



UNIVERSITY OF PITTSBURGH
Institute of Politics

case study

**Safety vs. Technology in High Risk
Environments: Trade-offs in Public
Policy Decision-Making**

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and Carrie Miller
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PROFILES

Governor's Office

Dick Thornburgh, Governor of Pennsylvania
William Scranton, Lieutenant Governor of Pennsylvania
Paul Critchlow, Press Secretary to the Governor and Director of Communications

Bureau of Radiation Protection within the Department of Environmental Resources

William Dornsife, Nuclear Engineer
Tom Gerusky, Radiation Protection Director

Pennsylvania Emergency Management Agency

Oran Henderson, Director
Clarence Deller, Watch Officer

Pennsylvania Department of Health

Gordon MacLeod, Pennsylvania Secretary of Health

Metropolitan Edison

Walter Creitz, President
Gary Miller, Station Manager and Senior Executive at TMI
John (Jack) Herbein, Vice President

Nuclear Regulatory Commission

Joe Hendrie, Chair
Harold Denton, Director of the Office of Nuclear Reactor Regulation
Roger Mattson, Head of the Division of Safety Systems
Victor Stello, Director of the Office of Operating Reactors
Lake Barrett, Section Leader of Environmental Branch
Harold "Doc" Collins, Assistant Director of Emergency Preparedness
in Office of State Programs
James Higgins, Reactor Inspector

National Institute for Occupational Safety and Health

Anthony Robbins, Director

White House

Jimmy Carter, President of the United States
Jack Watson, Chief of Staff (Assistant to the President)

United States Department of Health, Education and Welfare

Joseph Califano, Secretary of Health
Richard Cotton, Califano's Assistant

United States Department of Energy

James Schlesinger, Secretary of Energy

Union of Concerned Scientists

Daniel Ford

Other Nuclear Opponents

Ernest Sternglass
George Wald

Local Players

Robert Reid, Mayor of Middletown
Kevin Molloy, Dauphin County Director of Emergency Management

THE POLICY PROBLEM

Decision-making for public policy inevitably involves trade-offs. With a diverse constituency, multiple demands, and limited resources, public policy-makers are faced with conditions in which they cannot meet all demands with the resources available, but must balance demand against capacity to achieve the best working situation. In this context, the policy-makers in Pennsylvania in the 1960s and 1970s faced a complex set of issues regarding the provision of energy for the commonwealth. The population was growing; the demand for electrical power was increasing; the once-abundant supply of oil in the state was diminishing; and policy-makers searched for new alternatives. At the time, the nuclear industry proposed an alternative that promised abundant, cheap energy, but adopting the technology involved a trade-off. It produced a dangerous byproduct of radiation that could be seriously damaging to human health. The question was whether nuclear power plants could be designed, constructed, and operated safely in order to produce the desired energy, without risking the release of radiation that would be destructive to the health of the surrounding community. Public policy-makers, responsible both for devising a workable energy policy and protecting the health and well-being of the citizens of the commonwealth, had to choose.

Aware of the risks, but confident that the technology of nuclear power production could be designed and operated with sufficient reliability to minimize the risks, public policy-makers in Pennsylvania and elsewhere in the nation opted for the construction of nuclear power plants as the most economical and viable solution to the energy question. In the late 1960s and 1970s, three nuclear power plants were constructed in Pennsylvania under federal regulation to meet the growing energy needs of the state. This energy policy, however, prompted the formation of a spirited opposition based on the potential damage to human health caused by any accidental release of radiation into the environment from a nuclear plant.

In the context of this lively debate regarding the benefits and risks of nuclear power, the accident at the Three Mile Island (TMI) nuclear power plant, located on an island in the Susquehanna River 10 miles south of Harrisburg, Pa., occurred in March 1979. After 25 years and many technological advances, the debate

about the safety of the power source continues. Many questions raised in the debate have remained constant during the past quarter of a century, and public policy-makers are confronting them today, but with the added concerns of aging power plants and electrical power distribution networks vulnerable to sudden stress.

THE DEBATE: SAFETY VS. TECHNOLOGY

One of the main issues surrounding the production of nuclear power focuses on the low levels of radiation released during the mining of uranium as well as during plant operation. Proponents claim that nuclear energy is safe for humans, citing evidence suggesting that radiation releases during normal plant operation are extremely minimal, and the effects of this minimal radiation are not dangerous (Abrahamson and Swahn 2002; Wolfson 1993). They argue that individuals living in the immediate neighborhood of a nuclear plant typically receive about one millirem per year, which is well under 1 percent of their normal dose of background radiation. According to some scientists, that one millirem is about the same as the radiation dose a person would get from cosmic rays on an airplane flight between New York and Chicago (Wolfson 1993). Proponents argue that radiation is a fact of life. The combination of watching color television, receiving a chest X-ray, and being exposed to other natural background radiation provides Americans with more radiation than they would receive living next to a nuclear plant for one year (Kruschke & Jackson 1990).

Nuclear proponents also support their argument for the safety of nuclear plants by pointing to a remarkable safety record. Hans Bethe, who has been active in nuclear-physics research and development since the 1930s, has pointed out that in more than 30 years, with 112 nuclear plants operating in the United States and another 200 similar ones operating throughout the world, no deaths or injuries have been caused by radiation from any "American-style light water reactor" (Rhodes 1993). Even in the case of Three Mile Island, no cancer deaths appear to have resulted from the small releases of radiation. Almost 25 years after the accident, a study conducted by the University of Pittsburgh's Graduate School of Public Health reported that no latent cancer deaths have been found in the aftermath of TMI (Scott 2002).

Nuclear power opponents, on the other hand, argue that nuclear technology is dangerous to humans. They argue that the low-level radiation emitted during the mining of uranium and normal operation of the plant is hazardous to human health (Wolfson 1993). Scientists and health experts know that some amount of exposure to radiation has been proven to cause cancer (the precise amount is unknown), and opponents argue that it is not safe to emit any level of radiation, even if it is minimal. They do not believe there is sufficient evidence or knowledge about low-level radiation to declare that it is safe for nuclear plants to emit any radiation. The fact that effects of low-level radiation may not be apparent for 20 or more years makes the uncertainty of radiation even more threatening (Kruschke and Jackson 1990). Opponents to the technology criticize the nuclear proponents' aversion to admitting the health risks from low-level radiation and claim that their attempts to represent that there are no health risks discredit their arguments (Abrahamson and Swahn 2002).

In addition, opponents also argue that nuclear power plants are unsafe due to their potential to emit huge amounts of radiation in the event of an accident (Wolfson 1993). A government study conducted in 1974 predicted that dispersal of radioactive material, if it escaped from the containment structure, could kill several thousand people immediately and leave nearly 50,000 with subsequent cancers (Wolfson 1993). In addition to the predictions from the government, the opponents also point to the actual event that occurred at the Chernobyl plant in 1986. Massive amounts of radiation were released into the atmosphere due to a technological experiment that spiraled out of control. At least 29 people were killed immediately from the fires and radiation and thousands more died of latent cancers and other ailments linked to the accident. In fact, more negative health consequences from Chernobyl are still being discovered today.

Nuclear opponents also point to the frequent temporary closures due to safety problems at plants in the United States. Nuclear plants that have been warned or shut down due to safety problems have often experienced more serious problems in subsequent operations and pose a continuing risk for future operations. For example, the accident at TMI occurred after the plant owner and the NRC ignored 10 prior warnings (Lochbaum 2000).

THE CASE: THREE MILE ISLAND, MARCH 28–APRIL 6, 1979

Given the continuing uncertainty regarding the safety of nuclear technology and the number of unknown factors concerning the effects of radiation on human health, the case of the nuclear accident at TMI on March 28, 1979, is particularly relevant to public policy-makers facing a similar set of trade-offs 25 years later. Critical to this policy process is the number of unknown factors that were involved in the debate, as well as the different interests, constituencies, and disciplinary backgrounds of the policy-makers involved. Reviewing this case, a set of six basic questions emerge that are relevant today. These questions are:

1. What are the health consequences of exposure to radiation?
2. What are the legal responsibilities involved in protecting the population against radiation?
3. What are the economic costs and benefits of nuclear technology for energy production?
4. What are the ethical premises that should govern the operation of nuclear power plants?
5. What is the organizational capacity of public agencies to manage the risk of nuclear technology for the protection of public health?
6. What is the federal responsibility for defining and maintaining safe sources of energy production for the nation?

Each of these questions represents a major concern for public policy-makers today. In March 1979, different positions regarding these questions emerged in the actions and public discourse regarding the TMI accident. While many persons were involved in the policy process in 1979, six actors or groups of actors specifically engaged in the debate and articulated specific positions on these issues. Their respective responsibilities are summarized briefly on the following pages. Their positions are revealed in the statements and actions taken at the time, reported in the brief chronology of events from March 28, 1979 to April 6, 1979. In this case study, the readers are asked to review the chronology of events from the differing perspectives of the six policy-makers who had primary responsibilities for action or who had articulated strong positions in the continuing debate over safety vs. technology in the production of energy. On the basis of the information provided in the chronology of events, readers are asked to propose a workable strategy that would be acceptable to all six major actors.

THE ACTORS

Anthony Robbins, Director, National Institute for Occupational Safety and Health

Anthony Robbins was responsible for setting the standards of protection for employees working in high-risk environments. In reference to nuclear power plants, his major responsibility was to assess the working conditions for plant employees and to ensure that these conditions met the safety requirements for protecting human health against overexposure to radiation.

Dick Thornburgh, Governor of Pennsylvania

As governor, Dick Thornburgh was responsible to the citizens of the commonwealth for protecting their health and safety. He was also responsible to these same citizens for providing them with energy and maintaining a strong economy and a reliable job market. His first task was “to find out exactly what was happening at the site of the accident” and to define a course of action that would protect both the health of the population from the threat of radiation and the economy of the commonwealth against the loss of energy.

John Herbein, Vice President, Metropolitan Edison

John Herbein was vice president of generation for Metropolitan Edison, the company that owned the TMI plant, and served as the company’s representative to the media. His primary concerns were to avoid negative publicity for Metropolitan Edison and to minimize the economic losses for the company.

Nuclear Opponents: George Wald, Ernest Sternglass, and members of the Union of Concerned Scientists

George Wald was a 1967 Nobel laureate in physiology and medicine and emeritus professor at Harvard University. Ernest Sternglass was the director of radiological physics at the University of Pittsburgh. Both men, distinguished scientists, were adamantly opposed to nuclear power and spoke frequently about the dangers this technology posed to the human race. The Union of Concerned Scientists (UCS) was another very outspoken group regarding the

risks associated with nuclear power production. The basic position of all these scientists was that any amount of radiation was harmful to human health and that the risks of radiation were so great that nuclear power production should be halted altogether. In addition, the UCS constantly challenged the Nuclear Regulatory Commission to be sure they were creating and enforcing rigorous safety standards.

Gordon MacLeod, Secretary, Pennsylvania Department of Health

Gordon MacLeod was a professor of public health at the University of Pittsburgh, nationally known for his work in healthcare administration. He had been in office only 12 days when the accident occurred, and he was searching for information that he needed to carry out the responsibilities of his office (MacLeod 1979). The state Department of Health had authority and responsibility to enforce all statutes pertaining to public health, to protect the health of the people of the commonwealth, and to determine and employ the most efficient and practical means for the prevention and suppression of disease (Department of General Services 1979). The Department of Health did not have any specialized capabilities in the radiation health area at the time (Scranton 1980).

Harold Denton, Director, U.S. Office of Nuclear Reactor Regulation

Harold Denton was responsible for the federal regulation of the design and operation of nuclear power plants in the United States. He had the responsibility for overseeing the training and operation facilities of Three Mile Island, and he believed that with sound training and regular inspections, nuclear power facilities could be operated safely. A General Accounting Office (GAO) study done in 1979 stated that, “The NRC [National Regulatory Commission] has the primary responsibility for assisting state and local governments in developing emergency response plans for radiological releases from nuclear facilities. NRC provides guidance and assistance to states preparing nuclear emergency plans, and formally reviews state plans. When the NRC is satisfied that a plan meets all the essential planning elements, it issues a formal letter of concurrence with the plan. NRC’s review and concurrence is a cooperative, nonstatutory relationship with state governments; NRC has no authority to either require states to develop

plans or disapprove state plans” (The United States General Accounting Office 1979, 14). In addition, “The NRC had almost exclusive jurisdiction over nuclear reactor operations in the U.S. It licensed each plant, approved the proposed operating procedures, required changes in the procedures and plant structure whenever this seemed appropriate, required the utilities to report when they had violated any of these agreements, and then adjudicated these suspected violations” (Starr and Pearman 1983, 67).

In addition to their formal responsibilities, each of these policy-makers was accountable to a particular constituency that was affected by these events. While these constituencies played no formal role in the debate, they were significant forces in the economic and political tensions that drove the dynamics of policy in this case. These clientele groups included the citizens of Pennsylvania, the shareholders of Metropolitan Edison, members of Congress who oversee the work of the NRC, as well as the president of the United States in whose administration the NRC functioned. Further, there were specific groups of citizens: the citizens of Middletown, Pa., who lived and worked in the neighborhood of the plant; the emergency response personnel of Pennsylvania who responded to threats and emergencies; and the scientists of the nation who watched closely as new technologies were tried in practice and attempted to assess the consequences of these actions for society as a whole.

Readers are also asked to factor in the effect of these clientele groups upon the policy-makers’ actions in the development of an effective strategy. For example, what is the appropriate trade-off between safety and risk in public policy? Is there a threshold of “acceptable risk” that justifies some loss for particular groups for the promise of larger benefits for the wider society? This dilemma is faced not only in the production of energy, but also in such challenging policy arenas as space flight and biotechnology.

THE ACCIDENT: CHRONOLOGY, MARCH 28–APRIL 6, 1979

Wednesday, March 28, 1979

04:00: Something began to go wrong at the nuclear power plant facility on Three Mile Island (TMI) near Harrisburg, Pa. The accident began in Unit 2 with a relatively minor mechanical malfunction. A small-break loss-of-coolant accident (LOCA) occurred when a valve failed to close. The indicator light in the control room showed that the signal had been sent to close the valve even though the valve remained open. Relying on this indicator light, the control room operators believed that the valve had closed. Meanwhile, they ignored other indications that the valve was actually open and that temperatures in the core were rising. The emergency core cooling system (ECCS) automatically came on, but the operators turned it off because they did not understand what was actually taking place. By doing this, they severely restricted the amount of water that was being injected into the core by the ECCS. As a result, a significant portion of the core was left uncovered for an extended period of time.¹

06:50: Operators in the control room realized that the radiation levels were abnormal. It was now time to take action by alerting authorities outside the plant of the problem. Following the procedures for emergencies at the plant, William Zewe, the shift supervisor at TMI, called Dauphin County officials and told them there was a “site emergency.”²

07:02: Zewe called the Pennsylvania Emergency Management Agency (PEMA), and told the PEMA watch officer Clarence Deller that the reactor “has been shut down ... There is a high level of radiation within the reactor room. ...”³ Because Deller was not trained in the technical details of nuclear reactor operations, Zewe did not go into any more detail about what was happening at the plant.

07:04: The PEMA duty officer contacted the Bureau of Radiation Protection (BRP) within the Department of Environmental Resources (DER), and spoke with William Dornsife, the only nuclear engineer employed by the state of Pennsylvania.⁴ The Bureau of Radiation Protection is responsible for contacting the plant to determine the parameters of the situation. With an understanding of the technical details and implications, the BRP then contacts PEMA with a proposed course of action.⁵ This communication flow functioned exactly as it should have.

¹ *Report of the President’s Commission on the Accident at Three Mile Island*. Washington, D.C.: U.S. Government Printing Office, 1979, 27, 28, 110, & 111.

² Governor’s Office. Press Conference Transcript. March 28, 1979, 11 a.m.

³ Henderson, Oran. Memorandum to Governor Richard Thornburgh. “The Chronology of Alerting—Three Mile Island Incident,” March 29, 1979.

⁴ Gerusky, Thomas. Memorandum. “Department of Environmental Resources: Bureau of Radiation Protection Actions,” undated, 1.

⁵ Henderson, Oran. Testimony to President’s Commission on Three Mile Island. August 2, 1979, 33.

07:04: The first phone call to the Nuclear Regulatory Commission (NRC) was logged.⁶ A few minutes later, PEMA contacted Dauphin County, and the county official verified that they had been contacted directly by the operators at TMI earlier.⁷

07:15: Gary Miller, the station manager and Metropolitan Edison’s senior executive stationed at the facility, arrived at the plant to take charge of the control room. Miller later testified that what surprised him the most was that radiation monitors were now flashing at several stations in the plant and that the radiation was rapidly growing in intensity. He established and sent out teams, as was required by the plan in the event of a site emergency, to monitor radiation both on and off site.⁸

07:15: Dornsife finally got in touch with the operators in the control room. The operators told Dornsife that a small-break LOCA had occurred, but that it was now contained. They also told him that a site emergency had been declared due to the increased levels of radiation in the control room. They assured him that no radiation had been detected outside of the building and that the plant was stable and in the process of being cooled. Dornsife was then connected with a representative from the health physics department who once again assured him there were no off-site releases.⁹

07:24: Miller of Metropolitan Edison escalated the incident from a “site emergency” to a “general emergency.” A general emergency is defined by Metropolitan Edison as an “incident which has the potential for serious radiological consequences to the health and safety of the general public.”¹⁰

07:30: The BRP learned from TMI that a general emergency had been declared. At this point, Tom Gerusky, the radiation protection director at the BRP, requested verification of on- and off-site radiation survey instrumentation.¹¹

07:36: TMI called PEMA to notify them of the general emergency status and warned PEMA that they should be ready to evacuate Brunner Island and the community of Goldsboro, both within close proximity of the plant.¹² A few minutes later, the DER verified the general emergency condition and recommended that PEMA initiate preparedness for emergency evacuations.¹³

07:50: In Harrisburg, Governor Dick Thornburgh was called out of a meeting to answer a phone call from Oran Henderson, the director of PEMA. The information given to Governor Thornburgh at the time was brief and undetailed.¹⁴

08:00: Sometime between 08:00 and 09:00, Gordon MacLeod, Pennsylvania’s secretary of health, was notified of the events unfolding at TMI. MacLeod, who had held his office for 12 days, was in a Pittsburgh branch office at the time. In a later testimony, he recalled this notification call. “I asked the person who called me, the director of health communications, to put me in touch with the person who was in charge of radiation health within the health department. He advised me that we did not have a Division of Radiation Health. ... Well, I asked him where was radiation health, and he said that it was in the Department of Environmental Resources. I then asked him if he would put me in touch with the person who was our liaison person, and I found out that in fact, we have no liaison with that department. I then asked him to collect for me the library references and journals that would inform me about radiation health and found out that we did not have a library. It had been dismantled about two years ago for budgetary reasons.”¹⁵

08:13: Governor Thornburgh left his breakfast meeting and called his press secretary and director of communications, Paul Critchlow. After Critchlow reported everything he knew about the situation, Governor Thornburgh asked him to gather as much information as he could about the incident.¹⁶

08:20: Henderson contacted the lieutenant governor, William Scranton, to notify him of the happenings at TMI.¹⁷ The lieutenant governor was the acting chair of the Governor’s Energy Council, an organization created by executive order of Thornburgh.¹⁸ In addition, the lieutenant governor was the head of the State Emergency Council. In this role, he was to act as the liaison between the governor and PEMA when state emergencies occurred.¹⁹

09:30: John (Jack) Herbein, the vice president of generation for Metropolitan Edison was getting ready to leave Philadelphia for TMI. Walter Creitz, the president of Metropolitan Edison, had charged Herbein with the task of managing press relations upon his arrival at Three Mile Island.²⁰

⁶ Martin, Daniel. (1980) *Three Mile Island: Prologue or Epilogue*. Cambridge, MA: Ballinger Publishing Company, 74.

⁷ Henderson, Oran. Memorandum to Governor Richard Thornburgh.

⁸ Martin, 62.

⁹ Martin, 103.

¹⁰ *Report of the President’s Commission on the Accident at Three Mile Island*, 122.

¹¹ Gerusky, 1.

¹² Henderson, Oran. Testimony to President’s Commission on Three Mile Island. August 2, 1979, 36.

¹³ Henderson, Oran. Memorandum to Governor Richard Thornburgh.

¹⁴ Gazit, Chana. 1999. *The American Experience: The Meltdown at Three Mile Island*. Produced and written by Chana Gazit. 60 min. PBS Home Video. Videocassette.

¹⁵ MacLeod, Gordon. Testimony to President’s Commission on the Accident at Three Mile Island. August 2, 1979, 133 & 134.

¹⁶ Thornburgh, Richard L. Deposition for the President’s Commission on the Accident at Three Mile Island. Harrisburg, Pa., 5 & 6.

¹⁷ Henderson, Oran. Memorandum to Governor Richard Thornburgh.

¹⁸ Department of General Services. 1979. *The Pennsylvania Manual (1978–1979)*. Volume 104. Harrisburg: Department of General Services, Commonwealth of Pennsylvania, 363.

¹⁹ Martin, 105.

²⁰ *Report of the President’s Commission on the Accident at Three Mile Island*, 124.

09:37: Scranton called Thornburgh to brief him on the situation. Scranton told Thornburgh that there had been some release of radiation into the environment. He also stressed the importance of informing the public about the situation. Scranton recognized the unique fear that the threat of radiation can cause due to its unknown consequences.²¹

10:55: State officials conducted the first press conference of the day. Scranton gave the opening statement and quoted Metropolitan Edison as saying, “There is and was no danger to public health and safety.” He told the press corps that there was a small amount of radiation released into the atmosphere. He also reported that all safety equipment functioned properly, that a helicopter was monitoring the air around the plant and the near vicinity, and that there was no need for evacuation.²²

During this time, state and federal officials were forced to rely on the radiation readings from Metropolitan Edison because the state did not have mobile monitoring equipment. They had tried twice through legislative measures in the past to obtain the funding needed to purchase the equipment, but both times the proposals were unsuccessful.²³

11:00: All nonessential people were ordered to leave the island.²⁴ At the same time, the BRP was requesting a team from the Brookhaven National Laboratory of the U.S. Department of Energy to monitor the radiation levels in the area.²⁵ The DOE began its first helicopter flight to monitor radiation levels at **13:45**.²⁶

11:00: The mayor of Middletown, Robert Reid, finally got through to Three Mile Island. The operator told him to call Metropolitan Edison’s headquarters in Reading, Pa. After hours of calling and trying to get more information, he finally received a phone call from the company assuring him “that no radioactive particles had been released and there were no injuries.” He described what happened next in his testimony in front of the House Select Committee: “I walked out to my car, which took about 20 seconds, turned on my radio, and the announcer said that radioactive particles had been released. Now that’s 20 seconds after the man told me that there were no radioactive particles released.”²⁷

11:30: Governor Thornburgh called a meeting in his office to review what had been reported at the press conference. According to the governor’s deposition for the President’s Commission, his understanding of the situation to this point was “that there had been a venting to the environment of radiation; that at that time there was not perceived to be any substantial off-site threat or any concern; that they did not have the thing under control; that they were still trying to find out precisely what happened, and that our people were in contact with the utility people at the site, and that for the moment, there was no need for us to take any ... action insofar as evacuation was concerned.”²⁸

13:00: Metropolitan Edison held its first press conference. Herbein answered questions outside the observation deck of the plant. During the question-and-answer session Herbein said, “I would not call it at this point a very serious accident.” He also reported that no significant levels of radiation were released, that the reactor was being cooled in accordance with design, and that there was no danger of a meltdown.²⁹

16:30: Lieutenant Governor Scranton held his second press conference of the day. Once again, he began the press conference by reading a prepared statement that gave the press corps an update on the situation at the plant. He stated that the “incident is more complex than Metropolitan Edison led us to believe.” He informed the press that more tests were being taken and that the governor’s office and experts on the scene remained convinced that there was no danger to public health. Scranton said that the company had given out conflicting information. He stated that there had been a release of radiation, but there was no evidence that it was at a dangerous level. He also informed them that steam was discharged earlier in the day during normal venting procedures, but due to the leak, radioactive material was also released. DER was not notified until after the release had taken place, but Scranton assured the press that Metropolitan Edison would be notifying the DER of any future ventilation releases. While answering questions, Scranton admitted his disappointment with the company for not revealing the information about the venting.³⁰

16:45: Lieutenant Governor Scranton called a meeting of NRC, federal, and state officials in his office to review the status of the incident. Charles Gallina of the NRC stated that, “Future emissions, if any, will be less than today’s venting from the auxiliary building.” He also mentioned possible core exposure.³¹ The meeting

²¹ Governor’s Office. Chronology of the T.M.I. Incident: March 28, 1979–April 1, 1979. (Draft prepared in preparation for the President’s Commission testimonies.), 2.

²² Governor’s Office. Press Conference Transcript. March 28, 1979, 11 a.m., Part II–3a.

²³ Department of Environmental Resources, Commonwealth of Pennsylvania. HB53-PR55. March 29, 1979.

²⁴ *Report of the President’s Commission on the Accident at Three Mile Island*, 126.

²⁵ Ibid.

²⁶ Ibid.

²⁷ Reid, Robert. Testimony for The Select Committee’s Report of the hearing concerning Three Mile Island. June 8, 1979, 21.

²⁸ Thornburgh, Richard L. Deposition for the President’s Commission on the Accident at Three Mile Island. Harrisburg, Pa., 11 & 12.

²⁹ Metropolitan Edison. 1979. Video Recording of 1:00 p.m. Press Conference, dated March 28, 1979. Filmed and produced by WQED. Videocassette.

³⁰ Governor’s Office. Press Conference Transcript. March 28, 1979, 4:30 p.m., Part I–4 & 5.

³¹ Governor’s Office. Chronology of the T.M.I. Incident: March 28, 1979–April 1, 1979, 4.

attendees acknowledged the difficulty of communicating and understanding the technical language used to describe the events occurring at the plant.³² By the end of the meeting, they had established that there was a slight chance of a meltdown, but if that were to occur, they would have plenty of time to order and carry out an evacuation.³³

22:00: Scranton held his third and final press conference of the day. He informed the press that there was no radioactive leakage from the primary building or the reactor itself. During a lengthy question-and-answer session, the NRC officials reported that there had been no human error detected at this point. They also said that the reactor was in a safe condition, that everything was being monitored by the NRC, that no mechanical damage had been detected, that there was no problem with containment, that there was no significant core damage, and that Metropolitan Edison had acted responsibly throughout the day.³⁴

Thursday, March 29, 1979

Thursday, March 29, 1979, began with a number of talk show appearances by many of the key actors in the situation. *The Today Show* with Tom Brokaw featured interviews with Walter Creitz; Richard Pollack from the Ralph Nader Critical Mass Energy Project; Daniel Ford from the Union of Concerned Scientists; and Senator Gary Hart, the chair of the Senate Subcommittee on Nuclear Regulations. The *Today Show* correspondent announced at the beginning of the program that the DOE and the NRC had been aware of problems, including a problem with a safety valve, at the Three Mile Island plant as early as one month before the accident. Pollack said he was amazed that the plant was still in operation after being shut down for five out of the last 12 months due to safety-related problems. When Creitz was interviewed, he assured the viewers that there was no human error involved in the incident at the plant. During the debate between Ford and Creitz about the safety of the plant, Ford cited an NRC report (completed before the accident) on safety problems at TMI. During Senator Hart's interview, he reported that there was, in fact, human error involved in the situation at TMI. He also supported the fact that the plant had been shut down four times already for safety reasons.³⁵

Later that morning, Creitz and Ford were also on *Good Morning America*, once again debating the safety of nuclear power plants. This time, Ford pointed to five other plants in the United States that had recently been shut down due to safety problems. Ford said, "The fact of the matter is that the regulatory program has been exceedingly lax. ... They have been so interested in seeing a large nuclear power program that they have compromised the safety of the reactors in the interest of promoting the commercial prospects of the industry. That's the problem." Creitz responded, "I think the record of the industry having 72 reactors in operation and never injuring any member of the public certainly speaks highly of the safety precautions that are followed in the nuclear industry."³⁶

10:00: Metropolitan Edison held another press conference. Herbein began by telling the press that the situation was secure, cooling was in progress, and that there was no immediate danger to the general public. He anticipated that the reactor would be stabilized sometime later that day. During the press conference, Herbein said, "There is presently no danger to the public health or safety. We didn't injure anybody, we didn't overexpose anybody, and we certainly didn't kill anybody."³⁷

Sometime that afternoon, Anthony Robbins, the director of the National Institute for Occupational Safety and Health (NIOSH), made a phone call to MacLeod. MacLeod claims that during this phone call Robbins urged him to consider evacuation of the area around TMI. MacLeod informed Robbins that radiation levels were low and evacuation was not necessary at that time. Robbins was more concerned with the inability to bring the reactors to a cold shutdown than he was about radiation levels. Robbins also said he was speaking both from the standpoint of the NIOSH and the Bureau of Radiological Health within the Food and Drug Administration.³⁸ There has been some controversy surrounding the actual content of this conversation. Robbins denies that he called to urge evacuation, claiming that he called MacLeod to offer support and assistance.³⁹ Following this phone call, MacLeod set up a conference call between Henderson, Tom Gerusky of BRP, and one of Thornburgh's staff members. He shared the details of his phone call with Robbins, and they all agreed that evacuation was not necessary at the present time. MacLeod did suggest that they consider advising pregnant women and children under the age of two to leave the area because they are the population most susceptible to the harmful effects of radiation. The group agreed not to take any action at that time.⁴⁰

³² Martin, 110.

³³ Governor's Office. Chronology of the T.M.I. Incident: March 28, 1979–April 1, 1979, 5.

³⁴ Governor's Office. Press Conference Transcript. March 28, 1979, 10:30 p.m.

³⁵ National Broadcasting Company. *The Today Show*, March 29, 1979. Produced and written by WNBC-TV & NBC Television Network: New York. Transcript.

³⁶ American Broadcasting Company. *Good Morning America*, March 29, 1979. Produced and written by WABC-TV & ABC Television Network: New York. Transcript, 5.

³⁷ Metropolitan Edison. 1979. Video Recording of 10 am Press Conference, dated March 29, 1979. Filmed and produced by WQED. Videocassette.

³⁸ MacLeod, Gordon. Testimony to President's Commission on the Accident at Three Mile Island. August, 2 1979, 137–140.

³⁹ Martin, 123 & 124.

⁴⁰ MacLeod, Gordon. Testimony to President's Commission on the Accident at Three Mile Island. August, 2 1979, 137–140.

Mobilization for Survival, a coalition of 250 people against nuclear technology, also called a press conference for that afternoon. George Wald, professor emeritus of biology at Harvard University and winner of the 1967 Nobel Prize for physiology and medicine, and Ernest Sternglass, director of radiological physics at the University of Pittsburgh, both spoke at the gathering. Wald stated that, “Every dose of radiation is an overdose. ... A little radiation does a little harm and more radiation does more harm.” He also criticized the nuclear industry for prioritizing profit-making over safety and said, “The business of the power industry is not to make power but to make money. ... The industry has regularly cut corners to save money ... and from the very beginning, the American insurance companies have refused to insure nuclear plants, making the bulk of liability rest on the government.”⁴¹ Sternglass spoke after Wald and argued that the plants should be shut down. He expressed his belief that more money should be spent on alternative energy sources such as clean oil and gas facilities. Sternglass had a portable radiation monitor with him and claimed that three miles away from the plant, the reading was nine times higher than normal and that within a one-mile radius of the plant, the levels were 14 to 15 times higher than normal.⁴² Both men also warned of the latent cancers and ailments that could “creep up” on people and occur as many as 30 years after exposure.⁴³

22:00: James Higgins, a reactor inspector, called Critchlow and reported that the NRC’s assessment of the problem had changed. They had discovered that there was, in fact, serious fuel damage. He also told Critchlow that the recovery time could be very lengthy and there was a strong possibility of more emissions being released from the plant.⁴⁴

22:20: Governor Thornburgh participated in his first press conference and assured the press that there was no reason for alarm or for daily routines to be disrupted. Nor was there reason to believe that public health had been affected. He said that he had spent “the last 36 hours trying to separate fact from fiction.” He empathized with the reporters for receiving conflicting information and let them know that he had received the same confusing information. Thornburgh shared his belief that things were now under control. During the questioning by the press corps, Higgins said the plant “is now approaching the cold shut-down region.” Gallina said, “A preliminary evaluation indicated no operator error.”⁴⁵ He also stated that the danger was now over for people off site. Thornburgh later reported that he was uncomfortable with this last statement. He thought it was too soon to be issuing these kinds of assurances to the public.⁴⁶

James Schlesinger, the secretary of the U.S. Department of Energy, was quoted sometime on Thursday as saying the DOE would be looking into the accident at TMI. He also expressed his belief that the nuclear power industry had a good safety record and said, “Over the years there have been no fatalities resulting from the use of nuclear power. ... Nothing is riskless, but when one weighs the risks overall, the advantages of nuclear power exceed the risks.”⁴⁷ He also noted that nuclear power is vital to the United States economy—without nuclear energy the U.S. would be forced to increase dependence on foreign oil and potentially suffer from energy shortages.⁴⁸

Senator Edward Kennedy, chair of the Subcommittee on Energy of the Joint Economic Committee, was quoted in the newspaper on Thursday urging Schlesinger to reconsider submitting a bill designed to expedite the licensing process for nuclear power plants.⁴⁹ Kennedy made reference to safety issues, saying “the shutdown of five reactors two weeks ago for safety reasons and the accident yesterday ... show that the nuclear safety licensing process is not working.” He stressed the importance of building the plants safely rather than trying to build them quickly.⁵⁰

Friday, March 30, 1979

Again, the day opened with appearances on television and radio programs by Thornburgh and nuclear opponents Wald and Sternglass. Friday morning at 07:00, Thornburgh appeared on a local CBS station. Before the interview began, a reporter, Bob Schieffer gave an explanation and update of the situation at TMI. He said, “For some reason not yet explained, a control room operator cut off the emergency water supply.”⁵¹ Schieffer went on to report that, “Some health officials are arguing it could be 30 or 40 years when cancer rates are finally evaluated before the effects of the accident are really known.”⁵² Sternglass and Wald both commented on the extreme dangers of radiation, reiterating that “there is no threshold, any bit is harmful.”⁵³

08:00: Radioactive steam was released from the plant when TMI operators opened a valve to release building pressure. They took this action without approval from anyone. At the very moment they released this steam, a helicopter was flying over the plant monitoring radiation levels took a reading of 1,200 millirems/hour.⁵⁴

⁴⁷ Staff Writer. 1979. He Favors N-Power Despite Accident. *The Patriot*. 29 March.

⁴⁸ Ibid.

⁴⁹ Washington Bureau. 1979. Schlesinger Is Cautioned. *The Patriot*. 30 March.

⁵⁰ Ibid.

⁵¹ Columbia Broadcasting System. *CBS Morning News*, March 30, 1979. Produced and written by WCBS and the CBS Television Network. Transcript, 1.

⁵² Ibid.

⁵³ Ibid., at 4.

⁵⁴ Starr, Philip and William Pearman (1983). *Three Mile Island Sourcebook: Annotations of a Disaster*. New York, New York: Garland Publishers.

⁴¹ Mobilization for Survival. Press Conference, dated March 29, 1979. Filmed and produced by WQED. Videocassette.

⁴² Klaus, Mary. 1979. Radiation Above Normal: Scientists Seek Closing. *The Patriot*. 30 March.

⁴³ Ibid.

⁴⁴ *Report of the President’s Commission on the Accident at Three Mile Island*, 135.

⁴⁵ Governor’s Office. Press Conference Transcript. March 29, 1979, 10:20 p.m.

⁴⁶ Thornburgh, Dick. (2003) Draft Copy—*Where the Evidence Leads: An Autobiography*. Pittsburgh, PA: University of Pittsburgh Press. Located at the Dick Thornburgh Archives, University of Pittsburgh, Pittsburgh.

08:40: Staff at PEMA spoke with operators at the plant. James Floyd, the supervisor of operations for TMI Unit 2, reported to PEMA that they had another incident at the plant and recommended preparation for evacuation if the release were to get out of control.⁵⁵

09:00: The NRC officials in Bethesda, Md., learned about the emission from the plant. Lake Barrett, a section leader in the environmental branch of the NRC, later said in testimony for the President’s Commission, “One of the NRC inspection people that had direct phone lines to the TMI control room reported that he had received the message from the site that the tanks were full, that the relief valves on the tanks had lifted, and that gases were passing from the make-up tank to a waste gas decay tank where they could not go, and the gases were being vented from the plant.” The NRC officials at Bethesda asked Barrett to make some quick calculations about what the radioactive material release rate would be. When he relayed this information to the five NRC commissioners, they asked him to estimate what the off-site radiation dose would be. Barrett was uncomfortable making the calculation right on the spot, but came up with a number—1,200 millirems/hour.⁵⁶

Within 15 seconds of Barrett’s announcement, the plant called the NRC to report the recent radiation reading taken by helicopter of 1,200 millirems/hour. Since the two numbers matched exactly, Barrett said it had a “profound effect on the whole center.” He described a shift “from sort of a lack of information on things and nothing really firm to, well, here [was] a piece of meaty information that had significance to it. ... It took a hypothetical situation and rather carved it in stone and set it on a mountain with a burning bush behind it. There was considerable concern.”⁵⁷ The group in Bethesda immediately began discussing evacuation. They wanted to make sure they were taking all necessary precautions and agreed it was best to err on the side of caution. Harold “Doc” Collins, the assistant director for Emergency Preparedness in the Office of State Programs of the NRC, was asked to make the phone call to recommend evacuation.⁵⁸

09:15: Collins called Henderson at PEMA to recommend an evacuation of the area, assuring Henderson that all the NRC commissioners supported this recommendation.⁵⁹ Thornburgh and his press secretary, Paul Critchlow, soon learned about these phone calls from Bethesda.⁶⁰ Instead of immediately following through on the evacuation recommendation, Thornburgh first called Henderson to find out who “Doc” Collins was and asked for Henderson’s judgment on evacuation. Henderson recommended they do so.⁶¹

09:25: Henderson called Kevin Molloy, the Dauphin County Director of Emergency Management, and warned him of the impending evacuation. He told Molloy to expect an official evacuation order within five minutes. Following procedures, Molloy began to prepare for the evacuation by alerting the firehouses and making a radio announcement about the potential evacuation.⁶²

At the same time, Gerusky and Dornsife were trying to reach Thornburgh and Henderson to recommend against evacuation. Gerusky could not get through on the phone lines to either Thornburgh or Henderson, so he and Dornsife split up and personally went to their offices to try to stop the evacuation. Dornsife reached Henderson’s office and informed him that the emission at the plant had stopped and that the BRP was recommending against any evacuation.⁶³

Shortly after, the operators at the plant called the NRC to tell them that the 1,200 millirems/hour reading had been taken directly over the containment structures, not off site. If Barrett had taken this information into account while calculating the potential radiation figures, there would have been no concern about the need for evacuation.⁶⁴

10:07: Thornburgh called Joseph Hendrie, chair of the NRC, to discuss the evacuation recommendation confusion. Hendrie assured him that there was no need for an evacuation, but that the NRC would encourage the citizens within 10 miles to stay indoors for a while. Thornburgh asked Hendrie to send an expert upon whom he could rely for accurate technical information and advice.⁶⁵

Sometime Friday morning, MacLeod asked Thornburgh to strongly consider evacuating pregnant women and young children from the area.⁶⁶ MacLeod, a physician, was aware that radiation has a much more significant impact on fetuses and developing children than it does on adults. He urged Thornburgh to take all necessary health precautions.

Friday morning, a U.S. senator contacted Joseph Califano, the secretary of the Department of Health, Education, and Welfare (HEW), to inquire what role the HEW was playing in the TMI situation. Califano was actually unaware of what the HEW was doing, so he and his assistant, Rick Cotton, began contacting various health officers within the HEW and the Environmental Protection Agency. Through their investigative efforts, they learned that the Food and Drug

⁵⁵ Henderson, Oran. Testimony to President’s Commission on Three Mile Island. August 2, 1979, 36.

⁵⁶ Barrett, Lake. Testimony to President’s Commission on Three Mile Island. August 2, 1979, 294–298.

⁵⁷ Ibid., at 299.

⁵⁸ Ibid.

⁵⁹ Henderson, Oran. Testimony to President’s Commission on Three Mile Island. August 2, 1979, 41 & 42.

⁶⁰ Governor’s Office. Typed list of daily chronological events. March 30, 1979.

⁶¹ Henderson, Oran. Testimony to President’s Commission on Three Mile Island. August 2, 1979, 43.

⁶² *Report of the President’s Commission on the Accident at Three Mile Island*, 139.

⁶³ Henderson, Oran. Testimony to President’s Commission on Three Mile Island. August 2, 1979, 43.

⁶⁴ Barrett, Lake. Testimony to President’s Commission on Three Mile Island. August 2, 1979, 303.

⁶⁵ *Report of the President’s Commission on the Accident at Three Mile Island*, 139.

⁶⁶ MacLeod, Gordon. Testimony to President’s Commission on Three Mile Island. August 2, 1979, 142 & 143.

Administration (FDA) was sampling food in Harrisburg and that the Centers for Disease Control and Prevention was “on call.” Califano was concerned that most of the radiation monitoring was being done by pronuclear organizations—the DOE, the NRC, and Metropolitan Edison.⁶⁷ Califano also became concerned about the possible release of radioactive iodine and began a search for sufficient amounts of potassium iodide, a drug that prevents radioactive iodide from affecting the thyroid. It saturates the thyroid making it unable to absorb any additional iodine. There were no pharmaceutical or chemical companies producing and marketing the drug in the quantities that the HEW believed might be necessary for the area around TMI. They finally found a company willing to provide the HEW with almost 250,000 one-ounce bottles of the drug. The shipments began arriving very early Sunday morning, April 1, and the last shipment arrived on Wednesday, April 4.⁶⁸

11:15: President Carter called Governor Thornburgh. Carter had attempted to call earlier, but could not get through due to busy phone lines. Thornburgh asked for an expert to be sent to help with the technical issues. Carter assured him that Harold Denton was on the way for that very purpose. Carter also promised to establish a special communications system to link the plant, the governor’s office, the White House, and the NRC.⁶⁹

11:20: A piercing sound was heard throughout Harrisburg. The emergency siren had been “erroneously” set off. The governor’s office was told the cause of the siren sounding was a mechanical malfunction.⁷⁰

11:40: Hendrie called Thornburgh to apologize for the NRC’s erroneous evacuation recommendation. Thornburgh mentioned MacLeod’s recommendation to evacuate pregnant women and children from the area and asked Hendrie what he thought about it. Hendrie told him, “If my wife were pregnant and I had small children in the area, I would get them out because we don’t know what is going to happen.”⁷¹

12:15: The governor’s office and PEMA issued a directive requesting “that all children attending school within the 5-mile radius of Three Mile Island be sent home immediately. All pregnant women and preschool children within the 5-mile area should be evacuated immediately. Intermediate units should be alert for the possible need for their buses for civil defense agencies.”⁷²

13:00: Metropolitan Edison held another press conference. Herbein began his statement by telling the press that the earlier release had been measured at around 300–350 millirems/hour by an aircraft flying over the plant. The press corps had heard the 1,200 millirems/hour earlier in the day, but Herbein admitted he had not heard that figure mentioned. There were many questions from the press about the validity of the numbers and whether the release had been controlled or uncontrolled. Herbein was visibly frustrated with the situation and finally responded to a question by saying, “I don’t know why we have to tell you each and every thing we do!” The reporters were obviously upset by this remark and intensely questioned the responsibility of the plant managers’ actions to inform the public.⁷³

14:00: Harold Denton arrived in Harrisburg with a team of experts and immediately began to assess the situation.⁷⁴

15:15: Denton called Hendrie in Washington to share the technical information about the plant. Denton concurred with the earlier decision that evacuation was not necessary at the present time.⁷⁵ When they finished speaking, Hendrie called Thornburgh and told him that the NRC and Metropolitan Edison agreed the core damage was serious.⁷⁶

16:05: Denton called Thornburgh to give him an update on the situation. Denton reported that he had assigned four task forces to study the situation, that the releases off site were routine noble gases and were nonthreatening, that the fuel damage was significant, that a bubble was present at the top of the core, and that it might be expanding.⁷⁷

Coincidentally, the GAO released a report on Friday about nuclear facility emergency preparation. The title of the study, which was initiated a year prior, was “Report to the Congress of the United States: Areas Around Nuclear Facilities Should Be Better Prepared for Radiological Emergencies.” The report was a summary of a study in which “the GAO visited 11 nuclear facilities and sent questionnaires to the 50 states, the District of Columbia, and the Commonwealth of Puerto Rico to find out how well prepared nuclear activities and the areas around them are for a radiological emergency.”⁷⁸ They concluded that, “Most of the facilities seemed prepared to respond to nuclear releases within the boundaries, but some questions arose as to whether the public would be adequately protected should a release extend outside facility boundaries.”

⁶⁷ Martin, 156.

⁶⁸ *Report of the President’s Commission on the Accident at Three Mile Island*, 145.

⁶⁹ Ibid.

⁷⁰ Governor’s Office. Typed list of daily chronological events. March 30, 1979.

⁷¹ *Report of the President’s Commission on the Accident at Three Mile Island*, 139.

⁷² Manchester, Frank. Memorandum to IU Directors. March 30, 1979.

⁷³ Metropolitan Edison. 1979. Video Recording of 1 p.m. Press Conference, dated March 30, 1979. Filmed and produced by WQED. Videocassette.

⁷⁴ Martin, 165.

⁷⁵ Ibid.

⁷⁶ Governor’s Office. Chronology of the T.M.I. Incident: March 28, 1979–April 1, 1979, 15.

⁷⁷ Ibid.

⁷⁸ United States General Accounting Office. 1979. *Areas around nuclear facilities should be better prepared for radiological emergencies: Report to the Congress of the United States*. Washington, D.C.: The United States Comptroller General.

The report made “recommendations to the Department of Defense, NRC, and the Federal Emergency Management Agency to increase preparedness for a nuclear accident.”⁷⁹

Saturday, March 31, 1979

09:35: Denton briefed Thornburgh and Scranton on the status of the plant. He confirmed that the fuel was damaged. He also told them of precautions that were being taken to avoid the potential explosion of the bubble. Denton expressed his opinion that the reactor was in a stable condition, but that it would be several days before they could begin the process of bringing the plant to a cold shutdown.⁸⁰

11:00: Metropolitan Edison held its final press conference, and Herbein declared, “I personally think the crisis is over.” Creitz announced that the press conference would be the last one held by the company. Although he did not explain why, the White House had indicated a request that all further information regarding the situation to be released by the NRC.⁸¹

12:00: Denton held a press conference and asserted that, unlike Herbein, he believed the crisis would not be over until the reactor was in a state of cold shutdown. When asked about the potential health effects of the accident, Denton replied “at these low levels the impact can only be predicted from health data obtained from much higher exposure levels, but based on people who had very high exposures and in calculating downward, health physicists and medical professionals think that it—in terms of 10,000 people receiving exposure of 1,000 millirems each—the probability of latent cancer being caused in that population is only one or two percent.”⁸²

23:00: Denton and Thornburgh held another press conference. Thornburgh said, “There have been a number of erroneous or distorted reports during the day about occurrences or possible difficulties at the facility on Three Mile Island. ... I appeal to all Pennsylvanians to display an appropriate degree of calm and resolve and patience in dealing with this situation.” Thornburgh also announced that President Carter would be visiting the site the next day. Denton reassured the press that the bubble was much less threatening than they once believed; there was no possibility of an explosion. He also admitted that communication

had been difficult and contradicting information had been released. He noted that better communication between the NRC representatives in Pennsylvania and those in Bethesda was important.⁸³ Although not mentioned in the press conference, there was still disagreement between the NRC officials in Bethesda and Denton’s crew in Pennsylvania about the potential explosiveness of the bubble. After the press conference, Denton asked Victor Stello, the director of the Office of Operating Reactors at the NRC, to continue exploring the situation with the outside consultants/experts.⁸⁴

Sunday, April 1, 1979

Stello attended church in the area on Sunday morning. During Mass, the priest announced that he had been given permission from the bishop to grant a “general absolution.” In the Roman Catholic Church, this absolution may be conferred at a time of imminent death. The citizens around TMI were still afraid for their safety and even for their lives.⁸⁵

Immediately following President Carter’s visit to the plant, Carter and Thornburgh held a joint press conference. Carter opened by assuring people that “everything possible is being done to cope with these problems, both at the reactor and in contingency planning.” Carter commended Thornburgh and the other state and local officials for the leadership shown through the previous days. He also expressed admiration to the citizens for behaving “calmly and responsibly.” In addition, he commended the civilian and government personnel “who continue to devote themselves without reservation to solving problems at the reactor site ... Over the next few days, decisions will be made on how to shut down the reactor. ... The primary consideration will be health and safety. ... An investigation will be conducted, and the results will be made public.”⁸⁶

19:34: Thornburgh received a telegram from Senator James Lloyd. The telegram read, “I implore of you, evacuate a 15 mile radius of the Three Mile Island. Thank you.”⁸⁷ Throughout the days surrounding the accident, Thornburgh received many similar pleas like this one from various people and groups. During his later testimony before the President’s Commission on the Accident at Three Mile Island, Thornburgh responded to a question regarding his hesitation to order an evacuation. “There are known risks. ... The movement of elderly persons, people

⁷⁹ Ibid.

⁸⁰ Scranton, William. Personal notes regarding telephone call with Harold Denton at TMI.

⁸¹ Martin, 166.

⁸² Nuclear Regulatory Commission. Press Release: Office of Public Affairs, Washington, D.C. March 31, 1979, 12 p.m.

⁸³ Governor’s Office. Press Conference Transcript. March 31, 1979, 11 p.m.

⁸⁴ *Report of the President’s Commission on the Accident at Three Mile Island*, 150.

⁸⁵ Gazit, Chana. 1999. *The American Experience: The Meltdown at Three Mile Island*. Produced and written by Chana Gazit. 60 min. PBS Home Video. Videocassette.

⁸⁶ Governor’s Office. Press Conference Transcript. April 1, 1979, 11 p.m.

⁸⁷ Lloyd, James. Telegram to Governor Richard Thornburgh. April 1, 1979.

in intensive care units, babies in incubators, the simple traffic on the highway that results from even the best of an orderly evacuation, are going to exert a toll in lives and in injuries. ... Moreover, this type of evacuation had never been carried out on the face of this earth ... quite different in kind and quality than one undertaken in time of flood or hurricane. ... When you talk about evacuating people within a five-mile radius of the site of a nuclear reactor, you must recognize that will have 10-mile consequences, 20-mile consequences, 100-mile consequences. ... It is an event that people are not able to see, to hear, to taste, to smell.”⁸⁸

Monday, April 2, 1979

11:15: Denton held a press conference with the help of Roger Mattson, the director of the Divisions of Systems Safety in the Office of Nuclear Reactor Regulation at the NRC. Denton began by informing the press that the NRC had “issued a bulletin regarding this accident to all the other B&W [Babcock and Wilcox, the agency that built the TMI plant] designed plants which are operating. ... These bulletins require the licensee to inform the NRC in 10 days of the steps he’s taking to assure that this type of occurrence won’t be repeated.” When Denton was asked whether the bubble was gone, he replied, “B&W is of the opinion that for all practical purposes, the bubble is gone. ... There is not a clear line between here and gone. ... It’s a gradual process.”⁸⁹

Also on Monday, a summary of a legislative proposal was sent from the legislative coordinator at the DER to the governor’s office. The proposed legislation was “to enhance the Commonwealth’s environmental radiation surveillance and emergency radiation response capabilities by granting certain powers to the DER and making an appropriation.” The bill had been suggested twice before, once in 1975–76 when it died in the House Committee on Conservation, and once in 1977–78 when it died in the Senate Committee on Appropriations. As written, “... the bill would provide \$300,000 to the DER to hire additional staff and obtain new equipment to increase the state’s capability to monitor levels of radioactive, population exposure and emergency radiation response.”⁹⁰

⁸⁸ Thornburgh, Richard L. Deposition for the President’s Commission on the Accident at Three Mile Island. Harrisburg, Pa., 25.

⁸⁹ Nuclear Regulatory Commission. Press Conference Transcript. April 2, 1979, 11:15 a.m.

⁹⁰ Department of Environmental Resources, Commonwealth of Pennsylvania. HB53-PR55. March 29, 1979.

Tuesday, April 3, 1979

10:00: Thornburgh received a memorandum from Jack Watson in Califano’s office. The cover said, “I am sending you the attached memorandum from Secretary Califano for your information and guidance. We stand ready to assist you in any manner needed.” The memo began with recommendations from the surgeon general regarding the thyroid blocking medication, potassium iodide. The director of the National Institutes of Health, the director of the National Cancer Institute, and the commissioner of the FDA all supported the recommendations, which included having workers at the plant begin taking blocking doses of the potassium iodide, having the drug ready for citizens within close proximity to the plant, and having the drug available at convenient distribution points.⁹¹

13:00: Thornburgh held a meeting to discuss the potassium iodide options. A decision was made to have the drug ready, but not to distribute it. Thornburgh later said in his testimony before the President’s Commission, “I think there was a concern that we might be perceived as being inattentive to the health needs of the people near the site, but I was not concerned that we were being inattentive to their needs, because the medical advice that we could get, and which I eventually felt that it was really not a very wise thing to do to distribute this. ... We had Dr. MacLeod, Dr. Neil Wald, the doctor who had written the paper upon which the purported recommendation to use the stuff, Dr. Johnson from the FDA, plus the nonmedical, but psychological side, Harold Denton, and my own people unanimously recommending against the immediate distribution of it.”⁹²

21:30: Thornburgh reiterated Denton’s earlier remarks that the bubble had dissipated and the core was stable. He explained that various plans were being explored to bring the reactor to a state of cold shutdown. Thornburgh expressed his gratitude to Denton and praised him for a job well done. He said, “One of the most serious problems we have [had] in this episode had been the unending flow of rumors hurled at us from a variety of sources. ... A nuclear specialist was quoted today as observing that alarming reports probably caused more psychological harm than did the radiation itself.” He went on to assure the press and the public that, “At no time have a variety of test measurements shown

⁹¹ Watson, Jack. Memorandum to Governor Thornburgh. April 3, 1979.

⁹² Thornburgh, Richard L. Deposition for the President’s Commission on the Accident at Three Mile Island. Harrisburg, Pa., 81 & 82.

levels of contamination that were dangerous to normally health people.” The governor stated, “In my opinion ... we stand at a point where the chances of any catastrophic event have been greatly reduced, that may mean that the worst is over ... but I am not so sure that it doesn’t mean that we are approaching a much more crucial interval for the future of central Pennsylvania from the point of view of public health, environmental integrity, and the economic development of this area. ... Those who would press for any expansion of present nuclear energy facilities in this state have a very heavy burden to prove to me so far as this Pennsylvanian is concerned.”⁹³

Wednesday, April 4, 1979

09:00: Governor Thornburgh made an appearance on *AM New York*. The host of the television show asked him if he felt he had enough information in the beginning of the incident to make decisions. He responded, “During the first two days, we were confused by a number of seemingly conflicting reports. ... We were getting information from diverse sources and it wasn’t always consistent ... from the utility, from representatives of state and federal agencies on the scene.” He credited Denton’s arrival in Harrisburg with bringing about a productive change. Thornburgh also discussed his concerns about evacuation and noted that an evacuation of that magnitude had never been carried out before in the United States.⁹⁴

Friday, April 6, 1979 and Beyond

At **19:30**, on Friday, April 6, Governor Thornburgh gave a televised statewide address to the people of Pennsylvania. Sitting at the desk in his office, he spoke into the camera saying, “I hope to be able to tell women and children they can go home—that will mark the end of the most dangerous days of decision any governor has had to face in this century. ... I now have serious doubts about opening TMI again. ... Nuclear opponents are not in touch with our needs for tomorrow, nuclear advocates simply are not in touch with reality. ... It’s not easy for ordinary people to assume that the power company is protecting their interests—only to find out that government standards of efficiency and expertise have been ignored and loosely enforced. ... I am also asking the federal government to inspect, without delay, every nuclear reactor located within the borders of Pennsylvania. ... I am appointing a Central Pennsylvania Recovery Committee

to be chaired by Lieutenant Governor Scranton to review the role of nuclear power in meeting our energy needs in Pennsylvania, to monitor the long-term health effects of this accident, to assess the economic consequences, and to coordinate the implementation of assistance and relief to our people.”⁹⁵

On Sunday, April 8, Thornburgh and Hendrie held a meeting to discuss Thornburgh’s request that the NRC inspect all of the nuclear reactors within Pennsylvania. Because he was responsible for the health and safety of the population, Hendrie told Thornburgh that the NRC would make the reports available to him within a few weeks for evaluation.⁹⁶

On April 9, Thornburgh was finally able to lift all previous recommendations and directives. At an afternoon press conference, he announced that it was safe for pregnant women and preschool children to come home. He also informed the public that “schools may reopen tomorrow ... state offices can return completely to business as usual ... Civil Defense and Emergency Preparedness can shift from full-alert status to on-call status.” He stressed that the state would monitor the situation at the plant continuously. When asked about evacuation, Thornburgh responded by saying, “We were never on the brink of an evacuation. ... As the incident went on, the mechanics of carrying out the evacuation became less of a concern because the response became more realistic and well-planned.”⁹⁷

On April 28, 1979, exactly one month after the small glitch in the system turned into the most serious nuclear reactor accident to ever occur in the United States, Unit 2 at Three Mile Island was finally brought to a cold shutdown. Since that event, not one nuclear reactor has been purchased in the United States. Seventy-four plants under construction in 1979 were cancelled, and the owners of the 13 of the plants operating at the time shut them down. Only 53 of the plants under construction at the time of the accident were finished and put into operation.⁹⁸

⁹⁵ Pennsylvania State Address, written in Harrisburg, Pennsylvania and delivered by Governor Thornburgh on April 9, 1979. Located at the Dick Thornburgh Archives, University of Pittsburgh, Pittsburgh.

⁹⁶ Thornburgh, Richard. 1979. Letter from Richard L. Thornburgh to Joseph Hendrie. Located at the Dick Thornburgh Archives, University of Pittsburgh, Pittsburgh.

⁹⁷ Governor’s Office. Press Conference Transcript. April 9, 1979, 3 p.m.

⁹⁸ Union of Concerned Scientists. 1999. Clean Energy: Three Mile Island’s Puzzling Legacy. Internet. Available from http://www.ucsusa.org/clean_energy/nuclear_safety/page.cfm?pageID=183; accessed 15 November 2003.

⁹³ Governor’s Office. Press Conference Transcript. April 3, 1979, 9:30 p.m.

⁹⁴ Thornburgh, Richard. *AM New York*: April 4, 1979, 9:00 a.m., interviewed by Janet Langhart. (Radio TV Reports, Incorporated: Washington, D.C.), 1–14.

DISCUSSION: LEARNING FROM PAST EVENTS

After reviewing the events of these critical days in 1979, please return to the questions originally posed on page 5.

1. What are the health consequences of exposure to radiation?
2. What are the legal responsibilities involved in protecting the population against radiation?
3. What are the economic costs and benefits of nuclear technology for energy production?
4. What are the ethical premises that should govern the operation of nuclear power plants?
5. What is the organizational capacity of public agencies to manage the risk of nuclear technology for the protection of public health?
6. What is the federal responsibility for defining and maintaining safe sources of energy production for the nation?

In what ways can the events of 25 years ago provide insight into the complex problems of managing energy policy for a population with ever-increasing demands for electricity? As policy-makers search for alternative strategies to supply the increasing needs for power in an advanced technological society, many are reconsidering the potential of nuclear power. But the threat of radiation to human health is unchanged. The substantive question is whether human organizations can manage nuclear technology and its known risks with sufficient reliability to warrant public acceptance of it as a legitimate source of energy. The readers are asked to consider the events and actions taken in this case as a basis for devising a workable strategy for energy policy that is consistent with public interest.

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