions to report on March 28, any or all of the following to State and/or Federal officials:

- loss of coolant via open PORV and letdown system and throttled high pressure injection between 4:00 a.m. and approximately 6:20 a.m.

- incore thermocouple data indicating temperatures in excess of 2000 degrees F.;

- computer print-outs of incore thermocouple voltages indicating presence of superheated conditions (and partial core uncover);

- hot-leg temperatures indicative of superheated conditions prevailing for most of the periods between 6:00 a.m. and 8:00 a.m.;

- the pressure pulse recording and other manifestations of a hydrogen detonation in the containment at 1:50 p.m.;

- that the reactor was being cooled via a process not described in the plant's operating procedures or one in which the operators were schooled; e.g. an event not analyzed in the TMI-2 FSAR, and

- uncertainties during the day as to whether the core was uncovered?

43. Did the failure of Metropolitan Edison officials to report any of the foregoing in a timely fashion constitute a violation of requirements imposed explicitly or implicitly by NRC regulations and/or licensing conditions?
44. To what extent has Metropolitan Edison and/or General Public Utilities conducted an inquiry into the causes of the failure of Messers Herbein and/or Miller to fully inform their superiors as to conditions at Three Mile Island Unit 2 on March 28?
45. Does any failure of Metropolitan Edison and/or General Public Utilities to conduct any such inquiry as mentioned above constitute a violation of requirement imposed explicitly or implicitly by NRC regulations and/or licensing conditions?