



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

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June 28, 1979

MEMORANDUM FOR: G. Frampton, Deputy Director, NRC/TMI Special Inquiry Group

FROM: M. L. Ernst, Leader, Task Group No. 6, NRC/TMI Special Inquiry Group

SUBJECT: CHRONOLOGY

Enclosed is the latest chronology being used by Group 6 per your request. By copy of this memorandum, I am distributing this chronology to the other Group Leaders and would appreciate any comments they might have.

As you can see, our chronology is substantially shorter than the other chronologies that have been developed by other people. The reason for this is that we have restricted ours to include only those events that have potential or actual offsite consequences, or those that might result in other agencies taking emergency response actions.

Malcolm L. Ernst, Leader
Task Group No. 6
NRC/TMI Special Inquiry Group

Enclosure:
As stated

cc: M. Rogovin
K. Cornell
R. DeYoung
Group Leaders

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CHRONOLOGY OF POSSIBLE TRIGGER POINTS FOR
CHANGES IN AGENCY EMERGENCY RESPONSE ACTIONS

<u>3/28/79</u>		<u>Reference</u>
4:00 am	Accident Initiation	(Met Ed)
6:45 am	Site emergency declared based on alarms of process and area radiation monitors	(IE-Rad)
7:02 am	Pennsylvania Emergency Management Agency notified of site emergency by Shift Supervisor, who requested that PEMA notify the Bureau of Radiological Health	(IE-Rad)
7:04 am	Attempted notification of NRC Region I - answering service received the call	(IE-Rad)
7:09 am	Department of Energy Radiological Assistance Plan office at Brookhaven National Laboratory notified of site emergency	(IE-Rad)
7:09 am	Dauphin County Civil Defense notified of site emergency	(IE-Rad)
7:10 am	Pennsylvania Bureau of Radiological Health notified of site emergency by the Pennsylvania Emergency Management Agency	(IE-Rad)
7:18 am	Pennsylvania State Police contacted by control room personnel	(IE-Rad)
7:20 am	Attempted notification to American Nuclear Insurers - no answer	(IE-Rad)
7:24 am	General emergency declared by Station Manager based on high radiation reading of containment dome monitor	(IE-Rad) (Met Ed)
7:30 am	Dauphin County Civil Defense notified of general emergency	(IE-Rad)
7:35 am	Department of Energy Radiological Assistance Plan office notified of general emergency	(IE-Rad)
7:35 am	Shift Supervisor notified Pennsylvania Emergency Management Agency of escalation to general emergency	(IE-Rad)
7:36 am	Dauphin County Civil Defense was called to verify that the Emergency Director, DCCD, had been personally notified.	(IE-Rad)

<u>3/28/79</u>		<u>Reference</u>
7:37 am	A Metropolitan Edison representative from Reading, PA called NRC Region I. Left word with the answering service that a general emergency had been declared.	(IE-Rad)
7:40 am	A representative of the Pennsylvania Bureau of Radiological Health called the control room and was briefed on the situation by the Superintendent, Technical Support. The phone line was left open.	(IE-Rad)
7:40 am	The site phoned NRC Region I to inform them that a general emergency had been declared. The answering service informed the caller that they had been unable to contact designated Region I individuals, but that the regional office switchboard would open at 7:45 am	(IE-Rad)
7:50 am	NRC Region I established telephone contact with TMI Unit 2 control room.	(IE-Rad)
8:00 am	Director, NRC Region I, notified Acting Director, Inspection and Enforcement of the incident.	(IE-Rad)
8:00 am	Isolation of auxiliary building on high radiation levels	(IE-OPN)
9:00 am	NRC Region I Incident Response Center was activated. Open phone lines established between IRC and control rooms of Units 1 and 2.	(IE-Rad)
8:05 am	NRC Headquarters Incident Response Center was activated.	(IE-Rad)
8:18 am	Reactor containment was isolated by high containment pressure (4 psig) (Met Ed chronology indicates isolation of containment at 7:56 am).	(IE-Rad)
11:04 am	State urges shutdown of auxiliary building ventilation system to limit further releases.	(IE-OPN)
11:04 am	Unit 2 ventilation system was turned off (NRC concerned that this action might lead to ground level releases)	(IE-Rad)
11:10 am	Island evacuated of all non-essential personnel	(IE-Rad)
11:18 am	Commonwealth of Pennsylvania requested assistance from Department of Energy.	
11:55 am	Using atmospheric dump valves to remove decay heat	(IE-OPN)

		<u>Reference</u>
<u>3/28/79</u>		
12:45 pm	Route 441 blocked to traffic by Pennsylvania State Police upon request from Pennsylvania Bureau of Radiological Health.	(IE-Rad)
1:50 pm	Reactor containment pressure spike of 28 psig due to hydrogen detonation. Engineered Safeguards actuated on high-high pressure signal.	(IE-Rad) (Met Ed)
<u>3/29/79</u>		
1:15 pm	Industrial waste treatment system (release to river) was started upon instruction of chemistry department.	(IE-Rad)
1:28 pm	The Supervisor, Technical Training, called the Pennsylvania Bureau of Radiological Health concerning industrial waste system release to river.	(IE-Rad)
2:10 pm	Industrial waste release was terminated due to xenon in a sample of the waste (later determined to be in error)	(IE-Rad)
4:10 pm	Industrial waste release was initiated at approximate 200 gpm rate	(IE-Rad)
5:55 pm	NRC Executive Management Team directed the licensee to stop dumping all water. Region I Director discussed order with Plant Manager.	(IE-Rad)
6:15 pm	Release of industrial waste was stopped after release of about 25,000 gal.	(IE-Rad)
<u>3/30/79</u>		
12:15 am	Permission granted to licensee for resumption of liquid waste discharge)	(Chairman's testimony CRS IB 79035)
1:30 am	An engineer at the Emergency Control Station stated that he notified a representative of the NRC in the Unit 1 control room and the Commonwealth of Pennsylvania of a planned venting of the make-up tank to the vent header at approximately 2:00-3:00 a.m.	(IE-Rad)
3:30 am	Operator began venting the make-up tank to the waste gas vent header.	(IE-Rad)
3:50 am	Venting of the make-up tank was stopped	(IE-Rad)

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7:10 am	Operator started venting the make-up tank to the vent header - action had the concurrence of two shift supervisors. Needed to reduce pressure so that water could be transferred from the reactor coolant bleed hold-up tank to the make-up tank.	(IE-Rad)
7:44 am	The Supervisor, Station Operations, requested dispatch of survey teams and the helicopter.	(IE-Rad)
7:44 - 8:45 am	An engineer at the Emergency control Station notified NRC representatives in the Unit 1 Shift Supervisor's office and the Commonwealth of Pennsylvania that the make-up tank had been vented and that increased releases were expected. He later notified both the NRC and state representatives that the venting would last longer than originally expected.	(IE-Rad)
7:56 - 8:01 am	Radiation levels of 1000 and 1200 mR/hr (beta-gamma) were measured at 7:56 am and 8:01 am, respectively, from a helicopter at an elevation of 600 feet (130 feet above the Unit 2 auxiliary building.) The helicopter decreased altitude in an attempt to better define the source of the radiation. The radiation level decreased to 600 mR/hr as the helicopter descended. Upon return to the original altitude, no further high readings were found.	(IE-Rad)
8:34 -	The Unit Supervisor, Operations, called Civil Defense to report radiation levels of 1200 mR/hr at 300 feet above plant. He requested Civil Defense to contact the Pennsylvania Bureau of Radiological Health and recommended that the state prepare to evacuate. At the same time, Civil Defense was talking to another individual on-site who explained that an evacuation of the site was not planned.	(IE-Rad)
8:45 am	NRC Headquarters was notified that contents of waste gas tanks were being released to the stack, resulting in an increased stack release rate.	(IE-Rad)
11:30 am	Chairman Hendrie suggested to Governor Thornburg that pregnant women and pre-school children be evacuated from area within five miles of plant site. Subsequently, Governor Thornburg declared on-site state of emergency after uncontrolled release of radiation with readings as high as 1,200 mR/hr. Radio broadcast by Governor warned persons within five to ten miles radius to stay indoors and advised pregnant women and pre-school children to evacuate.	(CRS IB 79035)

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11:15 am

During press conference, Denton announced that hydrogen bubble appeared to be effectively gone, but that the staff was still checking the calculations.

Reference

(CRS IB 79035)
(Press Conf. 4/2/79)

4/9/79

Denton declared crises over so far as the reactor was concerned.

(CRS IB 79035)

Governor Thornburg lifted the limited evacuation of pregnant women and pre-school age children.

(Response to VPM)

Governor Thornburgh directed involved state agencies which had been on a full emergency alert status to move down to an "on-call" status.

(Response to VPM)

4/27/79

2:07 pm

Plant put on natural circulation for core cooling

(Press Conf 4/27/79)

References:

1. Metropolitan Edison Company, Preliminary Annotated Sequence of Events, May 10, 1979, Revision 0. (Met Ed)
2. Office of Inspection and Enforcement, TMI-2 Radiological Sequence of Events as of June 14, 1979, June 19, 1979. (IE-Rad)
3. Office of Inspection and Enforcement, Interim Sequence of Operating Events - Three Mile Island Incident, May 16, 1979. (IE-OPN)
4. Congressional Research Service, Issue Brief IB 79035, Nuclear Power: The Three Mile Island Accident and its Investigation, April 19, 1979. (CRS IB 79035)
5. Summary of Radioactive Liquid Release Situation, from miscellaneous papers from NRC Incident Response Center, undated, backup for Chairman's Testimony.
6. NRC Press Conference - 4/2/79 - Transcripts (Press Conf 4/2/79)
7. NRC Response to Inquiry of Vice President Mondale - 4/10/79 (Response to VPM)
8. NRC Press Conference - 4/27/79 - Transcript