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# case study

**The Three Mile Island Nuclear Accident:  
Continuing Policy Issues, Dilemmas and Strategies**

*by Louise Comfort  
and Carrie Miller  
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In partnership with the Dick Thornburgh  
Archives of the University Library System

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## DICK THORNBURGH BIOGRAPHY

Dick Thornburgh served as Governor of Pennsylvania, our nation's sixth largest state, Attorney General of the United States under two presidents, and the highest-ranking American at the United Nations during a public career that spanned over 25 years. He is currently counsel to the national law firm of Kirkpatrick & Lockhart LLP, resident in its Washington, D.C. office.

Elected Governor of Pennsylvania in 1978 and re-elected in 1982, Thornburgh was the first Republican ever to serve two successive terms in that office. He served as Chair of the Republican Governors Association and was named by his fellow governors as one of the nation's most effective big-state governors in a 1986 *Newsweek* poll.

During his service as Governor, Thornburgh balanced state budgets for eight consecutive years, reduced both personal and business tax rates, cut the state's record-high indebtedness and left a surplus of \$350 million. Under his leadership, 15,000 positions were eliminated from a swollen state bureaucracy and widely recognized economic development, education and welfare reform programs were implemented. Pennsylvania's unemployment rate, among the ten highest in the nation when he was elected, was among the ten lowest when he left office. Following the unprecedented Three Mile Island nuclear accident in March 1979 when Thornburgh had been governor for 72 days, he was described by observers as "one of the few authentic heroes of that episode as a calm voice against panic."

After his unanimous confirmation by the United States Senate, Thornburgh served three years as Attorney General of the United States (1988–1991) in the cabinets of Presidents Reagan and Bush. He mounted an unprecedented attack on white-collar crime, and the Department of Justice obtained a record number of convictions of savings and loan and securities officials, defense contractors and corrupt public officials. Thornburgh established strong ties with law enforcement agencies around the world to help combat drug trafficking, money laundering, terrorism and international white-collar crime. The *Legal Times* noted that Thornburgh as Attorney General "built a reputation as one of the most effective champions that prosecutors have ever had." He is one of only twenty persons, including seven Presidents, to be named as an honorary Special Agent of the Federal Bureau of Investigation.

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As Attorney General, Thornburgh played a leading role in the enactment of the Americans with Disabilities Act. He also took vigorous action against racial, religious and ethnic “hate crimes,” and his office mounted a renewed effort to enforce the nation’s anti-trust and environmental laws. During his tenure as Attorney General, Thornburgh twice personally argued and won cases before the United States Supreme Court.

All told, Thornburgh served in the Justice Department under five Presidents, beginning as United States Attorney in Pittsburgh (1969–1975) and Assistant Attorney General in charge of the Criminal Division (1975–1977), emphasizing efforts against major drug traffickers, organized crime and corrupt public officials.

During his service as Under-Secretary-General at the United Nations (1992–1993), Thornburgh was in charge of personnel, budget and finance matters. His report to the Secretary-General on reform, restructuring and streamlining efforts designed to make the United Nations peacekeeping, humanitarian and development programs more efficient and cost effective was widely praised. He also has served as a consultant to the United Nations and the World Bank on efforts to battle fraud and corruption.

Throughout his career, he has traveled widely, visiting over 40 countries and meeting with leaders from Canada, Mexico, Europe, Africa, the Middle East, Russia, Japan, China, Taiwan, Korea, Australia and Central and South America. He served as an observer to Russia’s legislative (1993) and presidential (1996) elections, is Chairman of the U.S. Committee for Hong Kong and is a member of the board of advisors of the Russian American Institute for Law and Economics.

A native of Pittsburgh, Thornburgh was educated at Yale University, where he obtained an engineering degree, and at the University of Pittsburgh School of Law where he served as an editor of the *Law Review*. He has been awarded honorary degrees by 30 other colleges and universities. Thornburgh served as Director of the Institute of Politics at Harvard’s John F. Kennedy School of Government (1987–1988).

Thornburgh serves on the boards of the University of Pittsburgh, The Urban Institute, the National Museum of Industrial History and the Gettysburg National Battlefield Museum Foundation. He is Chairman of the State Science and

Technology Institute, Vice-Chairman of the World Committee on Disability and Chairman of the Legal Policy Advisory Board of the Washington Legal Foundation. He is a member of the American Law Institute, the American Bar Foundation, the American Judicature Society and the Council on Foreign Relations.

Thornburgh was an elected Delegate to Pennsylvania’s historic Constitutional Convention (1967–1968), where he spearheaded efforts at judicial and local government reform. He was an unsuccessful candidate for the United States House of Representatives (1966) and the United States Senate (1991).

Thornburgh, born July 16, 1932, is married to Ginny Judson Thornburgh. The Thornburghs have four sons and six grandchildren. As parents of a son with mental retardation, they have taken a special interest in the needs of persons with disabilities. Both Ginny and Dick Thornburgh were featured speakers at the Vatican Conference on Disabilities held in November, 1992, and received the Henry B. Betts Award in March 2003, from the American Association of People with Disabilities.

This biography was adapted from one prepared by Kirkpatrick & Lockhart LLP, Washington, D.C., January 1, 2003.

## THE DICK THORNBURGH ARCHIVES OF THE UNIVERSITY LIBRARY SYSTEM

The Dick Thornburgh Archives of the University Library System (Thornburgh Papers), which serves as the documentary source of information for this set of case studies, is housed at the Archives Service Center in the University Library System of the University of Pittsburgh. The Archives Service Center is located in the new Library Resource Facility that was dedicated in October of 2002. It is located at 7500 Thomas Boulevard, Pittsburgh, 15260, in North Point Breeze, about three miles from the Oakland campus. The center includes more than 30,000 linear feet of archives, manuscripts, photographs, videos, maps, books and other artifacts. The major collections housed at the Archives Service Center include the Thornburgh Papers, the Archives of Industrial Society, the United Electrical Workers of America Archives/Labor Collections, University Archives, and University Records Management.

In February 1998, Dick Thornburgh donated his papers to the University of Pittsburgh. Thornburgh said, "It was important to find a place where my papers could be stored and used by scholars interested in public policy questions... Also, students considering a career in politics can learn from the ups and downs of public life at the state, federal, and international level" (Phillips, 1998). Rush Miller, the director of the University Library System called the donation an "unparalleled gift." He continued, "This collection has tremendous potential because there are very few archives from political figures that are as confidential and personal as this collection. Dick Thornburgh is unusual in that he saved not only his papers, he saved his thinking" (Phillips, 1998).

There are over 1,200 boxes filled with more than one million documents currently occupying over 1,140 cubic feet of space at the University Archives Service Center and weighing in at almost fifteen tons. The boxes contain a vast variety of documents including grade school report cards, scrapbooks, videos, transcripts, newspaper clippings, speeches, campaign memorabilia, policy research, news releases, memoranda and much more (Watson, 1998).

Thornburgh is not only interested in saving his documents, he often refers back to them when writing articles and revisiting policy issues that continue to be relevant today. Public officials have used the archive recently to attain information relevant to current challenges. Federal prosecutors reviewed Thornburgh's 1971 report on criminal justice, "Toward a Safer Community," for "reference in the continuing struggle to modernize law enforcement efforts" (Phillips, 1998). Members of the community, historians and students, both graduate and undergraduate, similarly have conducted research using the Thornburgh collection.

Nancy Watson, curator of the Thornburgh Papers, and other staff members at the Archives are currently working on the Thornburgh Digital Project. This project will produce an informative website serving as an index to the archive and also allowing researchers to search many important documents and photographs from the collection. This website is expected to be available in June 2004.

## CASE STUDY SERIES ON THREE MILE ISLAND NUCLEAR ACCIDENT: ISSUES IN PUBLIC POLICY

### Introduction

The study of public policy is a dynamic process. Problems, actors, solutions and opportunities for action change, conflict, interact, fade and re-emerge in different forms and combinations. Decision making for policy makers is a continual process of assessing what *can* be done against what *should* be done, within the constraints of time, resources and existing knowledge. This process, which requires the exercise of informed judgment, can be honed through a careful review of past decisions and the context in which they were made. The past situation is not likely to recur in the exact same way or produce the same results, as physical scientists expect in their inquiries. Rather, in public policy, human actors change not only the answers, but also the questions, as they grapple with the substantive issues of governmental action in given locations under specific conditions. The problems are not so much solved, as they are given temporary strategies that are valid for a given time and place. Big policy problems tend to recur and demand public attention and action that is adjusted to current conditions and actors.

Understanding the dynamics of this policy process is a major challenge for policy makers. This series of case studies explores the dynamics that were involved in making decisions regarding the accident at the Three Mile Island (TMI) nuclear power plant in March 1979. The issues that emerged during this tense week in Central Pennsylvania had lasting repercussions that continue to shape the public debate on energy policy in the U.S. and the rest of the world today. Revisiting this set of issues through a series of case studies allows a thoughtful examination of differing perspectives and alternative strategies of action that might be applied to similar problems in current contexts. The case studies enable us to learn from the past in ways that may improve our judgment and capacity to make decisions regarding equally challenging issues in future events.

This case is the first in a series of five that address different but related issues involved in the accident at the Three Mile Island nuclear power plant. This initial case will give a brief characterization of the political and economic context in

which the event occurred. It will then summarize a chronological overview of the main sequence of events, identify a set of critical issues that emerged from this event and introduce a set of actors who played key roles in the evolving sequence of decisions. Finally, this case will set the context for probing more deeply into the core issues presented in the other four cases. These issues include:

- Decision making under conditions of uncertainty
- Communication and coordination in intergovernmental action
- Public safety vs. efficiency in managing risky technologies
- The community's "right to know" vs. responsible management of information in crises

The intent of this set of cases is not to replay the events of 1979, but rather to rethink the substantive policy issues that emerged from this incident, using different analytical techniques and considering alternative strategies for crafting public action. These are continuing policy issues that compel thoughtful inquiry today, albeit in different contexts with different actors and changing conditions. Other issues, such as the evacuation of surrounding communities and the management of the clean-up process, also warrant examination. There is extensive documentation on these and other issues in the Thornburgh Archives, and it is anticipated that this first series of cases will spur investigation of additional policy issues.

The need to develop informed judgment to manage these continuing dilemmas is even more critical today, as the context of democratic policy making regarding energy policy becomes increasingly complex and interdependent with global affairs.

### **Context for Action**

Like all policy issues, the accident at the Three Mile Island nuclear power plant did not occur as a single event unrelated to other policies and conditions in practice at the time. Rather, the accident occurred within a context of technical, organizational, scientific, economic and ethical issues that revealed a complex mix of conflicting interests, positions, proposed solutions and constraints on public action. The fact that public policy in a democratic society must be

fashioned within this intensely political context makes it both challenging and crucially important to maintain the legitimacy of democratic governance. Determining which is the most urgent, most relevant and most responsible strategy of action to take is the legal obligation of policy makers at different jurisdictional levels of action. The interplay of interests and constraints in crafting public policy triggers a fresh round of public review, response and debate as the (temporary) policy is implemented and evaluated.

The political context in which the events at Three Mile Island occurred framed the larger problem of energy as driving the dynamics of this policy process. Four prior events had significant influence in shaping the varying positions that emerged in reference to the nuclear accident. In 1973, member nations of the Organization of the Petroleum Exporting Countries (OPEC) sought greater control in managing their economies in a global market that had grown increasingly dependent on foreign oil. They raised the price of crude oil per barrel from \$3.01 per barrel in the summer of 1973 to \$11.65 on January 1, 1974 (Commoner, 1979, p. 28). The effect of this price increase was amplified by a parallel decision by U.S. oil companies to raise their target rate of profit from 11% in 1972 to 19% in 1974 (Commoner, 1979, p. 28). The combined effect of the two increases sent inflation, which had been steady at 2% per year, spiraling into double-digit figures in 1974. Commodity prices followed, and by 1977, the U.S. economy was reeling from rising energy prices that were driving a steadily increasing rate of inflation.

In 1977, Jimmy Carter, newly elected as president and trained as a nuclear engineer, announced a National Energy Plan as a means to cope with the increasing economic crisis. The plan initially focused on conservation as a primary means of reducing energy consumption and costs, but in making its way through Congress, the content of the plan shifted to provide substantial support for nuclear power as a means of reducing dependence on foreign oil while coping with decreasing reserves of oil and natural gas in the U.S. Nuclear power, viewed skeptically by scientists and citizens since the bombing of Hiroshima and Nagasaki in 1945 in the waning days of World War II, was offered as an alternative source of energy that could use technology productively to maintain a stable energy source for the economy and reduce inflation.

In 1978, the Atomic Industrial Forum released a report that showed the economic performance of the nuclear power industry was substantially less than anticipated. Recurring accidents at the plants and the increasing cost of safety requirements imposed by the Nuclear Regulatory Commission (NRC) meant that the average cost of electricity produced by nuclear plants was 20% higher than that produced by coal-fired plants (Commoner 1979, p. 49). Human error in the design, construction and operation of nuclear plants had not been calculated in the initial estimates of their efficiency. The technology was complex, risky and required continual monitoring to ensure safe operation. The consequences of mistakes, further, were dangerous, costly and largely unknown in terms of the long-term effects of radiation on human health. The economic benefit and efficiency of nuclear power plants was clearly under question.

In November 1978, the Commonwealth of Pennsylvania established the Pennsylvania Emergency Management Agency (35 Pennsylvania Commonwealth Services Act, Section 7311) to manage Commonwealth responsibilities relating to civil defense, disaster preparedness, operations and recovery. The creation of the new agency, known as PEMA, marked the shift in responsibilities from the former Office of Civil Defense, primarily focused on domestic preparedness for nuclear war, to a civilian agency that implemented an all-hazards approach to disaster reduction and response. The Pennsylvania Emergency Management Council was established as an oversight body for PEMA, and the lieutenant governor was assigned the formal responsibility of chairing this body. In appointing the members of his new administration in the early months of 1979, Governor Thornburgh asked his lieutenant governor, William Scranton III, to accept the responsibility of chairing the Pennsylvania Energy Council as well as the Pennsylvania Emergency Management Council. The Pennsylvania Energy Council, established in 1974, was primarily concerned with conservation and energy security. Assigning both responsibilities to the lieutenant governor had the effect of integrating the task of managing energy supply with the task of monitoring performance in energy production. In the TMI crisis, both tasks assumed high priority for the Commonwealth, and the sequence of events revealed potential conflicts in the design and implementation of energy policy.

The cumulative impact of this set of events shaped the political context in which the nuclear accident occurred. The sequence of actions taken—and not taken—are chronicled herein.

## THE ACCIDENT: CHRONOLOGY MARCH 28–APRIL 3, 1979

In this complex political arena, a series of events at the Three Mile Island nuclear power plant, located in the middle of the Susquehanna River about ten miles downstream from Harrisburg, Pennsylvania, began to unfold that dramatized the tensions inherent in this search for a national energy policy. Briefly, these events are summarized in the following chronology.

### Wednesday, March 28, 1979

Just after **04:00** on Wednesday, March 28, 1979, something began to go wrong at the nuclear power plant facility located on Three Mile Island (TMI) near Harrisburg, Pennsylvania. That morning, the plant was operating at 97% power. The accident began in Unit 2 with a 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, creating a hazardous situation for the region.<sup>1</sup> Following is a sequence of interactions among plant personnel, public agencies and public officials as they responded to this event.

**04:45:** George Kunder, the superintendent of technical support for the plant, arrived at TMI. Kunder later said that he was not expecting the situation he found when he entered the control room. Along with the four operators in the control room, Kunder tried to assess the events that were taking place.<sup>2</sup>

<sup>1</sup>*Report of the President's Commission on The Accident at Three Mile Island.* Washington, DC: U.S. Government Printing Office, 1979.

<sup>2</sup>*Ibid.*

**06:00:** Metropolitan Edison initiated a conference call between representatives from Metropolitan Edison, the company that owned the TMI plant, and Babcock and Wilcox, the company that designed and built the reactor. They discussed what was happening, and they were still under the impression that the valve had closed. At the time, the core was slowly being uncovered. Since there was no radiation alarm, and no fuel pellets were rupturing, the men were unaware that the core was in serious danger. About thirty minutes later, William Zewe, the shift supervisor of TMI, noticed the first instrument readings indicating that the core might be in grave danger.<sup>3</sup>

**06:50:** The 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, Zewe called Dauphin County emergency management officials and told them there was a “site emergency.”<sup>4</sup>

**07:02:** Zewe then called the Pennsylvania Emergency Management Agency (PEMA) and informed the PEMA watch officer, Clarence Deller, that the reactor “has been shut down...there is a high level of radiation within the reactor room...”<sup>5</sup>

**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.<sup>6</sup>

**07:04:** The first phone call to the Nuclear Regulatory Commission (NRC) was logged.<sup>7</sup>

**07:08:** PEMA contacted Dauphin County, and the county official verified that they had been contacted directly by the operators at TMI earlier.<sup>8</sup>

**07:10:** The United States Department of Energy (DOE) was notified of the situation. Metropolitan Edison contacted the Brookhaven National Laboratory of the DOE to notify them of the situation and the potential need for a Radiological Assistance Team (RAT). Although Metropolitan Edison did not request immediate assistance, the RAT team went on stand-by status.<sup>9</sup>

**07:12:** PEMA notified the Lancaster Emergency Management Office to advise them of the situation. In addition, since PEMA was having difficulty contacting York County officials, they asked Lancaster County to contact York County. York County acknowledged receipt of this information at 07:20.<sup>10</sup>

**07:15:** Dornsife finally got in touch with the operators in the control room. The operators told Dornsife that a small 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. During this phone call, a loud-speaker in the control room sounded, announcing that due to radiation in the fuel-handling auxiliary building, the building was to be evacuated immediately. Dornsife was then connected with a representative from the health physics department who once again assured him that there were no off-site releases.<sup>11</sup> After learning the status of the plant, he immediately called Maggie Reilly at the BRP and asked her to establish the required open telephone line to the plant.<sup>12</sup>

**07:24:** Gary 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.”<sup>13</sup> After this change in status, the plant was evacuated.<sup>14</sup>

**07:24:** At the same time, Colonel Oran Henderson, director of PEMA, was first told of the incident at the plant by one of his operation officers.<sup>15</sup>

**07:30:** The BRP learned from TMI that a general emergency had been declared. At this point, Tom Gerusky, the radiation protection director at BRP, requested verification of on- and off-site radiation survey instrumentation.<sup>16</sup>

**07:36:** TMI called PEMA to notify them of the general emergency status. The operators at the plant told PEMA that there had been another radiation release and that it could potentially go off in a direction of about 30 degrees. TMI warned PEMA that they should be ready to evacuate Brunner Island and the community of Goldsboro, both located within close proximity of the plant.<sup>17</sup> A few minutes later, the DER verified the general emergency condition and recommended that PEMA initiate preparedness for emergency evacuations.<sup>18</sup>

<sup>3</sup>Martin, Daniel (1980). *Three Mile Island: Prologue or Epilogue*. Cambridge, MA: Ballinger Publishing Company.

<sup>4</sup>Governor’s office. Press conference transcript. March 28, 1979, 4:30 p.m.

<sup>5</sup>Henderson, Oran. Memo to Dick Thornburgh. “The Chronology of Alerting—TMI Incident,” March 29, 1979.

<sup>6</sup>Gerusky, Thomas. Memo: “Department of Environmental Resources: Bureau of Radiation Protection Actions,” undated.

<sup>7</sup>Martin, Daniel (1980). *Three Mile Island: Prologue or Epilogue*. Cambridge, MA: Ballinger Publishing Company.

<sup>8</sup>Henderson, Oran. Memo to Dick Thornburgh. “The Chronology of Alerting—TMI Incident.” March 29, 1979.

<sup>9</sup>Cantelon, Philip L. and Robert C. Williams (1982). *Crisis Contained: The Department of Energy at Three Mile Island*. Carbondale, Illinois: Southern Illinois University Press.

<sup>10</sup>Henderson, Oran. Memo to Dick Thornburgh. “The Chronology of Alerting—TMI Incident,” March 29, 1979.

<sup>11</sup>Martin, Daniel (1980). *Three Mile Island: Prologue or Epilogue*. Cambridge, MA: Ballinger Publishing Company.

<sup>12</sup>Gerusky, Thomas. “Department of Environmental Resources: Bureau of Radiation Protection Actions.” memo: undated.

<sup>13</sup>*Report of the President’s Commission on The Accident at Three Mile Island*. Washington, DC: U.S. Government Printing Office, 1979, p.102

<sup>14</sup>Ibid.

<sup>15</sup>Henderson, Oran. Testimony to President’s Commission on Three Mile Island. August 2, 1979.

<sup>16</sup>Gerusky, Thomas. “Department of Environmental Resources: Bureau of Radiation Protection Actions.” memo: undated.

<sup>17</sup>Henderson, Oran. Testimony to President’s Commission on Three Mile Island. August 2, 1979.

<sup>18</sup>Henderson, Oran. Memo to Dick Thornburgh. “The Chronology of Alerting—TMI Incident,” March 29, 1979.

**07:40:** The NRC (Region 1—King of Prussia) switchboard operator arrived to work a bit early (the office opened at 08:00) and received the message about the events that were occurring at the Three Mile Island plant. The operator immediately began calling the appropriate people within the organization to apprise them of the situation.<sup>19</sup>

**07:40** and **07:50:** PEMA alerted York, Dauphin and Lancaster County Emergency Management Offices, the Pennsylvania State Police, the Pennsylvania Department of Transportation, and the Departments of Public Welfare, Health, Agriculture and Community Affairs to the risk.<sup>20</sup>

**07:50:** In Harrisburg, Governor Dick Thornburgh was called out of a budget meeting with legislators to answer a phone call from Henderson, director of PEMA. Henderson notified Thornburgh that there was an incident at the nuclear power plant. Thornburgh then returned briefly to his meeting.<sup>21</sup>

**08:00:** The containment building at the plant was isolated. The pipes going between the buildings were shut off. When the operators opened them, some radioactivity leaked into the atmosphere.<sup>22</sup>

**08:05:** At the NRC Region 1 office, Charles Gallina, an investigator with the NRC, was designated to organize the Inspection and Enforcement Team. Gallina ensured that telephone lines were established with both the plant and the NRC national management center in Bethesda, Maryland.<sup>23</sup>

**08:13:** Governor Thornburgh left his meeting and called his press secretary and director of communications, Paul Critchlow. Thornburgh asked Critchlow to gather as much information as he could about the incident. Thornburgh headed back to conclude his meeting.<sup>24</sup>

**08:20:** Colonel Henderson contacted the lieutenant governor, William Scranton, to notify him of the incident.<sup>25</sup> The lieutenant governor was the chairman of the Governor’s Energy Council and chairman of the State Emergency Council. He was to serve as the liaison between the governor and PEMA when state emergencies occurred.<sup>26</sup>

**08:25:** Reporters first became aware of the situation. A traffic reporter for WKBO, a local radio station, overheard conversations on his CB radio regarding the mobilization of fire and police departments in Middletown. He called the station news director, Mike Pintek, to alert him to the situation. Pintek immediately called the plant and was connected to the control room at TMI. The operator who answered the call said, “I can’t talk now, we have a problem,” and told Pintek to call Metropolitan Edison’s headquarters in Reading, Pennsylvania. Pintek spoke with Blaine Fabian, Metropolitan Edison’s manager of communication services, who told him that, “There was a problem with a feedwater pump. The plant is shut down. We’re working on it. There’s no danger off-site. No danger to the general public.”<sup>27</sup>

**08:30:** Cumberland County’s emergency preparedness office was contacted by PEMA. Cumberland County was not within a five-mile radius of the plant, but just on the border of the ten-mile radius.<sup>28</sup>

**08:44:** The mayor of Middletown, Robert Reid, was notified of the incident by his civil defense director. Middletown is a small community located only a few miles from TMI. Mayor Reid, a high school teacher who was paid \$150 a month for his job as the mayor, claimed the only information he received about the situation was from the television and the radio and later complained that this information was “confusing and contradictory.”<sup>29</sup>

**08:45:** In King of Prussia, Gallina had finished gathering the NRC site team that would soon depart for TMI. The team consisted of Gallina, James Higgins, a reactor inspector, and three health inspectors. At the NRC office in Bethesda, they were working to get their emergency center prepared. After a group of people from the appropriate offices within the NRC was gathered, the emergency center was operational by **08:50**.<sup>30</sup>

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 a total of twelve days, was in the Pittsburgh office at the time. MacLeod tried to get information about the situation and its likely effects on radiological health, but could not do so.<sup>31</sup>

<sup>19</sup>Martin, Daniel (1980). *Three Mile Island: Prologue or Epilogue*. Cambridge, MA: Ballinger Publishing Company.

<sup>20</sup>Henderson, Oran. Memo to Dick Thornburgh. “The Chronology of Alerting—TMI Incident.” March 29, 1979.

<sup>21</sup>Ibid.

<sup>22</sup>*Report of the President’s Commission on The Accident at Three Mile Island*. Washington, DC: U.S. Government Printing Office, 1979.

<sup>23</sup>Martin, Daniel (1980). *Three Mile Island: Prologue or Epilogue*. Cambridge, MA: Ballinger Publishing Company.

<sup>24</sup>Thornburgh, Richard L. Deposition for the President’s Commission on the Accident at Three Mile Island. Harrisburg, PA, August 17, 1979, p. 5–6.

<sup>25</sup>Henderson, Oran. Memo to Dick Thornburgh. “The Chronology of Alerting—TMI Incident.” March 29, 1979.

<sup>26</sup>Martin, Daniel (1980). *Three Mile Island: Prologue or Epilogue*. Cambridge, MA: Ballinger Publishing Company.

<sup>27</sup>*Report of the President’s Commission on The Accident at Three Mile Island*. Washington, DC: U.S. Government Printing Office, 1979, p.103–104.

<sup>28</sup>March 29, 1979. Call for Investigation: Area Officials Concerned Over ‘Proper’ Notification. (1979, March 29). *The Patriot*.

<sup>29</sup>Reid, Robert. Testimony for The Select Committee’s Report of the hearings concerning Three Mile Island. June 8, 1979, p. 21.

<sup>30</sup>Martin, Daniel (1980). *Three Mile Island: Prologue or Epilogue*. Cambridge, MA: Ballinger Publishing Company.

<sup>31</sup>MacLeod, Gordon. Testimony to President’s Commission on the Accident at Three Mile Island. August 2, 1979, p. 133–134.



<sup>32</sup>Governor's office. "Chronology of the T.M.I. Incident: March 28–April 1, 1979." (draft prepared in preparation for President's Commission testimonies).

<sup>33</sup>Thornburgh, Richard L. Deposition for the President's Commission on the Accident at Three Mile Island. Harrisburg, PA, August 17, 1979, p.13.

<sup>34</sup>Ibid.

<sup>35</sup>*Report of the President's Commission on The Accident at Three Mile Island.* Washington, DC: U.S. Government Printing Office, 1979, p.104.

<sup>36</sup>Ibid.

<sup>37</sup>Martin, Daniel (1980). *Three Mile Island: Prologue or Epilogue.* Cambridge, MA: Ballinger Publishing Company.

<sup>38</sup>*Report of the President's Commission on The Accident at Three Mile Island.* Washington, DC: U.S. Government Printing Office, 1979, p.104.

<sup>39</sup>Governor's office. "Chronology of the T.M.I. Incident: March 28–April 1, 1979." (draft prepared in preparation for President's Commission testimonies).

<sup>40</sup>*Report of the President's Commission on The Accident at Three Mile Island.* Washington, DC: U.S. Government Printing Office, 1979, p.104.

<sup>41</sup>Martin, Daniel (1980). *Three Mile Island: Prologue or Epilogue.* Cambridge, MA: Ballinger Publishing Company.

**09:05:** Governor Thornburgh contacted the lieutenant governor, who was the new administration's point person for energy matters, and requested a report about the incident at TMI.<sup>32</sup> Thornburgh later acknowledged that he "had really put the major burden of fact-finding and briefing for me on his (Scranton's) shoulders, and so his contacts with DER...were, in effect, my contacts because they formed the basis of any briefing that he gave me."<sup>33</sup> Thornburgh thought it was important he continue to conduct business as usual in the capital since there were many other pressing issues that needed his attention.<sup>34</sup>

**09:06:** Associated Press released the first news story about TMI. The article quoted the Pennsylvania State Police as saying that a general emergency had been declared. The article also stated that there was no radiation leak and that a helicopter requested by Metropolitan Edison officials would be carrying a monitoring team to measure the levels of radiation in the atmosphere.<sup>35</sup>

**09:15:** The NRC contacted the White House to notify them of the events that were taking place near the capital of Pennsylvania.<sup>36</sup> Victor Gilinsky, one of the five commissioners of the NRC, called Jessica Tuchman Mathews, a White House staff member, with whom he was acquainted. Her memo was delivered to the president, Jimmy Carter.<sup>37</sup>

**09:30:** Walter Creitz, president of Metropolitan Edison, directed John (Jack) Herbein, vice president of generation for Metropolitan Edison and located in Philadelphia to go to the plant at Three Mile Island. Once he arrived, his main responsibility would be to manage press relations.<sup>38</sup> There were, in fact, dozens (soon to be hundreds) of reporters already gathered near the plant waiting to obtain information about the situation happening inside the ominous structures located on the island.

**09:37:** After much investigation and information gathering, lieutenant governor Scranton called Thornburgh to brief him on the situation. Scranton reported that there had been some release of radiation into the environment and stressed the importance of informing the public about the situation.<sup>39</sup>

**10:00:** Just after the hour, the first officials arrived from the NRC.<sup>40</sup> James Higgins was responsible for discussing reactor problems, and Gallina was responsible for discussing problems with radiation.<sup>41</sup> They each had an open phone line to the NRC Region 1 office.

**10:55:** State officials called the first press conference of the day. Lieutenant governor Scranton, Dornsife, Henderson, as well as some other state officials met with reporters. Scranton gave an 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 currently monitoring the air around the plant and the near vicinity and that there was no need for evacuation. After reading the opening statement, Scranton and the others fielded questions from the press.<sup>42</sup>

**11:00:** All nonessential people were ordered to leave the island.<sup>43</sup> The BRP also requested a team from the Brookhaven National Laboratory of the United States Department of Energy to monitor the radiation levels in the area.<sup>44</sup> The DOE began its first helicopter flight to monitor radiation levels at **13:45**.<sup>45</sup>

**11:00:** Mayor Reid finally got through to TMI and was told to call Metropolitan Edison's headquarters in Reading, Pennsylvania. 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 testified that he heard a news report twenty seconds later that stated radioactive particles had been released.<sup>46</sup>

**11:30:** Governor Thornburgh called a meeting in his office to review what had happened at the press conference. Thornburgh reported his understanding of the situation 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."<sup>47</sup>

**13:00:** Metropolitan Edison held its first press conference. John Herbein answered questions from reporters 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.<sup>48</sup>

<sup>42</sup>Governor's office. Press conference transcript. March 28, 1979, 10:55 a.m.

<sup>43</sup>*Report of the President's Commission on The Accident at Three Mile Island.* Washington, DC: U.S. Government Printing Office, 1979, p. 106.

<sup>44</sup>Ibid.

<sup>45</sup>Ibid.

<sup>46</sup>Reid, Robert. Testimony for The Select Committee's Report of the hearings concerning Three Mile Island. June 8, 1979, p. 21.

<sup>47</sup>Thornburgh, Richard L. Deposition for the President's Commission on the Accident at Three Mile Island. Harrisburg, PA, August 17, 1979, p.11–12.

<sup>48</sup>Metropolitan Edison. Press conference video (WQED). March 28, 1979, 1:00 p.m.

**13:50:** A hydrogen explosion occurred inside the containment building and was heard in the control room. The force of the explosion was recorded on a computer strip chart at 28 pounds per square inch. The operators “failed to realize the significance of the event.” Not until late Thursday was that sudden and brief rise in pressure recognized as an explosion of hydrogen gas released from the reactor. Leland Rogers, a representative from Babcock and Wilcox, the company who designed the reactor, later stated, “The noise was dismissed at the time as the slamming of a ventilation damper.”<sup>49</sup>

**14:30:** Metropolitan Edison personnel had their first meeting with state officials. Paul Critchlow, press secretary to Governor Thornburgh, requested that a lawyer from the Department of Justice be present. Gerusky, director of radiation protection at the BRP, reported that a radiation release had occurred between **11:00** and **13:30** and stated that the company had not provided appropriate notification of this event. Jack Herbein, vice president of Metropolitan Edison, claimed that the release was a normal ventilation of steam from the reactor and that, in fact, there would probably have to be more controlled releases of steam. When asked why he had not mentioned the release in his earlier press conference, Herbein replied, “It didn’t come up.” During this meeting, Herbein also admitted that there was possible fuel damage at the plant.<sup>50</sup>

**16:30:** Lieutenant Governor Scranton held his second press conference of the day. 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 other experts on the scene remained convinced that there was no danger to public health. Scranton also stated that the company had given out conflicting information and sought to correct it. There had been a release of radiation, but there was no evidence that it was at a dangerous level. He also informed reporters 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 ventilations.<sup>51</sup>

**16:45:** Lieutenant Governor Scranton called a meeting of NRC, federal and state officials in his office to review the status of the incident. Gallina, NRC investigator, stated that “future emissions, if any, will be less than today’s venting from the auxiliary building,” but mentioned possible core exposure.<sup>52</sup> The participants acknowledged the difficulty of communicating and understanding the technical language used to describe the events transpiring at the plant.<sup>53</sup> They 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.

**22:00:** Scranton held his third and final press conference of the day. Scranton informed the press that there was currently no radioactive leakage from the primary building or the reactor itself. He stated that the auxiliary building did contain radioactive material, which was being ventilated. As a result of the ventilation, some radiation was escaping into the atmosphere, but the levels were not dangerous. The NRC officials reported that there had been no human error detected at this point and that the reactor was in a safe condition. They assured the reporters that the operations at the plant were 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 acted responsibly throughout the day.<sup>54</sup>

**23:00:** Thornburgh called a meeting of state and NRC officials at the governor’s mansion.<sup>55</sup> This meeting was the first full briefing that Governor Thornburgh had received. NRC and DER representatives gave Thornburgh a thorough account of what had happened at the Three Mile Island plant throughout the day. They also attempted to anticipate what would happen in the coming hours and days.<sup>56</sup> After the meeting ended, Thornburgh walked out to speak with anti-nuclear demonstrators outside of the front gate of the mansion.<sup>57</sup>

<sup>49</sup>Report of the President’s Commission on The Accident at Three Mile Island. Washington, DC: U.S. Government Printing Office, 1979, p.107.

<sup>50</sup>Governor’s office. “Chronology of the T.M.I. Incident: March 28–April 1, 1979.” (draft prepared in preparation for President’s Commission testimonies).

<sup>51</sup>Governor’s office. Press conference transcript. March 28, 1979, 4:30 p.m.

<sup>52</sup>Governor’s office. “Chronology of the T.M.I. Incident: March 28–April 1, 1979.” (draft prepared in preparation for President’s Commission testimonies).

<sup>53</sup>Martin, Daniel (1980). *Three Mile Island: Prologue or Epilogue*. Cambridge, MA: Ballinger Publishing Company.

<sup>54</sup>Governor’s office. Press conference transcript. March 28, 1979, 10:00 p.m.

<sup>55</sup>Governor’s office. “Chronology of the T.M.I. Incident: March 28–April 1, 1979.” (draft prepared in preparation for President’s Commission testimonies).

<sup>56</sup>Thornburgh, Richard L. Deposition for the President’s Commission on the Accident at Three Mile Island. Harrisburg, PA, August 17, 1979, p. 22–23.

<sup>57</sup>Gailey, Phil (1979, April 4). Pa. Governor’s Problem Was Simply Finding Facts. *The Washington Star*.

## Thursday, March 29, 1979

Thursday, March 29, 1979, began with a number of talk show appearances by many of the key players in the situation, offering differing perspectives on the continued operation of the plant. Walter Creitz, president, Metropolitan Edison, and Daniel Ford, executive director, Union of Concerned Scientists, appeared on Good Morning America, debating the safety of nuclear power plants. Ford pointed to five other plants in the United States that had recently been shut down due to safety problems. Creitz responded, “I think the record of the industry having seventy-two reactors in operation and never injuring any member of the public certainly speaks highly of the—of the safety precautions that are followed in the nuclear industry.”<sup>58</sup> The issue of safety was clearly under question.

**10:00:** Metropolitan Edison held another press conference, with both Herbein and Creitz present. Herbein stated 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. Mayor Reid of Middletown confronted Herbein about the difficulty of getting specific information from the company during the first hours of the incident.<sup>59</sup>

**12:00:** Lieutenant Governor Scranton released a press statement giving an update on the situation at TMI. He stated that off-site radiation was monitored overnight and that the readings were all within normal safety ranges. He added that “there is no need to consider evacuation at this time.”<sup>60</sup>

**12:45:** The lieutenant governor went to TMI and toured the facility. When Scranton asked Metropolitan Edison about visiting the plant to see what was happening for himself, Creitz was hesitant. Scranton insisted, and Creitz finally agreed.<sup>61</sup> Upon arrival at the TMI plant, Scranton was given protective gear to wear and guided through the facilities.

**14:30:** The TMI plant began releasing waste water into the river.<sup>62</sup> That afternoon, Anthony Robbins, the director of the National Institute for Occupational Safety and Health, made a phone call to MacLeod. MacLeod stated that during this phone call Robbins urged him to consider evacuation of the area around TMI. MacLeod set up a conference call between Henderson, Gerusky of the BRP and one of Thornburgh’s staff members. They discussed the possible need for

evacuation, and they all agreed that evacuation was not necessary at the present time. MacLeod suggested 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.<sup>63</sup>

**15:45:** Scranton returned from his tour of the TMI plant, reported his findings to Thornburgh and they decided to report Scranton’s observations to the press and the public.<sup>64</sup>

**16:00:** Joseph Hendrie, chairman of the NRC, ordered the operators at TMI to cease the release of waste water into the Susquehanna River. He was unsure at the time whether the water was hazardous, but wanted to take all necessary precautions in protecting the public.<sup>65</sup>

**17:15:** Governor Thornburgh opened the press conference with assuring the reporters that there was no reason for citizens to be alarmed or to disrupt their daily routines. Nor was there any reason to feel that public health had been affected. Thornburgh acknowledged that there had been conflicting information about the situation at the plant, but believed that operations were now under control.<sup>66</sup> 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...and the danger is over for people off-site.”<sup>67</sup> Thornburgh later reported that he was uncomfortable with this last statement. He thought it was too soon to be issuing those kinds of assurances to the public.<sup>68</sup>

During the afternoon, Mobilization for Survival, a coalition of 250 people against nuclear technology, called a press conference. Dr. George Wald, professor emeritus of biology at Harvard University and winner of the 1967 Nobel Prize for physiology and medicine and Dr. 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.” Both men questioned the safety of the plant, and Sternglass further argued that, given both known and unknown consequences of radiation on human health, the plant should be shut down.<sup>69, 70</sup>

<sup>58</sup>Good Morning America. Transcripts from television program on March 29, 1979. WABC-TV & ABC Television Network: New York.

<sup>59</sup>Metropolitan Edison. Press conference video (WQED), March 29, 1979, 10:00 a.m.

<sup>60</sup>Scranton, William. Press release, March 29, 1979.

<sup>61</sup>Scranton, William. Handwritten notes from Three Mile Island plant tour. March 29, 1979.

<sup>62</sup>Jones, Clifford L. Department of Environmental Resources press release. March 29, 1979.

<sup>63</sup>MacLeod, Gordon. Testimony to President’s Commission on the Accident at Three Mile Island. August 2, 1979, p.137–140.

<sup>64</sup>Governor’s office. “Chronology of the T.M.I. Incident: March 28–April 1, 1979.” (draft prepared in preparation for President’s Commission testimonies).

<sup>65</sup>Jones, Clifford L. Department of Environmental Resources press release. March 29, 1979.

<sup>66</sup>Governor’s office. Press conference transcript. March 29, 1979, 5:15 p.m.

<sup>67</sup>Ibid.

<sup>68</sup>Thornburgh, Richard. Personal communication. Pittsburgh, Pennsylvania, April 2, 2003.

<sup>69</sup>Mobilization for Survival. Press conference video (WQED). March 29, 1979.

<sup>70</sup>Klaus, Mary (1979, March 30). Radiation Above Normal: Scientists Seek Closing. *The Patriot*, p.1.

**22:00:** Higgins called Critchlow and reported that the NRC's assessment of the problem had changed. They had discovered serious fuel damage, and the recovery time could be very lengthy. There was a strong possibility that more emissions would need to be released from the plant.<sup>71</sup> Critchlow informed Thornburgh of the updated status of the plant, as well as the need for the plant to begin releasing waste water again.<sup>72</sup>

Late that evening, staff at DER drafted a press release explaining the wastewater release issues. The press release stated: "TMI needs to release wastewater that contains small concentrations of Xenon, a short lived radioactive gas...DER has reviewed the problem and agrees that the action must be taken...the discharge can be made without harmful radioactive pollution to the river."<sup>73</sup>

James Schlesinger, the secretary of the U.S. Department of Energy, was quoted sometime on Thursday as saying that the DOE would be investigating the accident at TMI. He also stated that the nuclear power industry had a good safety record and emphasized the importance of nuclear power for the United States economy. Without nuclear energy, he stated, the U.S. would be forced to increase dependence on foreign oil and potentially suffer from energy shortages.<sup>74</sup> Senator Edward Kennedy, the chairman of the Subcommittee on Energy of the Joint Economic Committee, stressed the importance of building the plants safely rather than trying to build them quickly.<sup>75</sup>

On Thursday, Lieutenant Governor Scranton received a letter from William Wilcox, the director of the Federal Disaster Assistance Administration. The letter stated that the FDAA would be "pleased to cooperate either in sponsorship or participation, or both, in a critique of the evacuation plans in place." The letter also informed Scranton that the Region III office of the FDAA would assume this responsibility and that the regional director of that office, Bob Adamcik, would soon be contacting Henderson, director of PEMA.<sup>76</sup>

<sup>71</sup>Report of the President's Commission on The Accident at Three Mile Island. Washington, DC: US Government Printing Office, 1979, p.115.

<sup>72</sup>Governor's office. Typed list of daily chronological events. March 29, 1979.

<sup>73</sup>Jones, Clifford L. Department of Environmental Resources press release. March 29, 1979.

<sup>74</sup>He Favors N-Power Despite Accident. (1979, March 29). *The Patriot*.

<sup>75</sup>Schlesinger Is Cautioned. (1979, March 30). *The Patriot*.

<sup>76</sup>Wilcox, William. Letter to William Scranton. March 29, 1979.

## Friday, March 30, 1979

**08:00:** Just after the hour, radioactive steam was released from the plant when James Floyd, supervisor of operations at TMI Unit 2, and other 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 flying over the plant monitoring radiation levels took a reading of 1200 millirems/hour.<sup>77</sup>

**08:40:** Staff at PEMA spoke with the operators at the plant. Floyd reported to PEMA that they had another incident at the plant and recommended getting prepared for evacuation if the release were to get out of control.<sup>78</sup> Henderson asked Floyd, "Are you ready to evacuate?" Floyd said yes, meaning that if the people at the plant had to be evacuated, they were ready to do so. Henderson misinterpreted his answer and thought Floyd was urging that general evacuation measures be taken.<sup>79</sup>

**09:00:** Just before the hour, NRC officials in Bethesda learned about the emission from the plant. They asked Lake Barrett, section leader for the environmental branch at the NRC, for quick calculations about what a dangerous radiation release rate would mean in terms of an off-site dose. Barrett calculated that rate to be 1200 millirems/hour at ground level.<sup>80</sup>

Within fifteen seconds of Barrett's announcement, the plant called the NRC to report the recent radiation reading taken by helicopter of 1200 millirems/hour. Since the two numbers matched exactly, Barrett said it had a "profound effect on the whole center."<sup>81</sup> The NRC 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. After discussing the risks of evacuation, the group decided that they would begin moving people within a five-mile radius. Harold "Doc" Collins, NRC assistant director for emergency preparedness, Office of State Programs, was asked to make the phone call to Pennsylvania authorities recommending evacuation.<sup>82</sup>

**09:00:** Back in Pennsylvania, staff at PEMA contacted Kevin Molloy, director of emergency preparedness, Dauphin County, to inform him about the radiation release at the plant.<sup>83</sup> Henderson, director of PEMA, shared this information with Lieutenant Governor Scranton.<sup>84</sup> Shortly after 09:00, Thornburgh and Scranton discussed the unplanned emissions from the cooling towers. Critchlow called the NRC to confirm that there had been an emission.<sup>85</sup>

<sup>77</sup>Starr, Philip and William Pearman (1983). *Three Mile Island Sourcebook: Annotations of a disaster*. New York, New York: Garland Publishers.

<sup>78</sup>Henderson, Oran. Testimony to President's Commission on Three Mile Island, August 2, 1979.

<sup>79</sup>Martin, Daniel. (1980). Three Mile Island. *University of Baltimore Magazine*.

<sup>80</sup>Barrett, Lake. Testimony to President's Commission on Three Mile Island. August 2, 1979, p. 294-298.

<sup>81</sup>Ibid., p. 299.

<sup>82</sup>Ibid., p. 299.

<sup>83</sup>Molloy, Kevin. Testimony to President's Commission on Three Mile Island. August 2, 1979.

<sup>84</sup>Henderson, Oran. Testimony to President's Commission on Three Mile Island. August 2, 1979.

<sup>85</sup>Governor's office. Typed list of daily chronological events. March 29, 1979.

<sup>86</sup>Henderson, Oran. Testimony to President's Commission on Three Mile Island. August 2, 1979.

<sup>87</sup>Ibid.

<sup>88</sup>*Report of the President's Commission on The Accident at Three Mile Island.* Washington, DC: U.S. Government Printing Office, 1979, p.119.

<sup>89</sup>Henderson, Oran. Testimony to President's Commission on Three Mile Island. August 2, 1979.

<sup>90</sup>Barrett, Lake. Testimony for the President's Commission on the Accident at Three Mile Island. August 2, 1979, p. 303.

<sup>91</sup>Governor's office. "Chronology of the T.M.I. Incident: March 28–April 1, 1979." (draft prepared in preparation for President's Commission testimonies).

<sup>92</sup>Wilburn, Robert. Testimony for The Select Committee's Report of the hearings concerning Three Mile Island. May 11, 1979.

<sup>93</sup>Governor's office. "Chronology of the T.M.I. Incident: March 28–April 1, 1979." (draft prepared in preparation for President's Commission testimonies).

**09:15:** Collins called Henderson at PEMA to recommend evacuation of the area, assuring Henderson that all NRC commissioners supported this action.<sup>86</sup> The recommendation for evacuation was reported to Critchlow and Thornburgh. Instead of immediately accepting the 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.<sup>87</sup>

**09:25:** Henderson called Molloy in Dauphin County to inform him of the impending evacuation. Following procedures, Molloy began to prepare for the evacuation by alerting the firehouses and making a radio announcement about the potential evacuation.<sup>88</sup>

At the same time, Gerusky and Dornsife were trying to reach Thornburgh and Henderson to recommend against evacuation after Gerusky had reached an NRC official at the plant who confirmed his opinion. Gerusky could not get through on the phone lines to either Thornburgh or Henderson, so he and Dornsife personally went to their respective 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.<sup>89</sup>

Shortly after, the operators at the plant called the NRC to tell them that the 1200 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 over the need for evacuation.<sup>90</sup>

**9:30:** Thornburgh assigned Robert Wilburn, secretary of budget and administration, to review existing evacuation plans.<sup>91</sup> Wilburn later said that he did so, moving back and forth between the governor's office, state agencies and local governments. He later expressed concern about the NRC's licensing procedure of plants and felt states should have some input.<sup>92</sup>

**10:00:** Henderson called Critchlow to advise against the evacuation. He told Critchlow about his conversation with Dornsife and informed him that the radiation reading from the BRP did not indicate a need for evacuation.<sup>93</sup>

**10:07:** Thornburgh called Hendrie, chairman of the NRC, to discuss the confusion over the recommendation for evacuation. Hendrie assured him that there was no need for an evacuation, but that the NRC would encourage citizens within ten miles to stay indoors. Thornburgh asked Hendrie to send an expert upon whom he could rely for accurate technical information and much needed advice.<sup>94</sup>

PEMA contacted the four counties within a ten-mile radius of Three Mile Island—Dauphin, York, Lancaster and Cumberland—and told them to extend their evacuation plans out to the 10-mile range. Henderson warned them that they should be prepared for a potential evacuation. He also told these "risk counties" that the governor would be advising all people within the ten-mile radius of the plant to remain indoors for the rest of the morning.<sup>95</sup>

Also on this Friday morning, MacLeod asked Thornburgh to strongly consider evacuating pregnant women and young children from the area. 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.<sup>96</sup>

Simultaneously, in Washington, a U.S. senator contacted the secretary of the Department of Health, Education, and Welfare (HEW), Joseph Califano, to ask what role that department was playing in the TMI situation. Califano was actually unaware of what that department 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 FDA was sampling food in Harrisburg and that the Center for Disease Control was "on call." Califano was concerned that most of the radiation monitoring was being done by pro-nuclear organizations—the DOE, the NRC, and Metropolitan Edison.<sup>97</sup> 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 iodine from affecting the thyroid. They finally found a company willing to provide the HEW with almost 250,000 one-ounce bottles of potassium iodide. The shipments began arriving very early Sunday morning, April 1, 1979, and the last shipment arrived on Wednesday, April 4.<sup>98</sup>

<sup>94</sup>*Report of the President's Commission on The Accident at Three Mile Island.* Washington, DC: U.S. Government Printing Office, 1979, p.119.

<sup>95</sup>Henderson, Oran. Testimony to President's Commission on the Accident at Three Mile Island. August 2, 1979.

<sup>96</sup>MacLeod, Gordon. Testimony to President's Commission on the Accident at Three Mile Island. August 2, 1979.

<sup>97</sup>Martin, Daniel (1980). *Three Mile Island: Prologue or Epilogue.* Cambridge, MA: Ballinger Publishing Company.

<sup>98</sup>*Report of the President's Commission on The Accident at Three Mile Island.* Washington, DC: U.S. Government Printing Office, 1979.

**10:30:** President Jimmy Carter called Hendrie to determine whether the NRC needed assistance. Hendrie told him that the communications were “a mess.” Carter asked for a recommendation of someone who could be sent to TMI to speak for the government. Hendrie replied that Harold Denton was the appropriate person and that Denton was preparing to leave for Pennsylvania.<sup>99</sup>

**11:00:** Metropolitan Edison held another press conference. Herbein stated 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 1200 millirems/hour figure earlier in the day, but Herbein admitted he had not heard that figure. Reporters questioned Herbein closely about the validity of the numbers and whether the release had been controlled or uncontrolled. They also asked about public safety and the previous release of the wastewater from the plant. 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!” This remark upset reporters, who then questioned the responsibility of the plant’s actions toward the public.<sup>100</sup>

**11:15:** President Carter called Governor Thornburgh. Thornburgh asked for an expert to be sent to help with the technical issues. Carter assured him that Denton was on the way for that very purpose. Carter also promised to establish a special communications system that would link the plant, the governor’s office, the White House and the NRC and assigned Jessica Tuchman Mathews, a White House staff member, to monitor the TMI situation.<sup>101</sup>

**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.”<sup>102</sup>

**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.”<sup>103</sup>

**12:30:** Thornburgh held another press conference and reported that he had spoken with President Jimmy Carter. Carter agreed there was no reason for panic or the implementation of emergency measures. Thornburgh also informed the press that Denton from the NRC was on his way to assist with the situation. He advised that because of their particular susceptibility to the effects of radiation, pregnant women and children should leave the area within a five-mile radius of the plant. He announced that the schools within that same area had been ordered to close. He assured the press that the radiation readings were no higher than they had been the day before, but they wanted to take “excess caution” to protect the health and safety of the public. While answering questions, Gerusky said the unplanned release of radioactive gas occurred when they were transferring water and a valve failed. Reporters asked further questions regarding the previous release of wastewater and the various levels of radiation measured throughout the day.<sup>104</sup>

**13:30:** In Washington, representatives from key federal agencies met at the White House. Agencies represented included the NRC, Defense Department, DOE, Joint Chiefs of Staff, FDA, and FDAA. Hendrie, NRC’s chairman, opened the meeting with a briefing on the status of the nuclear plant. The discussion then focused on the organization and coordination of the federal response to the incident and the chain of command for doing so. Jack Watson, Carter’s executive assistant for intergovernmental affairs, informed the group that he was now the White House coordinator for TMI issues. Denton was identified as the sole source of information regarding the plant’s status, and the FDAA was identified as the coordinator of evacuation planning.<sup>105</sup>

After the meeting, Mathews informed Jay Waldman, Governor Thornburgh’s executive assistant, that Watson would now be his contact person at the White House. Mathews also informed Thornburgh that there was a gas bubble present in the reactor, but the situation was stable. She told him that the core was hot and partially uncovered and admitted that “nobody [had] a very good picture of the situation.”<sup>106</sup>

**14:00:** Denton arrived in Harrisburg with a team of a dozen experts and immediately began to assess the situation.<sup>107</sup>

<sup>99</sup>Martin, Daniel (1980). *Three Mile Island: Prologue or Epilogue*. Cambridge, MA: Ballinger Publishing Company.

<sup>100</sup>Metropolitan Edison. Press conference video (WQED), March 30, 1979, 1:00 p.m.

<sup>101</sup>*Report of the President’s Commission on The Accident at Three Mile Island*. Washington, DC: U.S. Government Printing Office, 1979, p.119.

<sup>102</sup>*Ibid.*, p.119.

<sup>103</sup>Manchester, Frank. Memo to IU Directors. March 30, 1979.

<sup>104</sup>Governor’s office. Press conference transcript. March 30, 1979, 12:30 p.m.

<sup>105</sup>Martin, Daniel (1980). *Three Mile Island: Prologue or Epilogue*. Cambridge, MA: Ballinger Publishing Company.

<sup>106</sup>Governor’s office. “Chronology of the T.M.I. Incident: March 28–April 1, 1979.” (draft prepared in preparation for President’s Commission testimonies).

<sup>107</sup>*Report of the President’s Commission on The Accident at Three Mile Island*. Washington, DC: U.S. Government Printing Office, 1979, p.123.

**15:15:** Denton called Hendrie in Washington to share technical information about the plant. Denton concurred with the earlier decision that evacuation was not necessary at the present time.<sup>108</sup> About thirty minutes later, Hendrie called Thornburgh. Hendrie told Thornburgh that the NRC and Metropolitan Edison agreed that the core damage was serious. He confirmed that the bubble was, in fact, present, but that it was stable and had only a small chance of exploding. Hendrie told Thornburgh there was a one percent chance of a meltdown occurring, but a five percent chance of large unplanned releases of potentially radioactive gases from the plant.<sup>109</sup>

**16:05:** Denton called Thornburgh to give him an update on the status of 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. They agreed on the need for another press conference to inform the public about the current status of the plant and the general situation.<sup>110</sup>

**17:15:** The White House held a press conference and sought to minimize the damage from the recent press report regarding a possible meltdown of the reactor. Jody Powell, press secretary to the president, assured the press that although the experts did believe there was a chance of meltdown, that chance was extremely remote.<sup>111</sup>

**18:30:** The NRC released a statement to the media, reporting that there was no imminent danger of a core meltdown at the TMI nuclear power plant; temperatures were coming down; there was evidence of severe damage to the nuclear fuel; there was a large bubble of non-condensable gases in the top of the reactor vessel. Several options to reach a final safe state for the fuel were under consideration, and there had been intermittent releases of radioactivity into the atmosphere.<sup>112</sup>

In Washington, Secretary Califano established an informal group of top health officials to advise him on recommendations that he should be making to the White House, the NRC and the state in order to protect public health. Among the members of the informal group were the surgeon general, the director of the National Institutes of Health, the director of the National Cancer Institute, the director of the Center for Disease Control, the commissioner of the FDA, the director of the National Institute of Safety and Health and the director of the Bureau of Radiological Health. At this time, there was no established system for the HEW to relay this information to other federal officials.<sup>113</sup>

**20:30:** Denton briefed Governor Thornburgh in person for the first time. Denton told Thornburgh that there was extensive fuel damage and that the bubble posed a problem in cooling the core. They discussed meltdown as a worst-case scenario, and Denton recommended that although evacuation was not necessary at the time a twenty-mile evacuation plan should be ready.<sup>114</sup> In addition, Denton admitted that Metropolitan Edison was “thin on technical proficiency,” so he would be bringing more experts in to help solve the bubble dilemma.<sup>115</sup>

**22:00:** Thornburgh and Denton gave their first joint press conference. Thornburgh stated: 1) “no evacuation order is necessary at this time,” 2) “my earlier recommendation that pregnant women and pre-school children stay out of the area within 5 miles of the plant site will remain in effect until at least sometime tomorrow” and 3) “earlier advice that people living within ten miles of the plant site try to remain indoors will expire at midnight.” Denton gave a quick summary of the plant’s status and then fielded questions. Denton also informed the press that the NRC would make the final decision about the options for bringing the reactor to cold shutdown and for dealing with the bubble.<sup>116</sup>

**23:00:** Bob Adamcik from the Federal Disaster Assistance Administration arrived in Harrisburg. His primary responsibility was to organize the federal emergency management response to support an emergency evacuation should that become necessary.<sup>117</sup>

The nuclear industry became more involved in the situation on Friday, March 30. Herman Dieckamp, the president of General Public Utilities (the parent company of Metropolitan Edison), organized a team of experts from all over the country to assist in the management of the situation. The first members of the Industry Advisory Group began arriving in Harrisburg late Saturday afternoon.<sup>118</sup>

Mayor Reid estimated that about one-third of the population of Middletown had evacuated voluntarily. During the afternoon on Friday, fire trucks cruised the streets of Middletown announcing over loudspeakers that people should stay inside with the doors and windows closed.<sup>119</sup>

The governor received a letter from the chairman of the Pennsylvania Public Utility Commission (PUC), Wilson Goode. The PUC is the state’s regulating agency that has legal responsibility for the safety aspects of power generating stations. The letter from Goode requested that the PUC be notified of future briefings and press conferences regarding TMI.<sup>120</sup>

<sup>114</sup>*Report of the President’s Commission on The Accident at Three Mile Island.* Washington, DC: U.S. Government Printing Office, 1979, p.124.

<sup>115</sup>Governor’s office. “Chronology of the T.M.I. Incident: March 28–April 1, 1979.” (draft prepared in preparation for President’s Commission testimonies).

<sup>116</sup>Governor’s office. Press conference transcript. March 30, 1979.

<sup>117</sup>*Disaster Information: Report by the US Department of Housing and Urban Development, Federal Disaster Assistance Administration.* Washington, DC: Author, June, 1979.

<sup>118</sup>*Report of the President’s Commission on The Accident at Three Mile Island.* Washington, DC: U.S. Government Printing Office, 1979, p.123.

<sup>119</sup>Martin, Terrence (Producer). (1998). *CBS Eye on People: I Remember Three Mile Island* [film]. United States: CBS.

<sup>120</sup>Goode, Wilson. Letter to Governor Richard Thornburgh. March 30, 1979.

<sup>108</sup>Martin, Daniel (1980). *Three Mile Island: Prologue or Epilogue.* Cambridge, MA: Ballinger Publishing Company.

<sup>109</sup>Governor’s office. “Chronology of the T.M.I. Incident: March 28–April 1, 1979.” (draft prepared in preparation for President’s Commission testimonies).

<sup>110</sup>Ibid.

<sup>111</sup>Martin, Daniel (1980). *Three Mile Island: Prologue or Epilogue.* Cambridge, MA: Ballinger Publishing Company.

<sup>112</sup>NRC Press Release: Office of Public Affairs, Washington, DC. March 30, 1979, 6:30 p.m.

<sup>113</sup>Champion, Hale. Testimony to President’s Commission on the Accident at Three Mile Island. April 26, 1979.

## Saturday, March 31, 1979

**02:00:** Hendrie called the TMI plant. Victor Stello, NRC director of the Office of Operating Reactors, answered the phone. Hendrie was still very concerned about the oxygen buildup in the reactor and the status of the bubble. Hendrie asked Stello to enlist the help of other experts onsite to investigate the situation.<sup>121</sup>

**09:30:** Metropolitan Edison released a statement to the press. The press release stated that, “Radiation levels monitored at the site have decreased since yesterday...minor emissions from the auxiliary building ventilation stack are temporarily continuing...all proper authorities are being notified of these emissions...action is underway to prevent the gas bubble from increasing in size...estimated between six and fourteen percent of the fuel elements have been damaged.” The press statement also announced that American Nuclear Insurers and Mutual Atomic Energy Liability Underwriters, the insurance agencies for Three Mile Island, had set up a temporary office in Harrisburg for the convenience of citizens. Claims could be made for damages resulting from the situation, including evacuation costs and/or away-from-home living costs.<sup>122</sup>

**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.<sup>123</sup>

**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. The White House wanted all further information about the situation to be released by the NRC.<sup>124</sup>

**12:00:** Denton held a press conference and asserted that the crisis would not be over until the reactor was in a state of cold shutdown. He informed the press that the NRC was still examining the bubble data and, at this point, did not believe the bubble posed a threat. When asked about the potential health effects of the accident, Denton estimated the probability of latent cancer as only one or two percent. Another reporter asked about responsibility issues, and to that Denton

replied, “We hold the licensee responsible for the safety of the plant...we issue the licenses and the conditions under which he operates...so ultimately we would certainly bear the responsibility if (inaudible) that we would consider injurious to public health and safety.”<sup>125</sup>

**13:00:** Roger Mattson, NRC director of the Divisions of Systems Safety in the Office of Nuclear Reactor Regulation, and the others working on the bubble problem in Bethesda estimated that, “There was considerable time, a matter of several days, before there would be a potential combustible mixture in the reactor coolant system.”<sup>126</sup>

**14:45:** Hendrie met with reporters and announced that the engineers might attempt to force the bubble out of the reactor, and if they did so, a precautionary evacuation of ten to twenty miles might be necessary. He explained that the methods by which they would force the bubble out could cause more damage and possibly cause the bubble to explode.<sup>127</sup>

**15:27:** Mattson met with the NRC commissioners and assured them that there were still “several days” left before the bubble would become potentially explosive. Shortly after that meeting, Mattson was notified by the consultants working with him on the situation that their calculations now indicated the bubble was “on the threshold of the flammability limit.”<sup>128</sup>

**16:25:** Thornburgh called Hendrie to discuss and clarify the issues raised in Hendrie’s press conference. Hendrie recommended that pregnant women and young children continue to stay away from the area surrounding the plant. Although Hendrie had mentioned precautionary evacuation in the earlier press conference, he now said it was unnecessary.<sup>129</sup>

**20:23:** The first story about the NRC’s concern regarding the potential explosiveness of the bubble was released. Critchlow immediately called Denton to check the accuracy of the story. Denton told him the explosion was merely a “postulation.”<sup>130</sup> Critchlow called the governor to discuss a possible statement and then issued a press release to assure the public that the “news report about the gas bubble in the nuclear reactor becoming potentially explosive is not true, according to Harold Denton, director of the office of nuclear reactor regulation... by 3 p.m. today, they had ascertained that there was no danger of explosion... he said there is no cause for alarm.”<sup>131</sup>

<sup>121</sup>Martin, Daniel (1980). *Three Mile Island: Prologue or Epilogue*. Cambridge, MA: Ballinger Publishing Company.

<sup>122</sup>Metropolitan Edison. Press Release, March 31, 1979, 9:30 a.m.

<sup>123</sup>Scranton, William. Personal notes regarding telephone report from Harold Denton at TMI.

<sup>124</sup>Metropolitan Edison. Press conference transcript. March 31, 1979, 11:00 a.m.

<sup>125</sup>Nuclear Regulatory Commission. Press Release: Office of Public Affairs, Washington, DC. March 31, 1979, 12:00 p.m.

<sup>126</sup>*Report of the President’s Commission on The Accident at Three Mile Island*. Washington, DC: U.S. Government Printing Office, 1979, p.129.

<sup>127</sup>Nuclear Regulatory Commission. Press conference transcript. March 31, 1979, 2:45 p.m.

<sup>128</sup>*Report of the President’s Commission on The Accident at Three Mile Island*. Washington, DC: U.S. Government Printing Office, 1979, p.129–130.

<sup>129</sup>Ibid.

<sup>130</sup>Governor’s office. “Chronology of the T.M.I. Incident: March 28–April 1, 1979.” (draft prepared in preparation for President’s Commission testimonies).

<sup>131</sup>Governor’s office. Press release, March 31, 1979.



**23:00:** Denton and Thornburgh held a late night 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 Jimmy Carter would be visiting the site tomorrow. 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 also noted that better communication between NRC representatives in Pennsylvania and those in Bethesda was important.<sup>132</sup>

**23:00:** Pennsylvania State Senator George Gekas called Thornburgh and Scranton to complain about the lack of information being communicated to the people at the local level.<sup>133</sup>

Henderson drafted an evacuation preparation memo with information about the situation at TMI for PEMA employees, so they were informed and prepared when answering questions from the public or the media. The memo reported that the state emergency operations center was fully operational 24 hours a day. It also stated that in the event of an evacuation, 24,525 people would have to be evacuated from a five-mile radius; 133,675 from a ten-mile radius; and 630,075 from a twenty-mile radius.<sup>134</sup>

**24:00:** Middletown officials were printing handbills explaining what to do in the event of an evacuation. On Sunday morning, they handed the directions out door to door to the citizens who had stayed in the area.<sup>135</sup>

### Sunday, April 1, 1979

Throughout Saturday night and into the morning hours of Sunday, many citizens called the county emergency offices (Dauphin, York, Cumberland, Lancaster) to inquire about the bubble situation. They were concerned and confused by the conflicting reports they had received throughout the previous day.

**02:00:** Scranton called Dauphin County to temper their concern about the evacuation threat. He set up an appointment with Molloy for later that morning to discuss the issues surrounding evacuation and the information flow and gave Molloy a list of reasons why they should not evacuate.<sup>136</sup>

During the night, the federal officials were also concerned about the situation. Mathews spoke with Denton and learned that he was not concerned about the bubble exploding. Denton explained Stello’s calculations that suggested the bubble was not dangerous, and assured Mathews that he was more comfortable with the situation than he had been on Saturday.<sup>137</sup>

**09:00:** Still believing that the bubble could potentially explode at any minute and worried about the president’s visit to the plant, Hendrie and Mattson set out for Harrisburg by car. Their intentions were to warn everyone of the potential explosiveness of the plant and to prevent the tour from taking place.<sup>138</sup>

**10:00:** Scranton met with Henderson and Molloy. Henderson expressed his frustration with the difficulty in obtaining information. Molloy and other Dauphin County officials also expressed their concerns about the information situation. Molloy later said Scranton “was surprised; extremely, I think. I don’t think that he was fully aware of some of the problems that we were facing at our particular level and, perhaps, this was part of the problem, too.”<sup>139</sup> In Molloy’s testimony before the House Select Commission he said, “Information, misinformation, or the lack of timely information was one of the major problems that was faced by our office during the crisis period...The accepted chain of command is local to county to state to federal...The chain of command was disrupted because of a total breakdown in accurate and timely information from state and federal agencies...At the local level there was just a total collapse of information.”<sup>140</sup>

**12:50:** Hendrie and Mattson arrived at the hangar at Harrisburg International Airport where Denton, Stello, Thornburgh, and others were waiting for President Carter to land. Stello and Mattson had a heated exchange about the possibility of the bubble exploding. Mattson insisted that the bubble could explode at any time, while Stello held strong that his calculations were correct, that the bubble was not dangerous.<sup>141</sup>

**13:00:** President Carter and the first lady arrived, and they were escorted to a briefing session about the situation. Denton explained that there was still controversy and uncertainty about the fate of the bubble in the reactor, although he believed in Stello’s calculations. A decision was then made to follow through with the plans to visit the plant. President Carter, Mrs. Carter, Denton and Thornburgh toured the plant together. During the visit, President Carter, who was trained as a nuclear engineer in the navy, had many technical questions about the situation.<sup>142</sup>

<sup>132</sup>Governor’s office. Transcript of press conference. March 31, 1979, 11:00 p.m.

<sup>133</sup>Molloy, Kevin. Testimony to President’s Commission on Three Mile Island, August 2, 1979, p.15.

<sup>134</sup>Henderson, Oran. Memo regarding evacuation. March 31, 1979.

<sup>135</sup>Reid, Robert. Testimony for The Select Committee’s Report of the hearings concerning Three Mile Island. June 8, 1979, p. 23.

<sup>136</sup>*Report of the President’s Commission on The Accident at Three Mile Island.* Washington, DC: U.S. Government Printing Office, 1979.

<sup>137</sup>Martin, Daniel (1980). *Three Mile Island: Prologue or Epilogue.* Cambridge, MA: Ballinger Publishing Company.

<sup>138</sup>*Report of the President’s Commission on The Accident at Three Mile Island.* Washington, DC: U.S. Government Printing Office, 1979.

<sup>139</sup>Molloy, Kevin. Testimony to President’s Commission on Three Mile Island, August 2, 1979, p.15.

<sup>140</sup>Molloy, Kevin. Testimony for The Select Committee’s Report of the hearings concerning Three Mile Island. June 8, 1979.

<sup>141</sup>*Report of the President’s Commission on The Accident at Three Mile Island.* Washington, DC: U.S. Government Printing Office, 1979.

<sup>142</sup>Ibid.

Immediately following the president'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."<sup>143</sup>

While the president's tour of the plant was taking place, Hendrie, Mattson and Stello worked to explain the discrepancy between the two sets of calculations. It was finally concluded that Mattson's group had used a flawed formula. After Stello found the error, Mattson's group was also convinced that the bubble was not dangerous.<sup>144, 145</sup> Information about the differing calculations was not reported to the public or even to state officials on Sunday.<sup>146</sup>

**14:00:** Paul Leese, director of emergency management, Lancaster County, called a meeting of county emergency management directors at the Lancaster County Courthouse. He invited all county directors within a twenty-mile radius of the plant to discuss how they could get the information they needed about the situation at TMI.<sup>147</sup>

**16:20:** Wilburn called a meeting of state officials and Adamcik from the FDAA to discuss TMI, primarily regarding evacuation issues. The group considered plans for evacuation under conditions of different degrees of severity and risk. They were also concerned about local industries, Bethlehem Steel and Hershey Foods, that would need to be shut down in an orderly process to avoid severe systems damage. During this meeting, MacLeod also announced that the stock of potassium iodide they had received was defective-some of the bottles were not labeled and the instructions were inadequate.<sup>148</sup>

**17:34:** Thornburgh received a telegram from Senator James Lloyd that read, "I implore of you, evacuate a fifteen mile radius of the Three Mile Island. Thank you."<sup>149</sup> Thornburgh received many similar pleas from various people and groups, but he resisted them due to the risks inherent in the evacuation process and his confidence in the technical information provided by Denton.

**20:45:** State officials held another meeting regarding evacuation issues, with Hendrie and Denton from the NRC present. Denton showed a diagram of the bubble and explained the reduction in the bubble's size (from 800 cubic feet to 300 cubic feet). When Hendrie talked about the "thinness" of the technical personnel at Metropolitan Edison, Thornburgh asked, "What does that tell you about your licensing situation?" Hendrie did not respond.<sup>150</sup>

On Sunday, Thornburgh released a press statement issuing "the following directives, recommendations, and advisories:

- 1) I am directing that state offices continue to conduct business as usual, beginning Monday morning. Recognizing the special difficulties some families may have returning to the area this weekend, however:
  - (A) Personal or vacation leaves will be granted, and charged, to all absentees.
  - (B) Pregnant women and mothers of pre-school children who live within a five-mile radius of the power plant, and who are also state employees, will be excused, with no loss of vacation time.
- 2) I am continuing to advise pregnant women and mothers of pre-school children to stay out of the area within a five-mile radius of the plant.
- 3) I am recommending that schools located within five miles of the plant remain closed until further notice, consistent with the precautions taken last Friday."<sup>151</sup>

### Monday, April 2, 1979

On Monday morning, George Troffer, a Metropolitan Edison employee, leaked to the press that the bubble was likely gone.<sup>152</sup>

**11:15:** NRC officials held a press conference regarding the current status of TMI. Denton began the press conference by informing the press that the NRC has "issued a bulletin regarding this accident to all the other B&W designed plants which are operating...These bulletins require the licensee to inform the NRC in ten 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."<sup>153</sup>

<sup>143</sup>Thornburgh, Richard and Jimmy Carter. Press conference transcript. April 1, 1979, 2:00 p.m.

<sup>144</sup>*Report of the President's Commission on The Accident at Three Mile Island.* Washington, DC: U.S. Government Printing Office, 1979.

<sup>145</sup>Gazit, Chana (Producer/Writer). (1999). *Meltdown at Three Mile Island* [Film]. United States: American Experience.

<sup>146</sup>*Report of the President's Commission on The Accident at Three Mile Island.* Washington, DC: U.S. Government Printing Office, 1979.

<sup>147</sup>Leese, Paul. Testimony for The Select Committee's Report of the hearings concerning Three Mile Island. July 24, 1979.

<sup>148</sup>Knouse, Mark. Personal notes from emergency management meeting. April 1, 1979, 4:20 p.m.

<sup>149</sup>Lloyd, James. Telegram to Governor Thornburgh. March 1, 1979, 7:34 p.m.

<sup>150</sup>Governor's office. Typed list of daily chronological events. April 1, 1979.

<sup>151</sup>Governor's office. Press release. April 1, 1979.

<sup>152</sup>Governor's office. Typed list of daily chronological events. April 1, 1979.

<sup>153</sup>Nuclear Regulatory Commission. Press conference transcript. April 2, 1979, 11:15 a.m.

State and federal officials held three meetings on Monday to discuss evacuation. Monday was also the first day that low radioactive iodine levels were found in milk.<sup>154</sup>

**19:00:** Scranton spoke with General Frank Townend regarding the evacuation of 80,000 people that was carried out in Luzerne County in 1972 during Hurricane Agnus. By Townend’s estimates, Central Pennsylvania would need eight hours’ notice to complete the evacuation. Townend also informed Scranton that although an evacuation plan had been established in Luzerne County, many people chose their own evacuation routes, and he felt that most people had actually forgotten the protocol.<sup>155</sup>

Thornburgh issued a press release announcing that, “the recommendations, advisories and directives issued Sunday regarding schools, state employees and residents living within a 5-mile radius of the power plant are to remain in effect until further notice.”<sup>156</sup>

A local paper ran a story about Schlesinger’s continued support for the nuclear licensing bill that would cut the usual time for the plant licensing process (10-12 years) in half. Schlesinger was quoted as saying that atomic power “will and should be part of the energy mix.” He also argued that the bill was intended to reduce the amount of paperwork involved in the process, not to cut back on safety.<sup>157</sup>

The legislative coordinator at the DER sent a legislative proposal to Rick Stafford in the Governor’s office. The proposed legislation would enhance the Commonwealth’s capabilities for surveillance and emergency radiation response by increasing its budget to hire additional staff and some new material. The bill was filed that day.<sup>158</sup>

On Monday evening, *The Evening News* published stories and information about the evacuation plans of Lancaster, York, Dauphin, and Cumberland counties. All evacuation plans were ready and outlined in the newspaper so people had an idea about where they should go in the event of an emergency.<sup>159</sup>

<sup>154</sup>Knouse, Mark. Personal notes from emergency management meeting. April 2, 1979, 7:50 p.m.

<sup>155</sup>Scranton, William. Personal notes from the telephone conversation with General Frank Townend. March 2, 1979, 7:00 p.m.

<sup>156</sup>Governor’s office. Press release. April 2, 1979.

<sup>157</sup>Schlesinger Backs N-License Bill. (1979, April 3). *Pittsburgh Post-Gazette*.

<sup>158</sup>Department of Environmental Resources, Commonwealth of Pennsylvania. HB53-PR55. March 29, 1979.

<sup>159</sup>Lancaster County Area Ready for Evacuation. (1979, April 3). *The Evening News*.

## Tuesday, April 3, 1979

On Tuesday morning, Lieutenant Governor Scranton met with Wilson Goode to discuss PUC’s response to the incident at TMI. Goode informed Scranton of the pressures being put on him to speak with the press, but explained that he did not feel comfortable making any official statements until the plant was completely shut down and the safety of the citizens was assured. Goode said until these assurances could be made, “it is irresponsible to draw conclusions about the economic impact of the incident to the utility and the rate payers.” Goode also explained that the PUC would make a decision within 90 days about whether the rate payers or the company would have to bear the burden of the losses occurring as a result of the accident. If the company was required to do so, it could result in bankruptcy. He estimated that with TMI shut down, Metropolitan Edison would have to purchase \$600,000 worth of power per day. The PUC would make the decision whether to put a ceiling on the added energy costs.<sup>160</sup>

**13:00:** The governor held a meeting to discuss the potassium iodide options and made the decision to have the drug ready, but not to distribute it.<sup>161</sup>

**14:40:** Denton held a press conference and announced that the situation remained stable. He told the press that the fear of a hydrogen explosion was no longer a significant problem, and the bubble had been eliminated for all practical purposes.<sup>162</sup>

**21:30:** Thornburgh called a press conference to confirm Denton’s earlier remarks that the bubble had dissipated and the reactor core was stable. Thornburgh explained that various plans were being explored to bring the reactor to a state of cold shutdown. He expressed his gratitude to Denton and praised him for a job well done, but added that, “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.”<sup>163</sup> After the press conference and Thornburgh’s announcement about a 24-hour citizen information center, the Governor’s Action Center (GAC) was bombarded with phone calls until after midnight.<sup>164</sup>

<sup>160</sup>Scranton, William. Personal notes from meeting with Wilson Goode. March 3, 1979.

<sup>161</sup>Thornburgh, Richard L. Deposition for the President’s Commission on the Accident at Three Mile Island. Harrisburg, PA, August 17, 1979, p. 81–82.

<sup>162</sup>Nuclear Regulatory Commission. Press conference transcript. April 3, 1979, 2:40 p.m.

<sup>163</sup>Governor’s office. Press conference transcript. April 3, 1979, 9:30 p.m.

<sup>164</sup>Governor’s Action Committee. “Establishing a Viable Public Information Center During Crisis Situation: The Role and Activities of the GAC during TMI Nuclear Accident,” March-April, 1979.

Note: All sources, except books, are located in the Thornburgh Papers at the University of Pittsburgh.

## DISCUSSION: QUESTIONS FOR FURTHER INQUIRY

Learning from past events is a process of inquiry and interpretation. In the policy process, substantive questions require reflection and review, given changing conditions, personal interactions and basic premises for action. Importantly, also, the methods and techniques of policy analysis change, and new technologies are now available to support public policy making. New hazards also emerge and create other difficulties and risks. The events of the crisis at Three Mile Island warrant re-examination in the light of current conditions in the national and global debate on energy policy and security. The following sets of questions serve to stimulate discussion and reflection on relevant lessons from this case for current policy decisions regarding energy and safety in the 21st century.

What was the current state of scientific knowledge regarding the consequences of radiation upon human health in 1979? How has this information changed in 2003? To what extent did the actual experience of the accident at Three Mile Island shape the policy options regarding the effects of radiation on human health today?

What were the primary gaps in information processes that became evident in the Three Mile Island crisis? Where did these gaps occur, and who was responsible for closing them? To what extent do these same gaps exist in inter-organizational and inter-jurisdictional problem solving today? Who is responsible for closing these gaps today, and what technologies might be used today to provide support for policy makers operating on complex issues at different locations with different levels of authority and responsibility?

What were the primary economic costs involved in the Three Mile Island crisis, and who or what organizations were expected to bear those costs? What were the primary benefits of nuclear energy, as perceived in 1979, and by which groups? How would these benefits and costs be perceived today? Why not use the word “cleanup” here? It has been the usual word for the economic costs specifically related to the accident vs. national energy matters although relates to those larger matters, too.

What factors regarding the technology of operating nuclear plants present the greatest risk to communities in which they are located? In what ways could these risks be overcome? To what extent can technological risks be managed safely by organizational procedures and policies? What is the threshold of “acceptable risk” in producing electrical power for communities?

What is the role of public policy in balancing safety against technical risk, cost against benefit, economic development against public participation in designing workable strategies for producing energy? What is the appropriate role for each of the public jurisdictions involved in managing a nuclear plant: the local municipalities and counties, the state agencies and the federal agencies? What should be the primary criteria on which public policy should be based in the domain of energy or other policy arenas?

Please think through these questions in reference to the TMI experience, and draw your own conclusions with respect to their applicability to the production and distribution of energy in the U.S. today.

## PREVIEW OF FOUR SUBSEQUENT CASES

The accident at Three Mile Island involved a complex set of interactions among many agencies, actors and conditions in the public policy arena that warrant closer study. Some represent recurring problems that, with thoughtful reflection, can inform current policy making. The Thornburgh Papers are rich in detailed documentation of these policy issues and consequently provide a rare opportunity to use history as a guide to future policy design and implementation. Four additional cases are planned in this series that will delve more deeply into specific policy issues. They are outlined briefly below.

### Decision Making under Conditions of Uncertainty

This case will focus on the difficult conditions that are imposed on policy makers when they are in a position of legal responsibility for action, but are facing conditions that they have never seen before and that carry potentially high risk for the citizens whose well-being they are entrusted to serve. In this case, six primary roles will be used to explore the premises for decision that were used

by policy makers in reference to the potential threats presented by the accident at Three Mile Island Reactor 2. These roles are: governor of Pennsylvania; president, Metropolitan Edison; chairman, Nuclear Regulatory Commission; mayor, Middletown; director, Pennsylvania Emergency Management Agency; and chairman, Union of Concerned Scientists. Each of these roles encompasses specific responsibilities and serves a designated clientele. Further, each of these roles was influenced significantly by the personalities who filled them during these intense days, March 28–April 3, 1979.

In today's policy arena, similar threats are possible that reveal the tensions among local, state and federal authorities. These tensions create further dynamics among scientific, technical, economic and ethical perspectives that are articulated by the different parties in the policy making process. In this mix of known and unknown factors, public officials play a crucial role not only in determining, but also in interpreting and explaining, a strategy of action that serves the public interest. Again, short-term, medium-term and long-term goals are involved in these policies, and presenting these goals to a wary and worried public in ways they can understand is critical to effective policy making. The second case will explore the issues surrounding making judgments about public action under uncertain conditions.

### **Safety vs. Technology in High Risk Environments**

A major issue in the Three Mile Island accident was whether high risk technologies, such as nuclear power plants, could be safely managed by human organizational policies and procedures. At the core of this issue is the innovative capacity of human beings to conceive and implement technologies that can produce remarkable benefits for society versus the limited cognitive capacity of human beings to manage the detailed, rigorous procedures that are required for these technologies to operate safely, without risk to other human beings or wider communities. 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 individual communities for the promise of larger benefits for the wider society? This is a dilemma that is faced not only in the production of energy, but also in such challenging policy arenas as space flight and biotechnology.

In this case, the clientele groups that are led by the policy makers named above will be studied for their response and reaction to the dilemma posed by safety vs. technology in the TMI case. These clientele groups include the citizens of Pennsylvania, the shareholders of Metropolitan Edison, the members of the U.S. Congress who oversee the work of Nuclear Regulatory Commission, as well as the president in whose administration it functions. Further, there are specific groups of citizens: the citizens of Middletown, Pennsylvania, who live and work in the neighborhood of the plant; the emergency response personnel of Pennsylvania who respond to threats and emergencies; and the scientists of the nation who watch closely as new technologies are tried in practice and attempt to assess the consequences of these actions for the society as a whole. The third case will examine the issue of safety vs. technology from the perspectives both of those who design and manage the technology, as well as those who use and are affected by its products.

### **Intergovernmental Communication and Coordination**

A recurring problem in the Three Mile Island case was the difficulty of communicating highly technical information to people from widely varying backgrounds that had legitimate reasons for needing to know and understand the status of the nuclear reactor and the implications of that status for their safety and well-being. Equally important was the need for public officials who are responsible to the citizens in their jurisdiction to understand clearly what risks exist and what options to take for the protection of the citizenry. This is a perennial problem in complex policy arenas, and it will be examined in greater detail, looking specifically at the kinds of information that are required for informed policy making at different levels of organizational and jurisdictional authority.

This case will also raise the issues of different types of information—scientific, economic, ethical and political—that are factored into an overall strategy of action for public policy, and the appropriate balance among them. The tensions among these perspectives that were revealed in the Three Mile Island case in 1979 are relevant for the design and implementation of public policy for current issues today, such as homeland security, infectious diseases and managing economic growth and development. The fourth case will explore in more detail policies

and procedures that both facilitated and obstructed intergovernmental communication and coordination in 1979, and what lessons they might offer for managing complex intergovernmental action today.

### **Role of the Media in High Risk Conditions**

Democratic policy making assumes an active role for an independent press that informs citizens of public problems and frames strategies for action in terms that they can understand. This classic role becomes more complex when the issues involve highly technical problems and uncertain consequences. In these conditions, the reporters may not have the scientific or technical background to interpret the issues accurately; public officials also may not have the scientific or technical background to present the issues effectively. As a result, complex, technical problems may be exacerbated by lack of understanding on the part of both officials and citizens. Further, organizations with particular interests may focus on selected aspects of a more complex problem, leading to a misrepresentation of the whole issue.

This case will examine the kinds of public education and feedback processes that are central to informed policy making in a democracy, and specifically the role of the press in serving as a critical medium of information to the citizenry. The Thornburgh Papers provide an unusually rich set of documents for this study, ranging from televised press conferences to newspaper clippings from both regional and national newspapers to commentary on the role of the press in academic journal articles and books.

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*Note: All sources, except books, are located in the Thornburgh Papers at the University of Pittsburgh.*

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## CASE STUDY

EDITOR/MANAGING EDITOR

Terry Miller

CONTRIBUTORS

Louise Comfort

Carrie Miller

COMMUNICATIONS CONSULTANT

Janet Horsch

## INSTITUTE OF POLITICS

DIRECTOR

Dennis P. McManus

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HCPI INTERN

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DIRECTOR EMERITUS

Morton Coleman

## UNIVERSITY MARKETING COMMUNICATIONS

COMMUNICATIONS MANAGER

Jeanie Goff

DESIGNER

Matthew M. Chverchko

PRODUCTION COORDINATOR

Chuck Dinsmore

EDITORIAL ASSISTANT

Aviva Selekmán



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*Institute of Politics*

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