
Staff Report To

The President's Commission On

**THE
ACCIDENT AT
THREE MILE
ISLAND**

Report Of The Public's Right To

Information Task Force

THE PRESIDENT'S COMMISSION ON
THE ACCIDENT AT
THREE MILE ISLAND

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REPORT OF THE
PUBLIC'S RIGHT TO INFORMATION TASK FORCE

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I. SUMMARY OF REPORTS FROM PUBLIC'S RIGHT TO INFORMATION TASK FORCE

For every group even remotely connected to the nuclear power industry, the accident at Three Mile Island (TMI) was a time of truth. The training of plant personnel, the durability of equipment, the planning of civil defense officials, the responsiveness of public health officers -- all were tested under harrowing conditions in the glare of national publicity.

Members of the news media and public information officials were also tested far more severely than ever before in the history of the nuclear debate. Journalists were not unfamiliar with most of the issues in this debate. Battles between pro- and anti-nuclear forces, sit-ins at plant sites, acrimonious public hearings, and statements of "visible" experts have alerted the public and the media to such issues as radioactive waste disposal and the health hazards from low-level radiation. One study, prepared by the Battelle Human Affairs Research Center, estimates that there has been a 400 percent increase in print media coverage of nuclear power issues between 1972 and 1976.

Reporting the TMI story, however, posed new and different problems. For the first time, reporters had to cover a potentially serious accident as it was happening. Past accidents -- none so serious as TMI -- had ended before the media were fully aware of the problem. Coverage of accidents at Fort St. Vrain (Colorado) and Browns Ferry (Alabama), for example, was largely retrospective. The drama and urgency of an on-going news event were missing.

Officials of Metropolitan Edison (Met Ed) and the Nuclear Regulatory Commission (NRC) were not permitted the luxury of responding to questions in a matter of hours or days, although it sometimes took them that long. Rather, they were besieged with inquiries almost as soon as the news media learned that a general emergency had been declared at the site. Instead of a regional story, TMI quickly became a national and international story which attracted a worldwide press corps numbering at any one time from 300 to 500 journalists, including reporters from Japan, France, Sweden, West Germany, Italy, Spain, and Great Britain.

The accident at Three Mile Island became a test of the ability of reporters to deal with technological complexity and factual uncertainty while working under enormous pressure. It was, equally, a test of the ability of Met Ed and NRC public information officials to inform the public under crisis conditions.

It was the job of the Public's Right to Information Task Force to determine how well this test was met. To this end, the task force carried out a number of historical, journalistic, and quantitative studies. The findings, presented in this volume, are divided into two sections: an assessment of the performance of public information officials and an assessment of the performance of the news media. Additional material compiled by the task force but not appearing in this volume is available in the Commission's archives.

ASSESSMENT OF THE PERFORMANCE OF PUBLIC INFORMATION OFFICIALS

To make this assessment, the task force first looked at the past relationship between Met Ed and the community and Met Ed and the news media in the area around Three Mile Island. It tried to determine how much information was made available about the plant before the accident, and how prepared the utility was to provide information during a crisis.

The task force then focused on five specific events during the accident and attempted to determine who knew what about each event, when they knew it, and whom they told. In this manner it recreated the flow of information during the accident. Given the dependence of the news media on sources of information, particularly in a complex event like a nuclear accident, the task force felt it would be impossible to assess media performance without first assessing the accuracy and timeliness of the information being made available to the media. A structural overview of the public information departments at Met Ed and the NRC, and an assessment of how they performed during the accident, is therefore provided in this report.

ASSESSMENT OF THE PERFORMANCE OF THE NEWS MEDIA

The task force interviewed 41 journalists who covered the accident on-site and from Washington, D.C.; their view of the problems involved and an assessment of their own performance are contained in the second section of this report.

The centerpiece of this research is a content analysis of media coverage of the accident in some of the most influential news organizations in the United States: the two wire services (AP and UPI), the three broadcast networks (ABC, CBS, and NBC), The New York Times, the Washington Post, and the Los Angeles Times. Also included is the Philadelphia Inquirer and the Harrisburg Evening News. This section also contains a discussion of what a content analysis is, and the methodology for the study.

The report includes a discussion of the amount of coverage appearing about the accident.

The task force examined how each of the five events referred to above was covered, and noted how much background or contextual information was presented for each so that the significance of the event could be understood by the public.

In other parts of the content analysis the task force assessed whether the media presented a more alarming or reassuring view of the accident; how the media presented radiation information; and what sources of information were used by the media.

To supplement this content analysis, a qualitative assessment of the accident's coverage in 43 newspapers around the country was undertaken. The purpose was to note the tone of the coverage as expressed in headlines, pictures, and picture captions. The task force also wanted to determine if overall coverage of the accident in these newspapers differed from the sample in the content analysis.

This volume also contains an analysis of the role of local radio during the accident.

The Commission's archives hold additional material on the above topics, including an instruction book for the content analysis. Also in the archives are a report on media coverage of previous nuclear accidents; tapes and transcripts of the interviews with 41 journalists who covered the accident; results of a survey of editorial opinion on nuclear power both before and after TMI; a report on foreign press coverage; and transcripts of the interviews conducted by task force members with more than 100 participants in the accident.

OVERVIEW OF FINDINGS

The quality of information available to the public in a potentially life-threatening situation is of critical importance. This information has a significant bearing on the capacity of people to respond to the accident, on their emotional health, and on their willingness to accept guidance from responsible public officials. Those managing the accident, as well as journalists, must meet a rigorous standard in providing timely, accurate, and understandable information to the public.

During the accident at Three Mile Island, neither public information officials nor journalists served the public's right to know in a manner that must be achieved in the event of future accidents. Each side failed for different reasons, and to a different degree. The most common explanations -- that the utility lied, that the NRC covered up to protect the nuclear industry, or that the media engaged in an orgy of sensationalism -- do not hit the mark. Indeed, reporters often showed great skill in piecing together the story, and some NRC officials disclosed information that was truly alarming and damaging to the industry's image because they thought the public had a right to know it. Even the utility's shortcomings in the public information area (and there were many) are attributable in part to self-deception, as well as to a lack of candor. Given the enormous investment at stake for Met Ed, the company's unwillingness to recognize the severity of damage to the reactor is not surprising. But such hesitancy presents serious problems for serving the public's right to know during the early stages of an accident.

The public information problems of Met Ed and the NRC were rooted in a lack of planning. Neither expected that an accident of this magnitude -- one that went on for days, requiring evacuation planning -- would ever happen. In a sense they were victims of their own reassurances about the safety of nuclear power. As a result, neither had a "disaster" public information plan. Neither had personnel trained in disaster

public relations. Coordination between the utility and the NRC was so weak that responsibility for informing the public in the first crucial hours of the accident was undefined. The NRC did not know when, or whether, to send its own public information people to the site; when or where to set up an NRC press center. Met Ed's public information department was an operation with low status and no policy input. It had never dealt with a national press corps. It was experienced at producing educational materials promoting nuclear power, but inexperienced at fielding specific questions about nuclear power from critics or journalists. The utility did not have an appropriate spokesperson during the accident. The job fell to John Herbein, the vice president for generations, and he proved unsuited to the task.

Perhaps the most serious failure in the planning stage was that neither the utility nor the NRC made provision for getting information from people who had it (in the control room and at the site) to people who needed it. This group included other utility executives, the governor of Pennsylvania, the NRC's Incident Response Center (IRC) in Bethesda, public information officials, journalists, and members of the public. These people all needed information to make technical decisions in managing the accident, or to make decisions on evacuation and public health.

Met Ed officials at the company's headquarters in Reading, Pa., or officials with the parent company, General Public Utilities (GPU) in New Jersey often did not know what employees at the plant knew. NRC officials in Bethesda did not know what their colleagues from the Region I office knew, nor did they know what Met Ed was planning. These fundamental communication problems persisted for the first days of the accident. The internal communication problem proved particularly damaging to Met Ed because the inadequate flow of information was often mistaken for intentional coverup. On the morning of the first day of the accident, for example, while Met Ed President Walter Creitz was telling some reporters that there had been small off-site radiation releases, Met Ed public information officials in the same building were telling reporters there had been none. Creitz and Blaine Fabian, Met Ed's public information head, had neglected to pass on this information to their own staff. This is one reason the utility lost credibility early in the accident. In addition, little effort was made by the NRC (until day six) to supply the media with technical briefers who could answer questions. Met Ed was almost as deficient in this regard. Both organizations left reporters pretty much to their own devices.

Given this confusion among sources, and given that reporters are almost entirely dependent on such sources for their information, it is not surprising that news media coverage of the accident in the first few days was also confused. For a number of issues during the accident -- such as the danger posed by the hydrogen bubble or the size of a radiation release which led to evacuation concerns on Friday -- it is obvious that the only type of "accurate" reporting possible under the circumstances was the presentation of contradictory and competing statements from a variety of officials.

The news media were also somewhat unprepared, and this added to the prevailing confusion. While it is a goal of many journalistic organizations to develop specialists who are expert in particular areas (such as business reporting, science and medical reporting, or national political reporting), few reporters who covered TMI had more than a rudimentary knowledge of nuclear power. Some, by their own admission, did not know how a pressurized, light water reactor worked, or what a meltdown was. Few knew what questions to ask about radiation releases so that their reports could help the public evaluate health risks.

A number of reporters in the first group to arrive were assigned to the story because they were available, and because they could cover almost anything on short notice -- not because they had nuclear power as a regular "beat." Good journalists can absorb vast amounts of unfamiliar material while on the job; that happened during TMI, but the effort required to make sense of the story was enormous. It was not like covering a political campaign or an airplane hijacking, where at least the vocabulary of the sources and the vocabulary of the reporters are the same.

The nuclear industry has developed its own language, and this was a handicap for the many journalists who did not speak it. A seemingly simple question of whether the core of the reactor had been uncovered and damaged elicited responses couched in terms of "ruptured fuel pins," "pinholes in the cladding," "melted cladding," "cladding oxidation," "failed fuel," "fuel damage," "fuel oxidation," "structural fuel damage," or "core melt." The distinctions are real, but for reporters not speaking the language, it was like suffering from color blindness at a watercolor exhibition. William Dornsife, a nuclear engineer with the Pennsylvania Bureau of Radiation Protection (BRP), describes the language problem:

It was an experience ... considering the technical questions I was being asked and the lack of understanding of my answers. It's difficult for an engineer to respond to a technical question with anything except a technical response. And I knew by the questions I was getting back that the press people just didn't understand what was going on, and I knew there was going to be a real problem about getting information out to the public.

Neither Met Ed nor the NRC provided enough technical briefers in the first 5 days of the accident to help journalists interpret what they were being told.

Reporters also arrived with different objectives. Some were science writers with an interest in the reactor. Some were medical writers with an interest in public health and safety. Others were sent to write "color" stories and focus on reactions of citizens and evacuees. It would have been difficult under ideal circumstances for a public information program to serve the many needs of the reporters who covered the accident. Given the information program in place when the reporters arrived, it proved to be an impossibility.

In the important first few days of the accident, when evacuation decisions had to be made, the public's right to know was not served because the conditions under which all parties operated were such that the public's right to know could not be served. Imagine, for a moment, the problems confronting a reporter who arrived at the TMI site Wednesday afternoon. Met Ed had no central information facility. No one was distributing schematics of the plant or answering basic technical questions about the reactor. No one was describing what a general emergency was or why it was important. There was no central source, or good source, of up-to-date radiation information (not Wednesday, and not any day during the first week, when this was, arguably, the most crucial type of information for the public). There were no telephone facilities for reporters. The utility was answering phone queries from its Reading headquarters nearly 60 miles from the site, but the information being dispensed was late and, as it turned out, much too optimistic about conditions in the plant. There was no official spokesman for the utility until John Herbein took the part at an impromptu press conference early Wednesday afternoon. But no transcript was made of his remarks to aid reporters or Met Ed public information people who missed the press conference.

The situation was no better for the reporters trying to reach the NRC by phone. In Region I, Karl Abraham, the only public affairs officer, was swamped with calls beginning at 9 a.m. He found it impossible to get accurate updates on reactor status from the NRC technicians at work on the floor above him, in part because their information was poor, and in part because Abraham's reluctance to take the technicians away from their work to answer questions. He knew little more Wednesday afternoon and evening than he knew Wednesday morning. In Bethesda the small public affairs staff manning the phones was relying on an information chain stretching from the Met Ed operators on-site, to NRC investigators on-site, to the NRC's King of Prussia and Bethesda centers, to Joseph Fouchard, the NRC's chief public information officer. When Fouchard had information to relay to the other public information officers, he was often stymied by jammed phone lines. This information chain was destined to produce confusion, inaccuracy, and frustration.

In addition to Abraham, other public information and technical officials at Met Ed and the NRC were also reluctant to interrupt those trying to manage the accident with requests for information. They did not want to distract them from what was viewed as a more important task. The lack of technical liaison people who could perform this function without getting in the way was a serious deficiency.

The flow of information was so weak that at one point Wednesday afternoon Blaine Fabian, Met Ed's public information chief, drove from Reading to the site vowing to send back current information to his staff. He was not successful. Abraham says he did not really find out what was going on at TMI until late Wednesday night when he was driving to the site and heard on his car radio a press conference involving Lt. Governor Scranton and NRC Region I representatives. Abraham says he did not really find out what was going on at TMI until late Wednesday night when he was driving to the site and heard on his car radio a press conference involving Lieutenant Governor Scranton and NRC Region I representatives.

What, then, was a journalist working the phones on Wednesday and Thursday collecting? Fragmentary and often contradictory bits of information from a variety of uncoordinated sources. Often reporters were feeding these fragments back to ignorant sources, so that reporters were, in a sense, briefing information officers with what they heard elsewhere. Fabian, for example, learned from a reporter that the utility had declared a general emergency Wednesday morning. This is information that he should have had immediately for dissemination to the media.

Complicating matters further, some members of Congress were receiving different, often more speculative and pessimistic reports from the NRC on such subjects as core damage and operator error. Reporters who had not received this information heard it second-hand from Congressional sources. One result of this was to make reporters even more suspicious of the information they were getting from Met Ed and the NRC's Region I officials on-site. The NRC made no effort to coordinate the information going to Congress with that going to the news media.

The communication problems were not just organizational, however. Certain kinds of information were slow to reach the news media and the public. A close examination of utility and NRC press releases and public statements during the first few days shows a reluctance by Met Ed and the NRC to discuss operator error as a cause of the accident, blaming it instead on equipment malfunction. The utility minimized the extent of damage to the reactor core, and it was not forthcoming about present (and the likelihood of future) radiation releases beyond the boundaries of the plant. In light of what was known at the time, its early statements to the media on radiation release and core damage were misleading and deficient.

Utility officials acknowledge they were unwilling to release "pessimistic" information to the public until it was confirmed to their satisfaction. But, on the questions of core damage, operator error, and radiation release off-site, confirmation came well after some members of Congress and the NRC were aware of the problems. Utility officials were also more optimistic than others that the accident had run its course, and that the worst was over. Given the utility's stake in the resolution of the accident and in the public's perception of the accident, this optimistic approach is understandable, but not excusable. While there is no unambiguous evidence of coverup, some utility officials showed a marked capacity for self-deception, and others hid behind technical jargon to obscure answers to troublesome questions.

The NRC's behavior in the area of public information is more difficult to categorize. From the first day the NRC distanced itself from the utility, refusing to participate in joint press conferences or issue joint press releases. In this regard the NRC chose to adopt the role of regulator rather than the role of booster. With the exception of some of the NRC's Region I people on-site (who tended to side with the utility's view of the accident), NRC staff members spoke more bluntly about the accident. An analysis of "alarming" versus "reassuring" statements quoted by the press during the accident shows that the NRC in Washington/Bethesda was a chief source of "alarming" statements about

such subjects as the possibility of meltdown and the explosiveness of a hydrogen bubble in the reactor. Along with anti-nuclear groups, some NRC officials provided the news media with some of the most frightening information during the accident.

On the other hand, the commissioners were frequently less candid than their own staff. On Friday afternoon, for example, the NRC took the unusual step of writing a press release to undercut a UPI story on the chance of a meltdown at TMI. The UPI story was based on information provided to the media by an NRC staffer -- information which NRC Chairman Joseph Hendrie conceded was accurate. In another instance, a commissioner was reluctant to label what happened at TMI an "accident" because of the damage this could do to the industry's image.

For the first 2 days of the accident, reporters were given almost no help in reporting this extremely complex story. Such basic public information techniques as setting up a press center where reporters could gather and question sources, holding regular press conferences, or providing background information kits and graphics, were virtually neglected in the heat of the crisis. Nor, by Friday morning, the third full day of the accident, were plans afoot to improve the flow of information. Indeed, a number of officials thought the emergency had ended on Thursday and that by Friday the press corps would be heading home.

The catalyst for change came on Friday at about 9 a.m., because of the extraordinary confusion over a 1,200 millirem (mrem) per hour release of radiation from the plant. Not only were the public and press unable to learn what Met Ed was doing that morning in releasing radioactive gas into the atmosphere, but the NRC in Bethesda could not either. Alarmed at how large the release was, and not knowing whether the release was controlled or uncontrolled, planned or unplanned, stopped or continuing, on- or off-site, NRC officials at the Incident Response Center in Bethesda under Harold Denton's direction recommended to the Pennsylvania Emergency Management Agency (PEMA) that an area around the plant be evacuated out to 5 or 10 miles. Because Governor Thornburgh was receiving conflicting advice from people within his own administration, he did not seriously consider carrying out the NRC's recommendation, which had been made without consulting the NRC. He settled instead on an advisory that the public stay indoors, followed by a recommendation that pregnant women and young children leave the area. These developments, plus the discovery of a hydrogen bubble in the reactor, made it clear that the crisis was not over and that the communications problems could no longer be ignored. Given the inability of either the utility or the NRC to fashion a communications policy, the White House stepped in with a solution.

After telephone calls involving President Carter, Governor Thornburgh, Chairman Hendrie, Press Secretary Jody Powell, and Thornburgh's press secretary Paul Critchlow, Hendrie dispatched Harold Denton to the site on Friday. Denton, director of the Office of Nuclear Reactor Regulations (NRR), had one assigned role. He was to improve the flow of information about the reactor to the governor, the President, and the NRC. Upon his arrival he fell into a second role: chief briefer for the press on technical matters.

Over the next two days the White House -- principally Jody Powell, Jack Watson, and Eugene Eidenberg -- orchestrated other moves to centralize communications and limit the number of people talking to the press in an official capacity. On Friday it was decided that Denton would be sole source of news on-site on the status of the reactor. Governor Thornburgh would be the sole source of news on evacuation matters. And the White House would be the sole source of news about the federal emergency relief effort that had been assembled in Harrisburg. (The governor's press secretary, Paul Critchlow, was already establishing a system at his level for curbing statements from the Bureau of Radiation Protection, the Department of Environmental Resources, and the Pennsylvania Emergency Management Agency, logical sources of news for the media.)

First to withdraw from the public information scene was Met Ed. The utility was more than happy to comply with a White House suggestion following a disastrous press conference Friday morning for which John Herbein had been improperly prepared. Herbein found himself unable to answer questions about the dumping of waste water into the Susquehanna on Thursday and the 1,200 mrem per hour venting that morning. His performance fueled press fears that the utility was covering up information, and made Denton's arrival Friday afternoon a welcome event.

The NRC in Bethesda was next to withdraw, although they were less willing to close their doors to the press. Throughout Friday, Saturday, and Sunday morning NRC experts in Bethesda viewed the reactor as less stable, and potentially more dangerous, than did Met Ed or NRC experts on-site. This alarm reached the public through the NRC's Bethesda press center. On Friday afternoon, a UPI story quoted an NRC official on the subject of meltdown as saying that although it was not likely, it was not impossible. And on Saturday night, an AP story quoted an unnamed NRC official as saying that the hydrogen bubble in the reactor could explode in as little as 2 days. Both of these stories were considerably more pessimistic than the news coming from the site, and both alarmed the public in the area of the plant. The stories angered Governor Thornburgh, the White House, and NRC officials on-site.

After the AP story, the White House requested that the press center in Bethesda be closed and that all NRC comment come from the site. By the time the President visited the site on Sunday, this policy had been carried out.

Given the prevailing confusion, the White House effort to centralize information was not an unreasonable response. Reporters did not make much of a fuss at the time. Denton proved to have an easy manner -- the provost of Pennsylvania State University praised him for his "clear, understandable voice" -- and his job was made less difficult because most of the unpleasant surprises occurred before he arrived on the scene. After Saturday his tenure coincided with the shrinking of the bubble and the increasing stability of the plant.

In retrospect, however, most journalists interviewed by the task force disapprove of this centralization. They pointed out that while Denton was reassuring, and an improvement over his predecessors, he had

some faults. His language at press conferences was filled with jargon. He was usually unavailable to the press and in a single press conference each day, he could not possibly have discussed all the subjects of interest to the media. He did not really attempt to handle radiation information; and he had trouble explaining the term "man-rem" to reporters. His first few press conferences at the Middletown press center were chaotic.

The most serious drawback to this approach, however, is that Denton could not speak for the many groups with a different perspective on the accident, such as the utility and the various state and federal agencies monitoring radiation release and reporting on public health consequences. (Radiation information was being collected and coordinated by the Department of Energy (DOE) every day at 5 p.m. at an airport meeting near the site, but reporters were not informed of these meetings and were not invited to attend.) Reporters believe that the public's right to know would be better served through some sort of structured contact with all these groups.

Was the public's right to know served by the NRC and Met Ed? Clearly not. Both institutions suffered from a lack of planning, an absence of specialists in disaster public relations, a shortage of technical briefers strategically placed throughout the system, and an inability to correct these shortcomings in the pressure of the moment. The utility also permitted itself to underestimate the seriousness of the accident, leading to a loss of credibility with the news media and the public. As for the state, it failed to make information on radiation releases available and it kept county civil defense directors around the state uninformed by cutting PEMA out of the information flow.

It is not quite as clear how well the news media served the public's right to know, in large part because reporters do not act alone in covering such a story. They are dependent on the quality of their sources and these sources, for the most part, were unavailable or misinformed at TMI. In addition, while the number of public information people at Met Ed, the NRC, and the state is relatively small, and their problems were similar, hundreds of reporters covered the accident for a wide variety of news organizations. Since no two performed the same way, it is more difficult to characterize the performance of the media.

Before the accident, the media in the vicinity of the plant engaged in little investigative reporting. By their own admission reporters ignored the regular press releases from Met Ed on technical problems at TMI-2, and no serious effort was made to connect the weekly releases into a pattern indicating that the new reactor was experiencing operating difficulties. Because the news releases from Met Ed were written in technical language which reporters could not understand, and because the media did not adopt a questioning or adversarial stance toward the utility, the public could not have been prepared for the events beginning March 28.

In reporting events during the accident, confusion among sources was mirrored by confusion in the media. The media reported denials by Met Ed (now known to be misleading) that the core had been uncovered and

that operator error had contributed significantly to the accident. The burst of radiation Friday morning found reporters quoting sources saying that the release was both planned and unplanned, controlled and uncontrolled, expected and unexpected. Directly conflicting statements on the possibility of a hydrogen explosion, the size of the bubble, and the status of the accident (growing more or less serious) also appeared with frequency.

Some stories, such as the core being uncovered and seriously damaged, and relatively benign industrial waste water being dumped by the utility into the Susquehanna River, reached the media late. The media did not report at all during the week that Met Ed had to clear the control room at TMI of unnecessary personnel because of high radiation levels; that coolant pumps had not been acting properly on Wednesday; and that NRC engineers had been wrong in their predictions that the hydrogen bubble would explode if left alone. None of this information was made available to reporters at the time and they were unable to dig it out on their own.

The media also missed a number of political stories during the week. They failed to report the dispute between the NRC and the state over who should take responsibility for the dumping of waste water into the Susquehanna on Thursday. They missed the confusion at the NRC Friday morning that led to the recommendation that the governor order an evacuation, a recommendation he did not accept.

The media were forced to report some stories at second hand because first-hand sources were not making the information available. These stories included the extent of fuel damage; the role of operator error in the accident; and the very fact that a general emergency had been declared.

Also significant for the public's right to know is that many "facts" about the accident were not presented in a context that could be understood by the layperson. For example, the media did not explain the significance of a general emergency. Nor did they provide background or contextual information in coverage of the health hazards posed by releases of radioactivity at the plant. Here the reportage was almost always incomplete. Rarely was a radiation number accompanied by a unit of measurement (such as millirems), a rate (per hour), an explanation of the type of radiation being measured, an indication of where it was being measured, when it was measured, and the amount of time a person would have to be exposed to this source of radiation to incur some sort of health risk. Neither Denton nor Thornburgh was giving out such information with regularity or precision and not many reporters had the background to know what questions to ask.

While the media can be criticized for missing some stories and failing to provide a context for others, they were generally not guilty of the most common criticism leveled at them: that they presented an overwhelmingly alarming view of the accident. To test this hypothesis, the Task Force on Public's Right to Information noted each time the news media in the sample published or broadcast an evaluative statement on such topics as the likelihood of a meltdown or a hydrogen explosion, the status of

the accident, the health threat posed by the radiation releases, the general threat of danger, and the like. The numbers of alarming and reassuring statements were then compared.

Overall, the media offered more reassuring statements than alarming statements about the accident. This was true for such topics as the status of the accident (seen as improving); the threat of danger (seen as none, or not immediate); the health effects of radiation exposure (seen as none); the necessity for evacuation of the area (seen as not necessary); and the management of the accident (seen as being handled by competent and knowledgeable individuals).

The media were somewhat more alarming than reassuring on meltdown (seen as a possibility); the quality of information being made available during the accident (seen as unreliable); the future of nuclear power (seen as not bright); and the state of evacuation preparedness (seen as inadequate). In general, no special effort by the media was detected to portray the accident as any worse than it was.

Nor was the hypothesis supported that other news media around the country were more sensational in tone than the main disseminators of news: the wire services, the broadcast networks, The New York Times, the Washington Post, the Los Angeles Times, the Philadelphia Inquirer, and the Harrisburg Evening News. A nonquantitative examination of 43 newspapers from Alaska to Hawaii to Maine showed that, with just two exceptions (the New York Post and the New York News) the papers did not sensationalize or overplay the story in headlines, captions, use of pictures, or choice of material. If anything, headlines throughout the first week were more sober than the real confusion at the site, and in Bethesda, warranted.

One positive result of the TMI experience is that reporters and nuclear engineers were introduced to each others' problems, needs, and peculiarities. Nuclear experts should now realize that technical language, which to them offers precision and economy of expression, can be maddeningly opaque when aimed at reporters under deadline pressure. Instead of leading to more accurate stories, technical language can produce ambiguity, confusion and frustration.

Nuclear experts should also recognize that reporters are fond of "What if?" questions that inevitably lead to discussions of worst possible outcomes. Unless such questions are handled candidly, but with sensitivity, the answers can produce an unintended sensational effect. The likelihood of a meltdown or hydrogen explosion must be communicated in a concrete, specific manner. Journalists as a group view abstract constructs of uncertainty with distaste -- particularly at a press conference called to discuss a potential public hazard about which there is already great concern. Over time, scientists and journalists may find it possible to develop jointly a commonly accepted set of definitions in this language of uncertainty.

Finally, nuclear experts should be prepared to cope with the media's need for an instant reaction to events. Says Harold Denton:

[There] was this feeling that you couldn't ever have even a second . . . or five minutes to reflect on [a new development] And engineering doesn't work that way.

The Public's Right to Information Task Force believes the material in its staff reports and the body of material in the Commission's archives, supports the view that the public's right to know during the accident at TMI was ill-served by Met Ed, the NRC, and most of the other institutions directly involved. There were serious lapses in planning and an unwillingness, particularly by the utility, to be candid. Where the news media erred, those errors are usually traceable to the sources on which the media relied. Reporters, however, compounded these errors through a general ignorance of nuclear technology and the language of radiation. Both sides had difficulty communicating the probability of catastrophic events and the limits to scientific knowledge.

One hopes that, in the area of public information, the response of the NRC and the utilities will be to develop a disaster public information program. A proper information role for the utility must also be found. The basic decision to be made is whether any utility can be trusted to provide accurate and prompt information about the accident. Met Ed did not meet this test at TMI.

To the extent that journalists learn about nuclear technology and develop a standard of comparison for future accidents, they can help reduce the confusion that surrounds such accidents. But the major and initial burden in the area of public information falls on those who operate and regulate the nuclear plants. They failed to serve the public's right to know at Three Mile Island.

ASSESSMENT OF PUBLIC INFORMATION

II. LIST OF PARTICIPANTS

ABRAHAM, Karl	Public Affairs Officer, NRC, Region I. Answered press queries in King of Prussia on Wednesday; went to site Wednesday night and set up shop in Critchlow's office in Harrisburg; handled logistics for NRC press center in Middletown.
AHEARNE, John F.	NRC Commissioner.
ARNOLD, Robert C.	GPU Vice President, Generation. Advised Miller and control room on management of accident.
ASSELSTINE, Jim	Minority Counsel, Nuclear Regulatory Subcommittee, Senate Committee on Environment and Public Works. On Thursday, accompanied Senator Gary Hart and a Congressional delegation to site.
BERNERO, Robert	Assistant Director for Material Safety Standards, Office of Standards Development, NRC. Came to TMI Monday as technical briefer for the press in Middletown press center.
BARRETT, Lake	Section Leader, Environmental Evaluation Branch, Division of Operating Reactors, NRC. Worked in the Incident Response Center in Bethesda throughout the accident. Early Friday morning, he calculated the possibility of a 1,200 mrem on-site release from the plant.
BOTVIN, Judith	Met Ed Public Information Representative. Member of Fabian's staff, answered press calls in Reading.
BRADFORD, Peter A.	NRC Commissioner.
BURING, Michael R.	Met Ed Radiation Protection Specialist. Briefed Creitz on Wednesday and answered press phone calls in Reading as technical briefer.
CASE, Edson	Deputy Director, Office of Nuclear Reactor Regulation, NRC. Remained in Bethesda; approved AP story on bubble's explosiveness Saturday night; answered press queries throughout accident.
CASSIDY, James	Disaster Planner, Pennsylvania Emergency Management Agency. Took anonymous call from control room Friday morning about 1,200 mrem burst.
COHEN, Larry	Staff member, Office of Inspection and Enforcement. Worked in the IRC; received news of the dumping from Region I about 2:30 p.m. Thursday.

COLLINS, Harold	Assistant Director for Emergency Preparedness, Office of State Programs, NRC. Placed call to Henderson, relating NRC's recommendation of evacuation Friday morning.
COMEY, John	Public Information Officer, Pennsylvania Emergency Management Agency. Made some imprecise statements to news media leading Critchlow to decide to curb PEMA's public information activities.
CREITZ, Walter	Met Ed President.
CRITCHLOW, Paul	Press Secretary to Governor Thornburgh. Beginning Friday, almost all information issued by state came from his office; acted as information gatherer for governor.
CURRY, Donald	Met Ed Public Information Representative. Member of Fabian's staff, answered press calls from Reading and later from Hershey press center.
DAVIS, John	Acting Director, Office of Inspection and Enforcement NRC. Remained in IRC Bethesda; dealt with radiation problems.
DEAL, Joe	Acting Chief, Environmental Protection and Public Safety Branch, Operational and Environmental Safety Division, Department of Energy. Senior officer collecting radiological information on-site; never available to press or public.
DENTON, Harold	Director, Office of Nuclear Reactor Regulation, NRC. Went to TMI Friday to be agency's chief spokesman.
DIECKAMP, Herman	GPU President.
DORNSIFE, William	Nuclear Engineer, Pennsylvania Bureau of Radiation Protection. First to announce, at Scranton's first press conference Wednesday, that radiation had been detected off-site.
DUBIEL, Richard W.	Met Ed Supervisor, Radiation Protection and Chemistry. Worked on radiation problems from control room; reported to Miller.
DUNCAN, Peter	Special Deputy Secretary, Pennsylvania Department of Environmental Resources. Confirmed that content of industrial waste water Met Ed intended to dump was within government regulations.
EIDENBERG, Eugene	Deputy Assistant to the President for Intergovernmental Affairs. Worked for Watson; involved in closing East-West press center Saturday night.

EISENHUT, Darrell	Deputy Director, Office of Nuclear Reactor Regulation, NRC. Remained at IRC in Bethesda throughout accident; briefed foreign delegations.
FABIAN, Blaine	Met Ed Manager of Communication Services. Chief public information officer for utility; reported to Schleicher.
FLOYD, James R.	Met Ed Supervisor, Station Operations, Unit Two. Opened vent Friday morning releasing 1,200 mrem burst.
FOUCHARD, Joseph	Director, Office of Public Affairs, NRC. Worked out of IRC in Bethesda until Friday; privy to all information from site; accompanied Denton to TMI on Friday.
GALLINA, Charles O.	Investigation Specialist, Safeguards Branch, NRC, Region I. Briefed Governor Thornburgh Wednesday and Thursday; part of NRC team on-site.
GERUSKY, Thomas	Director, Pennsylvania Bureau of Radiation Protection. First to determine that radiation had reached Harrisburg on Wednesday.
GILINSKY, Victor	NRC Commissioner. Senior member of NRC when Hendrie absent; ordered East-West press center opened, then closed it Saturday night.
GOSSICK, Lee	Executive Director for Operations, NRC. Remained in IRC in Bethesda as head of Emergency Management Team.
GRIER, Boyce	Director, NRC, Region I. Arrived on-site Friday and helped manage accident.
GRIMES, Brian	Assistant Director for Engineering and Projects, Office of Nuclear Reactor Regulation, NRC. Remained at IRC in Bethesda; briefed press Friday with Dudley Thompson; in part responsible for Friday UPI meltdown story.
GROSS, William	Met Ed Information Coordinator. Answered questions at Observation Center Wednesday.
HART, Gary	Chairman of Senate Subcommittee on Nuclear Regulation. Briefed daily, beginning Wednesday, by NRC; went to site Thursday. Important source for news media.
HAVERKAMP, Donald R.	Reactor Inspector, Reactor Operations and Nuclear Support Branch, NRC, Region I. Part of NRC team on-site.

HENDERSON, Oran K. Director, Pennsylvania Emergency Management Agency. Received Collins advisory to evacuate Friday morning; public information function curbed by Critchlow.

HENDRIE, Joseph M. NRC Commissioner. Recommended to Governor Thornburgh Friday morning that pregnant women and young children be advised to leave; later recommended a 20-mile evacuation. Briefed press Saturday on explosiveness of bubble.

HERBEIN, John G. Met Ed Vice President, Generation. Utility's chief spokesman during accident.

HIGGINS, James C. Reactor Inspector, Reactor Operations and Nuclear Support Branch, NRC, Region I. Arrived on-site Wednesday as part of NRC team; with Gallina, briefed governor and lieutenant governor Wednesday and Thursday night; called Critchlow Thursday night to say that core damage was worse than originally thought.

HIGGINBOTHAM, Leo Assistant Director, Division of Fuel Facility and Materials Safety Inspection, Office of Inspection and Enforcement, NRC. Worked in the IRC; heard about dumping from Region I about 2:30 p.m. on Thursday.

HILBISH, John G. Met Ed Supervisor, Licensing. Answered press calls on technical matters from Reading and Hershey.

HOWARD, E. Morris Director, Division of Safeguards Inspection, Office of Inspection and Enforcement, NRC. Approximately 6:00 p.m. Thursday, he conveyed to Region I Hendrie's order to stop the dumping.

INGRAM, Frank Assistant to the Director, Office of Public Affairs, NRC. Fouchard's deputy; after seeing AP advisory about bubble's explosiveness Saturday night called Benjamin and checked story for accuracy; ran East-West Towers press center.

KEIMIG, Richard Chief, Reactor Projects Section, NRC, Region I. Among first NRC officials on-site Wednesday.

KENNEDY, Richard T. NRC Commissioner.

KLINGAMAN, Richard Met Ed Manager, Generation Engineering. Worked with Hilbish and Troffer answering press queries from Reading.

KLUCSIK, David	Met Ed Coordinator of Editorial Services. Member of Fabian's staff; edited company house organ; answered press queries by phone from Reading and Hershey.
KNOUSE, Mark	Executive Assistant to Lieutenant Governor Scranton. Accompanied him to site on Thursday.
KUEHN, Carl	Duty Officer, Pennsylvania Emergency Management Agency. Took Floyd's call about 1,200 mrem burst Friday morning.
KUNDER, George A.	Met Ed Superintendent, Technical Support, TMI-2. Worked in control room under Gary Miller.
LAMISON, Kenneth	Operations Officer, Pennsylvania Emergency Management Agency. Works with Williamson.
MACLEOD, Gordon, M.D.	Pennsylvania Secretary of Health. Played role in recommending evacuation of pregnant women and children; opposed distribution of potassium iodide; in office only 12 days before accident.
MCKEE, Ken	GPU Manager, Public Affairs. Reports to Murray; answered press questions over phone from Parsippany, N.J., headquarters; relieved Seldomridge as manager of Hershey press center.
MATHEWS, Jessica Tuchman	Staff Member, National Security Council. Liaison between NRC and White House.
MATTSON, Roger	Director, Division of Systems Safety, Office of Nuclear Reactor Regulation, NRC. Reports to Case; was convinced that bubble was explosive until Sunday afternoon when Stello persuaded him otherwise.
MILLER, Gary P.	Met Ed Manager, Generation Station. Managed accident from control room.
MILNE, David	Public Information Officer, Pennsylvania Department of Environmental Resources. Moved to Critchlow's office to gather information for Thornburgh.
MOLLOY, Kevin	Emergency Management Coordinator, Dauphin County. Responded to warning call from Henderson Friday morning by advising preparation for evacuation.

MURRAY, William B.	GPU Vice President, Communications. Went to TMI with Dieckamp to aid in management of accident.
ODOM, Col. William E.	Military Assistant to the Assistant to the President for National Security Affairs. Attended White House meeting at which centralized information policy was developed.
PAGE, Roland	Speechwriter and Deputy Press Secretary to Governor Thornburgh. Gathered information for Critchlow.
PARKER, William H.	Met Ed Supervisor, Administration. Dubbed "Mayor of Trailer City"; chiefly concerned with logistics during crisis.
POWELL, Jody	Press Secretary to the President. Helped plan strategy of centralizing information beginning Friday.
REILLY, Margaret	Chief, Environmental Control, Pennsylvania Bureau of Radiation Protection. Reports to Gerusky; Met Ed checked with her before dumping waste water on Thursday.
ROBBINS, Anthony, M.D.	Director, National Institute for Occupational Safety and Health (NIOSH), Department of Health, Education, and Welfare. Recommended to MacLeod that pregnant women and young children be evacuated.
SCHLEICHER, Ernest	Met Ed, Vice President, Consumer Affairs. Fabian reported to him; ran company from Reading while Creitz at TMI.
SCRANTON, William W., III	Lieutenant Governor, State of Pennsylvania. As head of PEMA governing body, kept in touch with Henderson about evacuation plans. Managed accident for state until Thursday evening.
SELDOMRIDGE, Howard	Met Ed Director of Public and Internal Information. Fabian's deputy; set up Hershey press center; remained in charge until relieved by Ken McKee.
SNIEZEK, James	Director, Division of Fuel Facilities and Materials Safety Inspection, NRC. Worked in NRC's Incident Response Center in Bethesda.
STELLO, Victor	Director, Division of Operating Reactors, Office of Nuclear Reactor Regulation, NRC. Denton's main technical advisor on-site; disagreed with Mattson on explosiveness of bubble.

STOHR, J. P.	Environmental and Special Project Sections, NRC, Region I.
THOMPSON, Dudley	Executive Officer for Operations Support, Office of Inspection and Enforcement, NRC. He and Grimes briefed press at East-West center Friday afternoon; his statements were basis of UPI story on meltdown.
TROFFER, George J.	Met Ed Manager, Generation Quality Assurance. Enlisted by public information staff to answer press phone queries from Reading and Hershey.
VILLFORTH, John C.	Director, Bureau of Radiological Health, Department of Health, Education, and Welfare. Passed to NRC a recommendation that potassium iodide be distributed to workers on-site as soon as possible.
VOLLMER, Richard	Assistant Director for Systems and Projects, Office of Nuclear Reactor Regulation, NRC. Chief NRC official on-site until Denton and Hendrie arrived Friday.
WALDMAN, Jay	Executive Assistant to Governor Thornburgh.
WATSON, Jack	Secretary to the Cabinet, Assistant to the President for Intergovernmental Affairs. Transmitted White House order that NRC take over public information on-site; involved in decision Saturday night to close East-West press center.
WILBURN, Robert	Secretary of Budget and Administration, Office of the Governor. Attended Thornburgh's briefings and, with Scranton, served as liaison with PEMA beginning Friday.
WILLIAMSON, Craig A.	Deputy Director, Pennsylvania Emergency Management Agency.

III. PUBLIC INFORMATION CHRONOLOGY

MARCH 28

Morning

- 7:40 Herbein and Fabian write two sentence release announcing reactor was shut down by "malfunction" and will be out of service "for about a week." No mention made of general emergency or possibility of off-site radiation.
- 9:00 Arnold of GPU dictates press statement to Murray and Creitz's office that mentions site emergency and "possibility of a general emergency."
- 9:30 Miller and Gross write press release that says no off-site radiation has been found "and we do not expect any." No mention of general emergency.
- 10:30 NRC press release mentions radiation released in containment, but no off-site measurements.
- 10:55 Scranton's first press conference, with Dornsife and Henderson. Dornsife first mentions off-site traces of iodine-131.

After-noon

- 12:00 Fabian and Botvin draft release saying "there have been no recordings of any significant levels of radiation, and none are expected outside the plant."
- 12:00 GPU press release mentions "some low-level release of radioactive gas beyond the site boundary."
- 12:15 Release from Creitz's office describes "increases of several millirems per hour at the Observation and Information Center at the edge of the plant site."
- 1:30 Herbein meets press at the Observation Center; admits to failed fuel and to readings of 7 mrems per hour at the site boundaries.
- 3:45 NRC Preliminary Notification (PN) says that "Safety Injection was secured manually approximately five minutes after actuation. It was subsequently resumed." Also says that "at 8:30 a.m., site boundary radiation levels were reported to not be significant (less than 1 mrem per hour). The source of activity was stated to be failed fuel."
- 4:30 Scranton's second press conference, with Dornsife, Henderson, Gerusky. Confirms off-site measurements of radiation; expresses lack of confidence in Met Ed's information. Gerusky says low-level radiation has been measured in downtown Harrisburg.

5:00 NRC press release says that "low levels of radiation have been measured off the plant site," up to "about three milliroentgens per hour about one-third mile from the site." No mention of radiation measurements taken in Harrisburg.

Evening 10:00 Scranton's third press conference, with Friess of DOE, Higgins and Gallina of NRC's Region I. Gallina admits fuel failure, but says "absolutely [no] indication" of human error.

12:15 NRC press release says off-site radioactivity measures "one-third of a milliroentgen per hour over the Harrisburg area."

MARCH 29

Morning 9:00 Met Ed update says coolant pump is running normally.

10:00 Herbein and Creitz's press conference at Hershey Motor Lodge. Herbein "won't rule out" human error; says failed fuel one percent at most.

10:00 GPU release says "low-level radiation releases to the atmosphere continue."

10:30 NRC Preliminary Notification says radioactive iodine detected off-site.

Evening 10:20 Thornburgh holds press conference with Scranton, Gerusky, Henderson, Higgins, and Gallina. Gallina says, "The danger is over."

12:00 Press release drafted by Milne and Abraham says Clifford Jones of Department of Environment Resources (DER) okayed Met Ed's dumping of contaminated waste water.

MARCH 30

Morning 9:50 NRC PN describes two bubbles of noncondensable gas in reactor coolant system, one in pressurizer, one in reactor vessel; says NRC gave Met Ed permission to resume dumping; reveals that two Met Ed workers received over-exposures Thursday afternoon.

10:00 In the wake of news about 1,200 mrem burst from the plant, Thornburgh directs local residents to stay indoors until further notice.

11:00 Herbein's second press conference in Middletown's American Legion Hall. Herbein characterizes burst from plant as 300-350 mrem. In response to questions about dumping says, "I don't know why we need to tell you each and every thing that we do." Also announces gas bubble in reactor.

After-
noon

- 12:25 Jody Powell holds press conference in Washington; informs press of White House plans to "upgrade" communications with TMI.
- 12:30 Thornburgh holds press conference to advise pregnant women and preschool children within 5-mile radius of plant to leave area. Also announces that Denton is coming to site.
- 3:00 NRC press briefing in Bethesda. Thompson and Grimes discuss bubble and possibility of core melt. UPI quotes Thompson on "ultimate risk of meltdown."
- 3:30 Met Ed update says "controlled plant activity this morning. . . resulted in increased radioactivity levels of 20 to 25 millirems per hour background in Goldsboro."
- 4:15 NRC PN says evidence exists of severe fuel damage and of "a large bubble of non-condensable gases in the top of the reactor vessel."
- 5:15 Jody Powell holds second press conference. Announces that, henceforth, information about state of the reactor will come from NRC or Denton; information about evacuation and safety will come from Thornburgh's office; information about the federal role will come from Powell. Says that the meltdown story has produced "an unwarranted and disproportionate degree of speculation."
- 5:30 Met Ed update quotes Herbein: "Reports of a meltdown are unfounded."

Evening

- 6:30 NRC press release dictated by Hendrie says no imminent danger of a core melt. White House press release issued simultaneously contains same statement. Neither release disputes truth of Thompson's statement of 3:00 p.m.
- 7:30 Met Ed update quotes Herbein saying radioactivity measures 90 mrem 500 feet above plant.
- 9:15 Met Ed update says off-site radioactivity measures .01 mrem per hour on the east side of TMI.
- 10:00 Denton and Thornburgh press conference. Denton says accident is "easily the most serious" reactor accident ever. Does not feel a meltdown is imminent.

MARCH 31

Morning

- 1:10 NRC PN announces pressure spike occurred Wednesday. Says bubble measures 1,000-1,500 cubic feet.
- 9:04 NRC PN says bubble not explosive yet.

9:10 Met Ed update says "we still have a bubble" which is being "degasified."

9:30 Met Ed press release says 14 percent of fuel rods have been damaged.

10:00 Met Ed's last press conference, at American Legion Hall in Middletown. Herbein says the bubble not explosive; mentions pressure spike. Says four workers have been overexposed.

After-
noon

2:30 Met Ed update from the Hershey Information Center says off-site readings less than 1 mrem per hour at site boundary, 2-5 mrem per hour downwind.

2:45 Hendrie holds press conference in Bethesda. Talks about two bubbles, one steam and one hydrogen; discloses possibility of evacuation up to 20 miles out; says chances of meltdown "have not changed very much in the past day or two."

Evening

7:25 NRC PN says bubble measures 880 cubic feet at 2:40 p.m.; 621 cubic feet at 4:20 p.m.

11:00 Denton and Thornburg press conference. Denton says no disagreement exists between NRC on-site and Bethesda; says it will be "days before the [bubble's] flammability limit would be reached, and many more days after that before detonation limits would be reached."

APRIL 1

Morning

8:28 NRC PN says discrepancies continue between utility's measurements of the bubble and the NRC's.

After-
noon

1:30 Met Ed update says Hershey Information Center will close Sunday or early Monday. Only NCR will hold press briefings.

2:00 Carter and Thornburgh make press statements in Middletown.

2:15 Met Ed update says volume of bubble has now decreased to 486 cubic feet.

3:00 Met Ed update describes Carter's visit.

APRIL 2

Morning

7:30 Met Ed update says bubble has decreased to 175 cubic feet.

8:30 Met Ed update gives same measurements; adds: "Not to be reported to the press ... we think the bubble has gotten so small that it may have disintegrated." Troffer announces the news.

11:15 Denton and Mattson hold press conference in Middletown. Say hydrogen bubble has decreased dramatically, but Mattson adds, "there is not a clear line between here and gone." Denton does not want to be "stampeded" into agreeing with the utility that bubble is gone.

After-
noon

1:30 Met Ed update contains an account of Denton and Mattson's press conference. Says radiation in the dome measures 30,000 rems per hour. Quotes Mattson that 100 mrems is the most anyone received during the accident.

IV. MET ED PUBLIC RELATIONS: WHAT THE PUBLIC KNEW ABOUT TMI BEFORE THE ACCIDENT

A. INTRODUCTION

This is a summary of an historical evaluation of the public relations activities of Metropolitan Edison before the accident at Three Mile Island and what the public living in the area surrounding TMI knew about the pre-accident status of the plant from the utility, the media, and outside groups.

The summary is drawn from a longer and more detailed report, which is available in the Commission archives. The original report explores many areas of Met Ed's public relations activities including policy, staff, materials given to the media, and the utility's public relations program. It also evaluates media coverage of TMI before the accident and public attitudes toward, and involvement with, the plant. Throughout the report, special emphasis is placed on Met Ed's weekly press releases on the status of TMI, since they provided a great deal of information about plant events. Major findings from each of these areas are summarized here.

Information for the report was gathered by an extensive document search and a series of 43 interviews with 67 Met Ed employees, media personnel, members of anti-nuclear groups, and citizens in the area. The names of those interviewed are listed in Appendix A. Information not footnoted in the summary or the original report came from these interviews. (Tapes of the interviews are available in the Commission's archives.) Additional comparative information came from a variety of sources including industrial trade groups, journals, and individual utilities.

B. PUBLIC RELATIONS POLICY AT MET ED

Evaluating the public relations effort of an organization involves looking not only at what it makes available to the public, but also at how important public relations is to the organization.

The integration of a public relations program within an organization -- the level at which public relations policy is made, who makes it, and who carries it out -- is vital to determining how well the program will function. Conversely, the status of a public relations operation helps determine whether the organization as a whole receives poor, adequate, or excellent public relations advice.¹

At Met Ed, the public relations program had a low status in the organizational hierarchy. Most public relations policy decisions were made by top management personnel -- engineers, former salesmen, and businessmen who had little knowledge of or training in public relations practices. The public relations department, called "Communications Services," carried out policies set from above, but rarely provided policy-level advice. As Blaine Fabian, the manager of the department,

put it, "the public relations functions . . . was not the overpowering operation in the company. Quite frankly, our executives are not accustomed to having . . . PR advice, or accepting it."2/

This disregard for public relations advice, coupled with the low status and small size of the communications services staff, led directly to the public relations debacle the utility experienced during the accident.

Three major Met Ed public relations policy areas were evaluated for this report: general operations; generation activities and the TMI plant; and the company's relationship with its parent corporation, General Public Utilities (GPU).

General Public Relations Policy

Policies for general public relations at Met Ed were set by Ernest Schleicher, vice president, consumer affairs, and Walter Creitz, president. Blaine Fabian, the manager of communications services, reported directly to Schleicher and provided whatever input he could for public relations policy. Although Schleicher called the policy making "a team effort in many respects," he was careful to point out that many things Fabian recommended could not be done because of monetary restraints.

Most of the information for public release came from Schleicher, who obtained it at Creitz's monthly staff meetings or from dealings with other vice presidents. Fabian was not invited to attend these staff meetings until February 1979, only after a 9-month effort by Schleicher to have him included. That the head of the public relations operation did not attend high-level staff meetings is both unusual and an indication of the low status of the public relations function at the utility.

Besides providing information, Schleicher also cleared most of the general press releases the communications services department wrote about the utility. As is usual in most businesses, Met Ed required a large number of clearances on every press release -- from Fabian, to the vice president of the department concerned, to Schleicher. If rates or other financial matters were involved, releases also were cleared by Creitz and GPU.

In essence, there was nothing unusual about how general public relations policy was made at Met Ed, except that the public relations head did not have much say in the decisions. For example, one of Fabian's most important public relations recommendations was to increase the size of his staff. The number of tasks assigned to his small staff of four professionals was large, and included such things as writing press releases, handling media, employee, and community relations, and preparing advertisements. The staff was overburdened but Fabian was told by Schleicher that because of financial constraints he would have to "make do with what was available."

Schleicher said he had tried to get the communications services staff enlarged before the accident, but because there were no crises and the program was "cost-effective," management could not understand why

more people were needed. "March 28 showed we could not cope with an emergency situation," Schleicher admitted.

Generation Public Relations Policy

While the company's general public relations policy was not unusual, that relating to the generation of electricity and to TMI in particular was. Providing information about generation activities at Met Ed was primarily the responsibility of the utility's generation department rather than its communications services staff. This policy was outlined in a document^{3/} written in 1974 and revised in 1978 by members of the generation staff, which described the responsibilities, precautions, and procedures for issuing public information about generation activities. It included what kind of information would be made available to the public, when to make it available, and who should decide to make it available. Attached to the document were sample fill-in-the-blank press releases relating to 13 specific types of events that, in 1974, the Atomic Energy Commission (AEC) had suggested utilities make public.

The communications services staff apparently had little to do with the development of this policy document, despite its importance for utility public relations. Fabian claimed to have discussed the document with generation staff members and to have had some input, but, in a letter attached to the 1978 revision, all he suggested were two minor changes in the distribution process. His second-in-command in 1978, Kenneth McKee, said the document was prepared by the generation staff without any communications services department support.

Not only did the staff play a minor role in devising the policy document, but it had little to do with the information process the document described. Deciding what information to make public about TMI and other plants rested with the vice president for generation, who, at the time of the accident, was John Herbein. Although Herbein said he consulted with Fabian about what information to release, it is clear that Herbein was making the decisions and Fabian was carrying out his orders.

Why the communications services staff did not play more of a role in developing this document or in deciding what information to release is unclear, but one surmises that since technical information was involved, the technical people wanted to handle it. Fabian suggested as much when he said that, at the time of the accident, the technical people did not trust the public affairs people on their own.^{4/} Not only did Herbein decide which events to make public, he also carefully controlled the information provided to the public by clearing almost all press releases concerning generation matters. When he cleared these releases, Herbein said, he looked primarily at whether summarization or journalistic style had distorted the actual technical event. He said he tried to avoid jargon but that one had to be accurate and to explain adequately. However, one of Herbein's own staff members criticized This approach, saying Herbein wanted to tell every little detail and was only interested in talking to people who understood nuclear power.

Another aspect of generation information policy concerned provisions in the TMI emergency plan for public information contacts and duties. A thorough review of the plan and its annex revealed only two references to the subject. The first, in the annex to the emergency plan⁵/, stated that during a general emergency, depending on the severity of the situation, "it may be deemed necessary to notify the general public that an abnormal operating condition exists at the Three Mile Island Nuclear Station." The document directed the station superintendent to inform communications services to make an announcement but provided no further information on how the announcement was to be made. It also noted that, in the event of a local or site emergency, notification of the public was not a high priority item and could wait until the emergency was over. The second reference was in the body of the emergency plan⁶/ and said that Met Ed headquarters in Reading would provide technical support in a number of areas, one of which was public relations and information services. That one line was all that was said on the subject.

Not one of the 13 persons interviewed from Met Ed or GPU for this report could identify any other plan that would delineate what specific tasks were to be done by communications services during a TMI emergency, and by whom. All agreed that no emergency plan for release of public information had existed before the accident.

Here, too, generation personnel appeared to be in complete control of deciding what information should be made available to the public during an emergency -- even though this is normally a public relations duty.

GPU Public Relations Policy

Prior to the accident, William Murray, GPU's vice president for communications, advised, reviewed, and coordinated public relations on certain matters for Met Ed and the other two utilities in the GPU system. Murray said he did not work with Fabian on day-to-day activities and that he dealt primarily with Schleicher if something needed to be done.

Within GPU itself, there were two levels of public relations policy making, which Murray had set up⁷/. One was the GPU Public Information Policy Board, which consisted of the GPU chairman and president, the three operating company presidents, and Murray, who served as chairman. The board was responsible for top public information policy matters.

The other level was the GPU Public Information Coordinating Committee, which consisted of the three operating companies' vice presidents for consumer affairs and Murray. Murray served as chairman of this group as well. The operating vice presidents could invite their communications managers to these meetings, but Fabian said he never went. According to Murray, GPU was interested in reviewing press releases from its operating companies whenever the releases concerned financial matters or something that could have system-wide implications, such as an unusual event at TMI.

One direct effect GPU had on Met Ed's pre-accident public relations policy was that most contacts with the national media were handled by the parent company. GPU's communications staff had an extensive mailing list that included nearly 1,800 news outlets and specialty magazines. Met Ed's mailing list, in contrast, contained only local press contacts. The communications services staff rarely spoke to reporters from the national media.

C. PUBLIC RELATIONS STAFF AT MET ED

The Met Ed communications services department, which evolved over the past 20 years from a publicity section in the sales department, normally has not had more than four people to handle such professional public relations tasks as media and employee relations, advertising, and community relations.

Pre-Accident Staff and Duties

During most of 1978, the communications services staff consisted of four professional writers, three display staffers, a photographer, and support personnel. The director of the Observation Center, who doubled as public information coordinator, was not on the communications services payroll, but was considered part of the staff.

Blaine Fabian, the manager of the department, was a 17-year veteran of Met Ed who had previously worked as a reporter and photographer for several Pennsylvania newspapers. His responsibilities included developing and executing communications programs and staff administration.

News gathering, writing and distribution of new releases, contacts with local media, school and community education programs, employee communications, and advertising were all duties that fell to Fabian and his staff.

Kenneth McKee was second in command during most of 1978. As director of public and internal communications, his duties included writing, designing, and producing newspaper and radio ads, publicity brochures, employee publications, and bill inserts. In October 1978, he moved up to GPU. His position at Met Ed remained unfilled until shortly before the accident, when Howard Seldomridge joined the staff.

McKee was assisted by Judith Botvin, who, as public and internal communications representative, was chiefly responsible for writing news releases and radio actualities. Also reporting to McKee was David Klucsik, the coordinator of editorial services, who produced "The Met Ed System," a monthly employee magazine. Both Botvin and Klucsik are college graduates; Klucsik had worked as a reporter and Botvin had been a substitute teacher and a member of the public information staff at Pennsylvania State University.

The public information coordinator was William Gross, a former Middletown high school English teacher. As director of the TMI Observation Center, he scheduled visits for school and other community groups, publicized the center, and frequently visited area schools to present slide programs about nuclear power.

While none of the professional communications services staff had formal academic training in science or technology, Gross and Botvin each attended, at company expense, a seminar sponsored by Oak Ridge Associated Universities on nuclear power and public information.

In characterizing their work at Met Ed, the professional staff agreed: 1) they had a great degree of independence in developing and pursuing projects and ideas; 2) the strict clearance procedure for public statements and programs did not seem to hamper them, although, as one person conceded, it occasionally would "tie things up a bit"; and 3) the Met Ed technical people were generally responsive and cooperative in providing information to the public relations staff. However, they noted, the technical people sometimes did fail to tell them about newsworthy things that were happening in the various departments.

Turnover and Staff Size

Two major problems in the communications services department were a high turnover rate and the small size of the staff. With the exception of Fabian, the most senior professional on staff at the time of the accident was Botvin, who had joined Met Ed in August 1977. In March 1979, the average tenure of the department's staff was 7 months.

Met Ed's communications services staff was the smallest of the three GPU operating companies. While the size of the staff in 1978 (12, counting Gross) was slightly above average for a ratio of public relations employees to total employees when compared to other utilities in the country, 1/ in real numbers it was quite small. As a result, there was a good deal of pressure on the staff; McKee pointed out that he sometimes worked 70-hour weeks.

D. MET ED PUBLIC RELATIONS ACTIVITIES

Public relations activities at Met Ed before the accident centered around three main areas: general press releases, weekly TMI press releases, and community relations activities. The department issued between 150 and 190 press releases annually, according to Blaine Fabian, of which about one-third were weekly releases on TMI.

Press releases comprise an important part of any public relations operation. They are one of the prime ways the company communicates with the public. Emphasis usually is placed on producing well-written releases that are newsworthy, timely, interesting, and relevant to the reader. A good press release, besides meeting all of these criteria, also has to be written in language that both reporters and readers can understand. While Met Ed made such an effort with its general press releases, it did very little translating of technical jargon in its weekly releases about TMI events.

General Press Releases

The general news releases written and issued by the communications services department were generally well received and frequently used by the media. Topics for the general releases were varied and ranged from fly-and-bottom-dumpings, to rate hearings, to retirements and

promotions. In style, the releases were in a traditional news format, and care was taken to make them interesting and relevant to the reader, particularly in relation to cost of electricity or energy conservation. In general, they were easy to understand.

The releases were mailed to a list with 134 addressees on it. Most were sent to reporters and editors in areas surrounding the four service divisions of Met Ed -- Lebanon, York, Reading, and Easton. However, releases were also sent to the Harrisburg, Lancaster, and Middletown media, as well as to the Harrisburg bureaus of the Associated Press and United Press International. In 1978, an effort was made to provide radio actualities -- tapes that could be used by radio stations calling a toll-free number -- based on press releases.

Weekly TMI Press Releases

Since 1973, Met Ed has issued weekly press releases summarizing the status of operations at TMI. According to Robert Arnold, the former vice president for generation at Met Ed who originated the idea, the utility wanted to make more information available to the public about the plant and it felt the best way to do this by regular press releases. Met Ed officials described a number of different functions for the weekly releases ranging from giving the community a sense of the presence of TMI, to making sure people did not think the utility was hiding things at the plant, to educating the media about the types of events that happen at a nuclear plant.

The weekly releases appeared on a different letterhead than the general news releases. The stationery had an outline drawing of TMI and were titled "Three Mile Island Nuclear Generating Station." At the beginning, and occasionally later on, these releases were not dated. There was no contact person or telephone number reporters could call to seek further information. This is contrary to normal public relations practice.

The releases were always brief -- anywhere from three to six paragraphs. They had a rigid format, which, according to Arnold, was supposed to supply information in the following order: 1) identify plant status; 2) contain something constructive and give a positive impression (emphasis added); 3) briefly describe all events required to be reported to the NRC that week; 4) contain a standard closing paragraph that identified who owned TMI, and Met Ed's relationship to GPU.

The releases were written by junior level engineers in the generation department and were cleared "perfunctorily" by the manager of general quality assurance and quite carefully, according to most reports, by John Herbein, vice president for generation. They were then sent to the communications services department for "polishing."

The "polishing" amounted to very little. Judith Botvin, who worked on most of these releases from mid-1978 to early 1979, said she changed little of what the engineers said. Kenneth McKee, Botvin's former

superior, added that communications services' only role was to see if the releases were grammatically correct. Both agreed that the releases were so technical they considered them generation's product, not their own.

The writing of these press releases by engineers with minimal input from communications specialists was a questionable practice. The engineers had little understanding of the comprehension level of the general public or the needs of reporters. They made numerous mistakes in preparing the releases including the use of technical language, complex explanations, and vague terminology. Even producing the releases on a regular basis seemed to work against their effectiveness.

Technical Language

Among the worst mistakes the engineers made was to use technical jargon and to expect reporters both to understand what they meant and to interpret the jargon for their readers. Even specialized science writers -- except perhaps those in the nuclear or electronic fields -- would have had trouble with the terminology used in the weekly releases. Accounts of events routinely reported to the NRC were couched in obtuse, technical language.

Yet generation management personnel thought the style of these releases was acceptable. Herbein said he did not consider them difficult to understand. And Arnold said that during his tenure as vice president reporters must have understood the releases because they frequently asked him, "What do you mean by this?" (One might question his logic: If reporters understood the releases, why did they need to ask what they meant?)

Even if the engineers thought the technical language was not a problem, the communications services staff members were aware that it was. They knew that the press releases were not effective: either they were not used by the media at all or they were printed nearly verbatim -- which meant that the technical jargon was simply being passed along without explanation.

However, the public relations staff did very little to convey their opinions to the engineers. Instead they seemed to view the TMI releases as doing exactly what they were supposed to do -- put Met Ed on record as having made the information available, even though it might not be readily understood.

Complexity of Explanation and Vagueness

Much of the explanation of events reported in the weekly TMI releases was confusing. Not only was technical jargon used, but it was usually difficult to figure out where a particular piece of equipment fit into the whole plant operation. Reporters complained that they probably would have paid more attention to these releases if they had any idea of the significance of equipment problems.

One example of this can be seen in the releases concerning a problem Met Ed had with its main steam relief valves in 1978. On April 23, there was a shutdown at TMI-2. In a press release dated May 26, 1978, Met Ed described the problem as minor:

TMI Unit 2 is presently undergoing extensive testing of its turbine plant main steam relief valves due to problems encountered with these during recent tests. It is expected that this problem will be resolved in the next few weeks.

The problem, as shown by a May 8, 1978, Licensee Event Report (LER) to the NRC, was that the valves would not reset. Eventually, 20 new valves had to be installed, resulting in a 20-week delay in plant startup. At the time of the above press release, this information had already been conveyed to the NRC, but was not made available to the media.

The significance of this event was not interpreted by the company for the media and the public in this release or in others that summer. The first real mention that the valves had malfunctioned came in a weekly release on June 16 in the third paragraph, which started off on a positive note:

Engineering design work for modifications associated with steam plant safety valves, which previously malfunctioned during plant shutdown, is currently in progress. This design work is expected to be completed shortly and will enable plant work on the piping modifications to begin in the next few weeks.

On June 23, Met Ed finally informed the media that it would take until September 1 for the engineering design and modifications involving the main steam plant safety valves to be completed. On September 18, TMI-2 began generating power for testing, ending the 20-week outage that began on April 23. Throughout this entire period, there was little way for a reporter to get any sense of the significance of the valve problem from any of the weekly press releases issued.

Also contributing to the press releases' inaccessibility was the vagueness of the information presented. For example, in a 1979 press release (Release 18-79c, no date), an event reported to the NRC noted:

. . . some water leakage was discovered in the vicinity of a TMI-2 decay heat removal system relief valve. The radioactivity level of the leakage was checked and found to be less than the minimum detectable level. The leakage was caused by a small crack in a piping weld near the valve. The crack was subsequently repaired.

Questions generated but unanswered by this paragraph include: How much leakage? What was the radioactivity level? What is the minimum detectable level? Is something wrong with the welds in the pipes only here, or elsewhere? How was the crack repaired? Just how large is a "small crack"?

Timing and Assurances

The weekly releases frequently violated one of the most important rules of public relations -- to make sure that current information is being provided to the press. A press release dated May 5, 1978, for example, reported that a "de-energized power distribution bus" and a blown fuse had caused a reactor shutdown. Yet, this event had actually occurred on March 29 -- 5 weeks earlier. In almost all cases, the dates of the events were never given. But the releases gave the impression of being up-to-date because the events had only recently been reported to the NRC. None of the reporters interviewed realized at the time that information in these releases was often a month old. Several said that this may have explained why, when they called Met Ed to follow up on one of these events, they were frequently told that it was "old news." The repeated assurances from Met Ed communications services people that everything was under control at the plant was a major reason reporters cited for not investigating TMI further.

Regularity of Releases

On the surface, it would seem that weekly press releases on the status of a nuclear plant are a good thing for the company, the media, and the public. However, in retrospect, this does not appear to have been the case.

Writing the releases became a mechanical chore at Met Ed. Reporters who received the releases were lulled by their regularity and only looked at them perfunctorily before discarding them. Very few journalists kept files of the releases. If the releases were used, they were either condensed for fillers or published nearly verbatim. Instead of informing the public, the releases created a false sense of security that everything was normal at TMI. Such standard statements in the releases as "does not affect the health and safety of the public" only added to this feeling. But the regular releases did put the utility on record as having made information on the status of TMI available to the public.

Were the Weeklies a Warning of Things To Come?

Could the weekly TMI releases have indicated to an alert reporter that something was wrong with the plant with how it was being operated before the accident? Utility officials insist that all of the incidents described in the weekly releases were part of the normal start-up and testing problems experienced by any nuclear plant before going on line. But, when one looks at the sequence of events described in the TMI releases from March 28, 1978, through March 28, 1979, an alarming trend emerges. Throughout this period, there were continuing problems involving valves, pumps, security breaches, and overlooked rules and safety specifications. According to NRC and Met Ed documents, including the weekly press releases, TMI-2 had been out of operation 71 percent of the time between the day it went critical and the day it went on line -- a total of 195 out of 274 days. It had suffered at least 11 reactor shutdowns and numerous turbine trips.^{8/}

This record is far above the industry norm for the start up of a nuclear plant, about 40 percent downtime. Even Arnold grudgingly admitted that TMI-2 ranked low in the efficiency of its start up -- 45th out of 65 on record -- but, he quickly added, it was not the worst case either.

With all of these problems documented in the weekly releases, why then did the media and public not become concerned about TMI? One reason, clearly, was that, instead of informing the public, the releases were lulling; instead of providing information, they obfuscated it; instead of making people aware of plant activities, they buried them in a plethora of obscure detail. In retrospect, the weeklies appear to have been more of a protective than an informational mechanism for the utility. But while they may have protected Met Ed, they in no way served to protect the public's safety or its right to know about events at the plant.

The Met Ed Nuclear Community Relations Effort

Met Ed's nuclear community relations program dates back to 1965, the year before the utility announced its plans for a nuclear station at TMI. That year, a master plan was drafted that has been followed closely and aggressively over the years. The plan spelled out the need to communicate the benefits of nuclear power to young people and to reassure the public about the cleanliness and safety of nuclear power.

The utility's community education efforts were successful: there was hardly any local opposition to the plant. A prolonged battle over pollution at a coal station near Middletown, along with the closing of Middletown's Olmstead Air Force Base that resulted in the elimination of many jobs, made area residents receptive to a nuclear power plant. Organized resistance was minimal. A handful of anti-nuclear organizations in the area suffered from lack of public support.

Key elements of Met Ed's community relations program included:

- o An Observation Center at TMI, built before construction was completed on TMI-1. The center featured a slide show and attractive displays about TMI and nuclear power. About 15,000 people visited the center each year, according to William Gross. Most of them were from outside the immediate area. Few had negative reactions.
- o School programs, many of which were administered by Pennsylvania State University with financial support from Met Ed. These included traveling lecture-demonstration programs, such as "This Atomic World" and "Energy Today and Tomorrow," and a Met Ed nuclear science conference for high school students. In 1977 and 1978, Met Ed paid for four local high

school teachers to attend Penn State's Nuclear Concepts and Energy Resources Institute. Gross also gave lectures at numerous elementary and secondary schools and, in addition, provided the schools with energy bibliographies, audio-visual materials, and literature about nuclear energy.

- Speeches by top Met Ed officials before civic and business groups.
- Display ads for area newspapers and radio spots, generally on the theme of energy conservation and the consequent economic problems associated with producing an adequate supply of electricity.
- Gimmicks, such as plastic litter bags bearing the Met Ed logo, road maps, and wallet-sized cards being the names and addresses of Met Ed area offices.
- Pro-nuclear pamphlets, booklets, and flyers produced by other utilities, the Atomic Industrial Forum, and the Pennsylvania Electric Association.

While Met Ed's community relations programs can be characterized as highly effective, well-planned efforts, they can likewise be faulted for the bias with which they presented "facts" to an unsuspecting, uninformed public. For example, a speaker at a 1971 Met Ed conference for high school students told his audience flatly that no environmental harm would result from the nuclear plant, and that the concept of zero-level pollution is "misleading, futile, and dangerous." Effluents from the plant, the speaker said, could safely be pumped into a school classroom.^{9/}

Met Ed simply did not acknowledge the possibility of a catastrophic accident. A Met Ed flyer headlined "Your Personal Radiation Inventory" (undated) contained the statement that

. . . if the worst conceivable accident were to occur at Three Mile Island Nuclear Station, because of safeguards a man could remain at a spot less than a half-mile from the reactor for 24-hours a day for an entire year and be exposed to only 2 mrems of radiation.

By and large, Met Ed's intensive efforts to assure its customers of the safety and non-polluting nature of nuclear power were accepted with few questions. These efforts backfired with the accident, however, resulting in a great deal of bitterness and the utility's almost immediate loss of credibility.

E. MEDIA COVERAGE OF TMI BEFORE THE ACCIDENT

Evaluating local media coverage of TMI involved looking at 1) how reporters and editors felt about the communications services staff at Met Ed; 2) how they evaluated their coverage of TMI and Met Ed; and 3) the coverage itself. Because the bulk of reporting about TMI was done by area newspapers rather than radio or television, attention was focused primarily on the press.

Press Evaluation of Met Ed's Public Relations Operation

Almost all of the 22 newspaper reporters and editors interviewed were satisfied with the cooperation, accessibility, and general performance of the communications services staff before the accident. Reporters most familiar with the staff were those in the York and Lebanon areas, since both were service regions for Met Ed. These reporters said they were in contact with Met Ed on the average of once a week, but that many of these contacts did not relate to TMI.

Reporters from Middletown, Harrisburg, and Lancaster, which are in the service area of Pennsylvania Power & Light Co. (PP&L), were less frequently in touch with Met Ed -- only about two or three times a month on the average. They had little face-to-face contact with Met Ed personnel. Few reporters ever talked with technical personnel from Met Ed, except on press tours at TMI. Only rarely would they be referred to John Herbein or other technical persons by the communications services staff.

Besides setting up occasional press tours of TMI, the communications services staff was not particularly aggressive in suggesting good feature stories to reporters, setting up interviews, or holding press conferences. One unusual service they did provide was to pay for some reporters in their service area to attend the annual Pennsylvania Power Conference. According to Blaine Fabian, Met Ed sent between 15-20 reporters to the conference and he referred to this sponsorship as "probably the biggest or the most effective" example of his department's media relations.

Despite the generally satisfactory rating given Met Ed by reporters, almost all of those interviewed agreed that of the three utilities in the region -- PP&L, Met Ed, and Philadelphia Electric, which runs the Peach Bottom nuclear plants in York County -- PP&L had the best public relations operation. Met Ed generally was ranked second, with Philadelphia Electric last.

The presence of the three utilities in the region as well as the Peach Bottom nuclear power plants -- the first one dedicated in 1967 -- had some major effects on press coverage of TMI, especially in the Lancaster and York areas. The editor of the Lancaster New Era said his paper treated Met Ed differently because it did not supply his readers with electricity. He said his reporters never asked Met Ed the tough questions they asked of PP&L. Peach Bottom had also made nuclear power plants a familiar issue to reporters and editors in the region so that TMI was not a novelty.

Press Coverage of TMI and Met Ed

The editorial policies of the eight papers studied were cautiously in favor of nuclear power, but there was some concern over safety issues. As the city editor of the Harrisburg Patriot put it, "Nuclear power is good, but it would be nice if it were a little safer."

Each newspaper had one reporter who had written about Met Ed and TMI over a period of time prior to the accident. But none of them covered the utility as a separate "beat." The reporters who wrote about Met Ed had no scientific or technical background beyond an occasional college science course, nor did the editors who handled their articles.

The number of stories about TMI ranged from one a week in the Middletown Press and Journal (a weekly paper) to one or two a month. About 60 percent of the stories were self-initiated, according to the reporters, and about 40 percent were based on information in Met Ed press releases or statements.

Most of the reporting was superficial in nature -- straight "hard news" accounts of what had happened. There was very little in-depth reporting or interpretive background pieces. Only the York Daily Record ever assigned a reporter to investigate TMI extensively. Most frequent reasons given for this lack of initiative were either insufficient staff or the lack of reporters with sufficient expertise.

Newspaper Response to Met Ed's Weekly Releases

Most reporters said they did not understand the weekly TMI releases. They complained about the technical language and lack of interpretation of events. They also said they had a hard time judging when something in a release was newsworthy -- that is, what it meant for the plant and the population. All they had to go by were the standard assurances in the releases that the described events "posed no threat to the public health and safety." If they called Met Ed, they received the same reassurances. Few reporters, however, bothered to call Met Ed for explanations of terms or to make inquiries about the significance of events. Only one reporter said he ever went to any outside sources for such information.

The reporters and editors said that the weekly releases did not give them a true picture of what had been going on at TMI during 1978. Few were aware how often TMI-2 had been shut down. Most explained that although they looked at the weekly releases and noticed that some were occurring, they were not concerned. The city editor of the Harrisburg Evening News said he viewed the delays as "positive signs" that Met Ed was being careful. Other reporters felt the events seemed unrelated and that although things might not have been going as well as Met Ed would have liked, there was no cause for alarm.

Despite the overall good rating reporters gave to the Met Ed communications services staff, they were less satisfied about the quality of information being provided about TMI. Most felt that it was incomplete; that safety questions were minimized; and that when reporters got into areas that the utility did not like, the staff was not as cooperative as usual.

In hindsight, most media personnel agreed that they had not done a good or even an adequate job covering TMI. In their defense, they pointed out that no one knew about the magnitude of the potential problems; that they kept getting reassurances that nothing was wrong with the plant; and that in the news business, one tends not to react until something actually happens.

With few exceptions, reporters and editors believed that Met Ed had misled them. "They gave false impressions on when incidents were occurring," one Lancaster reporter said. "Their tenor was as if a washer in a sink was broken. They did not put anything into context and did not say what it meant."

Actual Newspaper Coverage

A study of the Harrisburg daily newspapers showed a relatively large number of articles about issues concerning TMI, but little coverage of specific TMI events. The licensing hearings for TMI-2, for example, held in both Harrisburg and Washington, received extensive coverage as did the views of the intervenors and anti-nuclear groups.

During 1977, the Patriot-News ran 19 TMI articles, of which six were on safety or plant events; in 1978, the paper ran 31 stories, mostly on hearings, with six on safety or plant events. In the three months of 1979 prior to the accident, there were 10 stories, mostly on hearings, including one recounting the licensing history of TMI-2. In addition to these articles about TMI, both the Evening News and the Patriot ran many stories on nuclear power plants around the country from the wire services, news syndicates, and various other news syndicates.

As for the other newspapers in the region, the Middletown Press and Journal ran about 71 articles on TMI between 1976 and 1978; the Lancaster Intelligencer-Journal had 37; the York Daily Record had 34; the York Dispatch ran 27; and the Lebanon Daily News had 17. (These figures are based on a collection of clippings about TMI supplied by Met Ed and may be incomplete.) This coverage was devoted mostly to major news stories about TMI including articles on a radioactive waste leak from a truck; TMI-2 being granted an operating license; a protest by anti-nuclear groups; TMI-2's dedication; a good rating for TMI-1 from the NRC; and the beginning of commercial service at TMI-2.

Although the Middletown Press and Journal had the greatest number of articles about TMI, its coverage was hardly outstanding. For the most part, it ran the weekly releases nearly verbatim. It rarely carried any of the TMI major news events and made little effort to go beyond the releases themselves.

The other local papers ran the weekly releases with some revisions and additions until 1977, then appeared to grow tired of using them. Most of their subsequent coverage focused on the major events but few reported on the licensing hearings for TMI-2.

One exception to the general run-of-the-mill coverage was a four-part series on problems at TMI published by the York Daily Record 2 weeks before the accident. The series was inspired by a statement from the Union of Concerned Scientists that a fire such as the one that had occurred at the Browns Ferry nuclear plant could occur at TMI. While the articles dealt with radioactive wastes, the fire issue, evacuation plans, economic effects, and health effects, they never mentioned any of the events reported in the weekly TMI releases. Needless to say, Met Ed was unhappy with the series. Met Ed President Walter Creitz, at the invitation of the paper's publisher, wrote an op-ed piece for the Daily Record. His article, which sought to assure the public about the plant's safety, appeared just 2 days before the accident.

Summary on Press Performance

On the basis of our interviews and press analysis, it is apparent that local newspapers fell down on the job of pursuing, investigating, and following up important leads about the status of TMI given to them by Met Ed. Although the format and language of the weekly releases discouraged any kind of followup, as did the pat assurances from Met Ed, the utility was not the only source to which reporters or editors could have gone for explanations and interpretations.

It is hard to fault these papers too severely for not paying attention to the weekly TMI press releases. Given deadline pressures, the deadly sameness of the releases, and their technical jargon, one could see how reporters and editors might not pay much attention to them. But, for the most part, the local press was flaccid. With the exception of the York Daily Record, not one newspaper provided anything more than routine coverage.

Radio and TV Coverage of TMI Before the Accident

For several reasons, attention to TMI by broadcast media prior to March 28, 1979, was minimal. News staffs at radio and TV stations were small and had limited news gathering capabilities. But most stations also believed that their listening and viewing audiences were simply not interested in the existence of nuclear power plants. News reports were consequently perfunctory. Little attention was given to safety matters, with the exception of incidents of security violations that plagued TMI between 1974 and 1978. Rate matters, including petitions for increase, were usually considered more newsworthy.

Most of the 13 broadcast people interviewed were familiar with the TMI weekly news releases, but were unable to talk about their content except in the vaguest terms. They complained that the releases provided only skeletal information, that they were repetitive, and that information was not released in a timely manner. As a result, they said, there was a tendency to discount the significance of the events reported in the releases.

Nevertheless, it appears that news releases prompted whatever coverage that did find its way into radio and TV news broadcasts; only infrequently did the stations generate TMI stories on their own.

Radio and TV stations did make some effort to cover the anti-nuclear point of view, even though organized opposition to TMI was rare before the accident. Licensing hearings for TMI-2 were covered by all broadcast media contacted. The coverage ranged from announcements of the hearings to actual camera coverage of the proceedings. Two anti-nuclear groups, TMI Alert and the York Committee for a Safe Environment, were mentioned by some broadcast people as useful in providing an anti-nuclear perspective, but their usefulness was undercut by lack of credibility, bias, and lack of assertiveness.

Many contacts between Met Ed and the broadcast media were initiated by the media. There appears to have been little effort on the utility's part to generate radio and TV coverage aside from the weekly news releases, some radio actualities, and an occasional press conference on rate matters. One Harrisburg TV news director said he had to convince Met Ed that interviews would not only be newsworthy but might generate beneficial publicity for the utility. He had the distinct impression that the utility had a newspaper bias and that no one on the communications staff understood the broadcast media.

F. PUBLIC ATTITUDES AND INVOLVEMENT

Prior to March 1979, few residents of the area surrounding TMI had negative feelings about the nuclear plant. A 1974 survey of 1,178 residents of Reading, Easton, York, and Lebanon conducted by Met Ed found 55 percent of the respondents favored a nuclear plant in their region.^{10/} Almost all the reporters interviewed agreed that people were largely indifferent to the plant. Some citizens may have had reservations, but very few were vocally or actively against TMI. Several people interviewed explained this public disinterest in an ethno-religious context: The citizens of the area, they said, were religious, conservative, and had a strong belief in authority. Local civic leaders seemed as disinterested in TMI as their constituents. Indeed, Middletown Mayor Robert Reid went so far as to place part of the blame for the 1979 accident on community leaders, who "should have raised their voices about evacuation plans, radiation monitoring devices, and direct line communications with Three Mile Island."^{11/}

Most newspeople and citizens' groups believed that the people living around TMI were unaware of any problems TMI-2 was having during 1978. Out of about 100 citizens questioned informally at a public meeting of the Susquehanna Valley Alliance after the accident, only one person was able to say how long TMI-2 had been shut down in 1978. And he readily conceded he would not have known before the accident. At an informal meeting of several members of the Middletown chapter of the League of Women Voters, there was consensus that no one had been aware of any kind of operational problems. "Everything we read and heard was good," one member said. Even among Met Ed personnel, there was a sense that area residents simply did not bother to read newspaper reports about plant status.

The Anti-Nukes

Anti-nuclear sentiment in the Harrisburg area was confined to a few small groups such as TMI Alert and the York Committee for a Safe Environ-

ment. Since the accident, perhaps a dozen additional groups have been formed, most of them local offshoots of TMI Alert.

TMI Alert was formed in 1975. Before the accident, its membership consisted of a handful of concerned citizens. The York Committee for a Safe Environment had been active in licensing intervention since the early 1970s and had intervened in the licensing process for two nuclear plants at Peach Bottom, as well as TMI-2. Prior to the accident, the committee had a small following; public meetings rarely drew more than 30 people. Few local residents supported the anti-nuclear groups operating in the Harrisburg-Middletown area. "Most people around the area considered them a bunch of radicals," said the associate editor of the Middletown Press and Journal.

Public Hearings

Public hearings on TMI-2 did not seriously get under way until 1977, some 7 years after construction had begun. There had been 2 days of hearings in 1969 and one in 1975. During these early hearings, only one citizen participated. He made a statement regarding the possibility of aircraft from nearby Harrisburg International Airport crashing into the plant.

In 1977, the NRC's Atomic Safety and Licensing Board (ASLB) held 18 days of hearings in Harrisburg. According to NRC policy, time was reserved at the beginning of each set of hearings for statements from private citizens. Area newspapers carried announcements of these hearings, sometimes specifying that citizens could make "limited appearance" statements before the board.

Citizens appeared before the board on two of the hearing days -- April 5 and June 10. A total of 17 limited appearance statements were made, only one of which was pro-nuclear. Given the almost total lack of citizen participation in the earlier hearings, this upsurge of interest is impressive. The nature of the TMI-2 limited appearance statements ranged from brief, nontechnical appeals to lengthy, carefully researched and documented presentations. Many of the citizens displayed a surprising degree of knowledge, referring to specific Licensee Event Reports to the NRC, design controversies, and studies of the economics of nuclear power. The issues raised most frequently involved evacuation, safety systems, radiation hazards, the possibility of aircraft accidents, security, insurance, and the economic viability of nuclear power.

V. FLOW OF PUBLIC INFORMATION DURING THE ACCIDENT AT
THREE MILE ISLAND: A STRUCTURAL OVERVIEW

A. INTRODUCTION

Karl Abraham, the Nuclear Regulatory Commission's public affairs officer for Region I, has managed to retain his perspective on the first hectic week of the accident at Three Mile Island despite a run-in with Governor Thornburgh's press secretary, an argument with an old friend from The New York Times, and a harrowing period on Friday when he virtually stopped functioning as a news source for reporters. "You're never going to make covering a disaster a nice smooth operation," Abraham says. "The best you can hope for is to try to avoid some of the things that hurt the most."^{12/}

While it may be of little consolation to the citizens of Pennsylvania, who had to suffer through what turned out to be an unnecessary evacuation scare, a protracted nightmare involving a hydrogen bubble that did not explode, a battle of political one-upmanship over the dumping of waste water into the Susquehanna River, and other mismanaged events that will be detailed in this volume, the accident did demonstrate to the NRC, the utility, and the press what "hurt the most." The effort to inform the public of events at the reactor site was handicapped from the start by a complete lack of planning for an accident that would last for a period of days and attract worldwide press attention. The lack of planning was so profound and information policy so uncoordinated that spokesmen began issuing statements from at least a half dozen locations. Individuals assigned the task of briefing the press and public about the accident were unable to get current information from the technical people within their own organizations. The flood of calls from the news media was so strong that briefers were unable to leave their phones for technical updates -- had they been available. In the confusion, people without public information backgrounds became the main spokesmen and public information professionals were shunted to other tasks, resulting in even more serious communication problems.

For Metropolitan Edison and the NRC, TMI was a crash course in dealing with the news media during a serious nuclear accident. For the press, it was a crash course in nuclear terminology and the methods of explaining scientific speculation. Reporters are, to a large extent, only as good as their sources. The report that follows on the adequacy of those sources at TMI should help to explain why the public's perception of the accident -- and of the news media -- was rightfully one of confusion, misinformation, contradiction, and fear.

The public information operations mounted by the utility and the NRC were so inadequate that it is impossible to find any evidence of a conspiracy or a coordinated effort to mislead the public on the facts of the accident -- though the confusion may have had the same net effect. While the public was indeed misled at certain points, this was in large part a function of the exhaustion of the participants, an absence of

individuals who could explain technical information in lay terms, and genuine confusion among the decision-makers. Met Ed, however, was slow to recognize and acknowledge "pessimistic" information on such subjects as core damage, operator error, and off-site radiation releases. Some NRC officials, particularly from Region I, tended to support the utility's optimistic view of the accident, but other NRC officials, particularly in Bethesda, presented a much harsher view of the accident to the media. The lack of a consistent posture by the NRC seems in part attributable to the agency's own ambivalence with its regulatory and promotional roles (discussed below), and the freedom many NRC officials felt to speak their minds, regardless of the consequences. Only the public information staffs at the White House and in Governor Thornburgh's office tried to effect some sort of long-range information policy. Both were successful. Whether or not their actions were in the public interest is a matter that will be taken up later in this report.

B. THE PAST AS PRELUDE: PUBLIC INFORMATION AT THE NRC AND MET ED

The past performances of the NRC and Met Ed set the stage for the uncertainty with which the regulatory agency and the utility greeted the accident on March 28. At the NRC the problem was a technical staff unable to communicate with the public, an atmosphere of secrecy left over from the NRC's predecessor agency, the AEC, as well as a commitment to promoting nuclear power, and a fuzzy definition of what a public affairs program for a regulatory agency should be. At Met Ed the problems centered on having promoted the benefits of nuclear power for many years, on the low status of the public information office, and on the inexperience of the staff.

NRC

As Joseph Fouchard, the NRC's director of public affairs, admits, the agency is not particularly "media-wise." ^{13/} Karl Abraham attributes the NRC's timidity in dealing with the press to the fact that "for the last quarter century they've been more shielded from [the press] than any other government agency." ^{14/} The transition from the AEC to the NRC has also been difficult in that the NRC was intended to be a regulatory agency without the promotional role that was a part of the AEC's charter. As Frank Ingram, assistant to Fouchard in the public affairs office, points out, "It is very hard to get an agreed-upon perception of the dividing line between promotion and regulation."^{15/}

The inability to find this line has resulted in a certain lack of aggressiveness in the agency's public information program. Fouchard describes it as a tendency "to lean a little bit too hard on the written word and not really go out and meet the news people in a face-to-face situation."^{16/} Abraham does not see it as leaning on the written word, but rather hiding behind it. He is critical of the technical staff for its unwillingness or inability to speak to the public in language it can understand. In a memo Abraham sent in August 1978 to Fouchard and NRC Chairman Joseph Hendrie, in which he urged a "major overhaul" ^{17/} of the agency's public information program, Abraham wrote:

[B]y the time information reaches the Public Affairs Officer, it often has filtered through so many levels of technical and legal management that its presentation in press release form raises more questions than it answers ... [T]his gives the appearance of an agency-wide lack of candor. In most cases, the real cause is that the technical experts are functionally illiterate. We seem to be more afflicted than most technical agencies with people who cannot say what they mean.^{18/}

Robert Bernero, assistant director for materials safety standards, thinks the problem is even deeper. (Bernero functioned as a technical briefer for the NRC at its press center in Middletown and is one of the few technicians at the agency who can communicate with the press and the public.) Says Bernero:

I'm aware that many technical people don't like public affairs. And they can be less than constructive because they frequently become apprehensive about what they are saying and retreat to the shelter of technical language. And then they can say [if misquoted], "I said exactly what I would say in writing a technical report." There's a high risk of getting that when you put technical people into that sort of environment.^{19/}

The product of this history of secrecy, confusion over role, and mistrust of the press has been a low media profile for the NRC and a small public affairs staff. At the time of the accident, only 10 public information professionals were employed by the NRC -- five in Bethesda, including Fouchard, and one in each of the NRC's five regional offices around the country. (By comparison, the NRC's Office of Congressional Relations, headed by Carlton Kammerer, has five staffers in Washington just to brief Congress.)

Communications with the media relied heavily on the printed word, either in the form of occasional press releases from Bethesda or the regions, or the issuance of Preliminary Notifications (more formally, Preliminary Notifications of Event or Unusual Occurrence). These notices, which are distributed to "insiders" and interested Congressmen, and which are eventually placed in NRC public documents rooms around the country, seek to provide early notice of events of possible public interest related to safety matters at nuclear plants. They are written by members of the NRC's Inspection and Enforcement Division. Public information people have nothing to do with them. Although the PN's are the NRC's single most important means of communicating with the public, they are, Abraham says, "disgraceful."^{20/} "Most of the people who write those PN's," he says, "couldn't pass an eighth grade English test. The PN, as it has traditionally been put together, is an altogether worthless document as far as public information is concerned because it gives facts, but no meaning."^{21/}

Another problem NRC public affairs people face is a physical one. The agency's offices are on H Street in the District, while public affairs staffers are housed in the Maryland National Bank Building in Bethesda. Other NRC staffers have offices in the Phillips Building or

the Old Phillips Building near the Maryland National Bank Building (MNBB); still others are in the East-West Towers and additional buildings in Bethesda that are not within walking distance of the MNBB. Fouchard splits his time between MNBB and H Street. During the accident, the NRC's Emergency Management Team set up shop in the East-West Towers, thus separating themselves from most of the public information staff.^{22/}

Frank Ingram, Fouchard's assistant, notes some of the problems this layout causes:

You don't have the day-to-day personal contacts with people that you have when you're in the same building. You're not out running into somebody in the hallway who, when he suddenly sees your face remembers he's got this or that or the other thing coming up he should have told you about, or you've caught him with two minutes to chat and you remember that you have a couple of questions you've been meaning to ask him. . . Most of our business is transacted by phone. To get anywhere, with the exception of the Phillips Building, means you're spending approximately an hour on the road.^{23/}

Finally, a more subtle problem that affects the NRC's public information program is the naivete demonstrated by the commissioners themselves on how the press functions and the cynicism some of them show for the public's right to know. On the first day of the accident, for example, Commissioner Richard T. Kennedy objected to the use of the word "accident" in a press release drafted by Fouchard.

KENNEDY: One thought I had -- I had two thoughts. You use the word "accident" twice.

FOUCHARD: Yes, sir.

KENNEDY: Considered an accident--People think of accidents, you know. . . in the context of The China Syndrome. Is this an accident? What is an accident?

FOUCHARD: I believe it's an accident, Mr. Kennedy.

KENNEDY: Define an accident.

FOUCHARD: I was more concerned with the general emergency.

KENNEDY: That's a different one, but what is an accident?

FOUCHARD: Well. .

KENNEDY: Why don't you get that thing downtown and why don't we think about that and take a look at the whole thing.^{24/}

Another example of this unwillingness to be open with the public occurs in a phone conversation between Commissioner Victor Gilinsky and Edson Case, Harold Denton's deputy in the Office of Nuclear Reactor Regulation. Gilinsky was upset about an Associated Press story quoting NRC sources in the East-West Towers press center in Bethesda that said

the hydrogen bubble in the reactor could explode in as little as 2 days. Gilinsky asked Case, who had been talking to reporters at the press center, how a tighter lid could be put on the operation. Gilinsky suggested first that Frank Ingram, Fouchard's assistant, stop talking to the press. Then he suggested that only Case talk to the press. Case pointed out that at least four people were answering press queries and still the call-back requests were stacking up. Gilinsky recommended that they stop answering the phones altogether and just distribute the PNs to reporters. Case replied that reporters were not basing their stories on the PNs.

Finally Gilinsky said:

I guess I don't think that ... every guy ought to be explaining what the chairman said. You can read what the chairman said, but I don't think you ought to be interpreting what the chairman said.

To which Case replied:

Well, if they are interpreting, it's based on their understanding of what the words say and what they mean. And then straightening it, rather than not straightening it out ... It may not be the best system in the world, but it's a system that as far as I know we've had for ten years.^{25/}

Met Ed

At the time of the accident, the average length of service of the four members of Blaine Fabian's staff who had a public information function was only 7 months. None of them had a strong technical background in nuclear reactors.

According to Fabian, the technical people at Met Ed did not trust the public information people to put out technical information. ^{26/} Management kept his office on a very short leash, he said, but this was understandable given the short tenure of most of the employees.^{27/}

Fabian, who did not have a title of vice president, clearly deferred to the technical people in management. He admitted that public information was not a department with much clout at Met Ed and that the notion of his giving public relations advice to Jack Herbein, the vice president in charge of generation who became the main spokesman for the utility during the accident, was not very likely. "Quite frankly," Fabian said, "our executives are not accustomed to having that kind of PR advice, or accepting it."^{28/}

One other matter related to organization created problems during the accident. Met Ed is one of three subsidiary operating companies owned by the General Public Utilities Corporation. Met Ed President Walter Creitz, Vice President for Generation Jack Herbein, and Blaine Fabian have their counterparts within GPU: President Herman Dieckamp; Vice President for Generation Robert Arnold; and Vice President for Communications William Murray. Creitz says that the public information responsibilities for each company are not clearly divided, although GPU

usually handles queries about financing and Wall Street-related information, while Met Ed handles more parochial requests. 29/ The accident at TMI obviously cut across these lines. As a result the number of possible spokesmen for the utility doubled, and all three GPU officials played public information roles.

C. PLANNING FOR AN ACCIDENT

In other nuclear accidents prior to TMI, such as those at Browns Ferry and Fort St. Vrain, the normal response of the NRC's public affairs department was to send a regional public information officer to the site as an observer, but not to take over the information function from the utility. 30/ This is consistent with the instruction found in the NRC's Incident Response Program which encourages licensees "to take the lead in information activities related to incidents occurring at their facilities."31/

So long as public interest is low or an accident is of short duration, this policy can work. But a TMI-type accident of high visibility and long duration puts pressure on the NRC to provide information. Calls from the press and public will come to the NRC in Washington, D.C., and Bethesda and to the regional office involved, and the NRC will have to respond in some manner. The "NRC Headquarters Incident Response Plan" (as revised Jan. 15, 1979) at least recognizes the inevitability of an NRC role in public information by stating, "Any request for information from members of the public will be referred to the Office of Public Affairs representative in the IRC (Incident Response Center)."32/

Without NRC representatives on nuclear sites at all times, however, it is obvious that the utility, under the present system, must provide information to the NRC and the public in at least the first hours of an accident. Nowhere does the NRC spell out how this information is to get from the utility to the regulator. Indeed, although the NRC encourages the licensee to take the lead in providing information, it is clear in interviews with NRC personnel that they do not trust the utility to do so, nor are they inclined to accept information from utility officials at face value or to cooperate with them in the release of information.

Because of the regulator-licensee relationship, Karl Abraham does not believe the NRC should be in the position of taking information from anyone other than its own people.33/ Joe Fouchard adds,

I don't think it [the information function] can be a cooperative effort. In other words, we are the regulatory agency. Let us face it. There are some actions we're going to have to take which the utility won't like.34/

Met Ed President Walter Creitz believes that the main responsibility for informing the public rests with the utility.35/ Jack Herbein, vice president for generation, agrees.

We're the licensee, the ones responsible for operating the plant. The Nuclear Regulatory Commission is the regulating agency and has a different set of responsibilities. To the extent that they convey information to the public in accordance with their responsibilities and the utility does in accordance with its responsibilities, there are two separate functions.36/

Herbein is also opposed to cross-checking information with the NRC because that "could be viewed by some as collusion and we certainly aren't going to be a party to that."37/

In theory this arm's-length relationship sounds appropriate, but as a practical matter it does not work. Karl Abraham put his finger on the problem in a memo he wrote on public information policy in September 1976:

Experience has shown that an information gap in the first two or three hours after an incident frequently puts NRC in a position where it is unable to provide the public with a factual statement of what happened in a manner that will reach the public in time to be of any practical use in allaying unnecessary public anxiety.38/

Despite Herbein's statement on the separation of functions, Met Ed rather quickly tried to involve the NRC in its public information activities -- without success. On Wednesday evening, the first day of the accident, Blaine Fabian called Karl Abraham in King of Prussia, Pa., to alert him to Met Ed's scheduled press conference the next morning. Fabian asked Abraham if the NRC wanted to participate. Abraham said no.39/ Fouchard also told Abraham that night not to participate in any Met Ed press conference. On Friday afternoon, when Harold Denton's helicopter landed at the site, Denton and Fouchard were met by Creitz and a member of the Met Ed public information staff. Creitz had a statement on plant conditions which he wanted to release jointly with the NRC. Fouchard found it too "optimistic" and turned Creitz down. 40/ Once information on site was centralized in the person of Harold Denton, Met Ed was frozen out completely. David Klucsik, a member of the Met Ed public information staff, says the NRC did not even tell the utility when the briefings by Denton would be held or what he would discuss.41/

In all of this, Fabian sees more than an effort by the NRC to protect the sanctity of the regulator-licensee relationship. Rather, he thinks the NRC wished to portray itself as the white-hatted rescuer doing battle with the black hats at Met Ed. Neither Abraham nor Fouchard "made my job any easier," Fabian says.42/

This lack of cooperation worked both ways. On Wednesday morning, Abraham called GPU headquarters in New Jersey in an effort to add to his meager store of information on the accident, and no one at the company would talk to him.43/ He never tried to talk to the Met Ed public information people because in his experience he has always found utility public information people ill-informed. 44/

Met Ed's relationship with the State of Pennsylvania started out on the right foot, but quickly deteriorated when Paul Critchlow, Governor Thornburgh's press secretary, lost faith in Jack Herbein. Herbein talked to the press for the first time outside the Observation Center early Wednesday afternoon. He did not tell them that the utility was releasing some radioactivity into the air. Neither had the utility told the state. When Critchlow asked Herbein about this at a meeting shortly thereafter, Herbein said he did not tell the press because the question had not come up. Suspicious of the utility's candor, Critchlow refused to permit Herbein and Lt. Governor William Scranton to make a joint statement later that afternoon. When Scranton did meet the press for the second time on Wednesday, he said that the state had not been getting complete information from the utility, further undercutting Met Ed's reputation as a reliable source. Recalls Critchlow of this episode:

I have deep suspicions about Herbein and I'm not going to associate the Lt. Governor with him. I'm not going to give him credibility. I wanted to preserve the Governor and the Lt. Governor's credibility.^{45/}

As a result of Met Ed's failure to be forthcoming at the outset, the state and the NRC formed an alliance against the utility. The institution with access to the most reliable information about the reactor was no longer trusted by spokesmen for the state or the NRC.

TMI demonstrates the need to define clearly the role of the utility in the communication of information during an accident. Can a utility be trusted to present accurate and timely information about an accident in its own plant? This is particularly crucial until the time the NRC decides to send its own information-gathering team and public information officials to the site. At present there is no clear responsibility and no workable plan. The confusion is summed up by Karl Abraham who says, "We have no requirements [for the utility] in the area of public affairs. I can't make a utility person do anything. I'm not sure I should be able to make them do anything."^{46/}

Given this lack of agreement over the basic question of who is to provide what information in the first hours of an accident, it is not surprising that there was no plan at the utility or the NRC for providing information as the accident developed. Says Joe Fouchard, "I don't really know a utility in America that is staffed up for a nuclear emergency."^{47/}

The utility is not hesitant to admit this. According to Fabian, the utility had "absolutely no" emergency communications plan after the requirements for declaring a general emergency at the site had been carried out at approximately 7:30 a.m. on Wednesday. Nor had Fabian ever consulted any of the emergency communication plans drawn up by other companies.^{48/} Says Robert Arnold, GPU's vice president for generation:

We did not really plan, as part of the emergency plan, to interface with the news media. I think if one were to look at the emergency plan, it is clear that it does not address interface with the news

media at all. . .The thrust of our emergency plan was to give the best support we could to the State for making [evacuation] decisions, and we really didn't look at the interface with the media.49/

Nor was the NRC any better prepared. In his usual blunt manner, Karl Abraham puts NRC thinking in perspective:

[I]f there's anything that's clear, it was that we didn't expect this accident. And if I have to put my money in a basket, I'd put my money in a basket that says that most of our people, if you woke them up in the middle of the night on Tuesday night and said to them, "What do you think?" and you list the seven or eight major causes of the accident that have been identified so far, they would say, "Hell, that can't happen." There would be a few who would be smart enough to say, "Well, our studies haven't really addressed themselves to that. It's probably unlikely but I couldn't say for sure." But most of them, I think, would say, "That can't happen."50/

To complete this sad picture, the Thornburgh administration had been in office for only a few months at the time of the accident. "The Governor's office didn't even have any idea of the emergency procedures and so forth, or who was responsible," says Tom Gerusky, director of the Bureau of Radiation Protection in the Pennsylvania Department of Environmental Resources. "The problem was we [in the State departments] didn't know them [in the Governor's office] and they didn't know us and it took a while."51/

D. SEAT-OF-THE-PANTS MODE

During the first week of the accident, an enterprising reporter could have telephoned or visited 10 different locations set up by the NRC or Met Ed, each with some sort of public information function. These information centers are described below with an emphasis (in this part of the report) on the organizational and information-flow problems that made each a less than ideal source for the press and public.

NRC

Maryland National Bank Building in Bethesda

This is the headquarters of the NRC's public information staff. After Met Ed declared a general emergency on Wednesday morning, the NRC convened the Emergency Management Team to staff the Incident Response Center (IRC) in the East-West Towers building. Joe Fouchard went to the IRC to function as the eyes and ears of public information by staying in close touch with the Emergency Management Team. Periodically, Fouchard was to call Frank Ingram at the MNBB and provide him with up-to-date information. Ingram and three staffers would supply this to reporters over the phone. At the IRC, there was no space to receive reporters in a group or to hold a press conference.

While Fouchard was at the IRC, he prepared three press releases with technical information from Harold Denton, Edson Case, and John Davis. 52/ These statements were released at 10:30 a.m., 5:15 p.m., and 12:15 a.m. (on Thursday, March 29). Ingram says that these statements were basically all the information his people had. He had no means of checking the releases' accuracy or timeliness. Ingram had no exclusive phone line linking him with Fouchard, and he suspects that Fouchard tried, unsuccessfully, to phone updates to him through the jammed switchboard. 53/ Thus, says Ingram, he and his staff spent most of Wednesday telling reporters they could not answer their questions. 54/ The fact that the East-West Towers is a short bus ride from the MNBB made it difficult for the public affairs people to travel back and forth easily, and impossible for them to ask the Emergency Management Team questions directly.

Ingram ran the MNBB operation Wednesday and Thursday until he replaced Fouchard at the IRC on Friday. The staff thinned out on Sunday when public affairs reinforcements went to the site as part of the White House-directed centralization effort.

IRC in East-West Towers in Bethesda

Typical of the NRC's lack of planning is the fact that no one expected that reporters and other interested persons would call the IRC directly to talk with technical people. But call they did. Lee Gossick and John Davis responded to this emergency by creating on the spot the job of "operations status officer," filling it with Dudley Thompson, who was supposed to be executive officer for operation support at the IRC.55/ Thompson took calls from NRC commissioners, members of Congress and their staffs, and, occasionally, from the press. In addition, Commissioner Gilinsky asked Edson Case to handle calls to the IRC. Case says that to help out public affairs, he talked to a number of reporters on Wednesday but he soon saw he could spend all his time this way, so he cut back after the first day. 56/

Meanwhile, two of the most capable technical people, Darrell Eisenhut and Victor Stello, were briefing the commissioners and Harold Denton. Eisenhut also found time to brief government delegations from Japan and Germany and a handful of business leaders. He did not brief the press. 57/

Region I Headquarters in King of Prussia, Pa.

When Karl Abraham heard about the accident at 8 a.m., he tried to draft a press release, but he was never able to finish it. Calls from the media began pouring in just after 9:00 a.m. His secretary had to put a hold on all calls every 4 hours just so Abraham could get to the bathroom. Even though the main collection center for information for the NRC was right above him, he was only able to go there for updates two or three times the entire day.58/ Part of Abraham's problem was his reluctance, shared by many, to interrupt the technical people with questions that would distract them from the accident.

As a result, Abraham admits he did not know much more about the accident at 7:30 p.m. than he did in the morning. Nor did he receive the first PN on the accident, which was released during the afternoon: 59/

When I look back now on the kinds of -- I wouldn't even dignify it by calling it information -- that I was able to give out during the first two hours or so, it was pretty bad.60/

After a while on Wednesday morning, Abraham says, he started giving out background information about the plant rather than attempting to answer specific technical inquiries. His plan during this period is evident in this exchange with Stuart Diamond, the science writer for Newsday:

Diamond said, "I want you to know I'm taking a very sober, serious approach to this situation, and what I would like you to do is give me a step-by-step chronology of just how this accident happened so that my readers will know exactly what the facts are." I said, "That's what everybody would like to have, including us." I said, "We don't have that kind of information." And, you know, he was very surprised that I would say I haven't got the least idea of what really is going on out at Three Mile Island at 11 a.m. in the morning when by then it had become clear that this thing had started around 4 a.m. And he couldn't understand that.61/

Between 7:00 and 7:30 Wednesday evening, Abraham discussed with Fouchard whether he should stay in King of Prussia or go to the site. Fouchard was concerned about stripping the regional office of its only public affairs officer. But Abraham pointed out that "everybody on the east coast is driving or flying to the site. . . Do you want to try to explain why in this kind of an action. . .we don't have anybody there to answer questions of the news media?"62/ Fouchard agreed, cautioning Abraham not to participate in any news conference called by Met Ed.63/

Abraham drove to the site on Wednesday evening. Approaching Harrisburg, he picked up on his car radio a live broadcast of a press conference involving Charles Gallina, one of the NRC's Region I technical people dispatched to the site that morning. Abraham recalls that what he heard was better information about the accident than he had received all day, and he used the information all the next day in briefing reporters. "Of course it's ridiculous, but it was the only game in town for me."64/

On Thursday, Jan Strasma replaced Abraham in Region I. He had been called in from Region III in Illinois, thus stripping that area of its public affairs officer.

Karl Abraham On-Site

Given that Abraham's presence at the site was the result of an ad hoc decision, it is not surprising that he was not sure what to do when he got there. He and Fouchard had not yet discussed setting up an NRC press center near the site, a decision which Fouchard now regrets not having made earlier.64/

Abraham first went to Met Ed's Observation Center across from the plant. No trailers had been set up yet and he could not find any of the NRC Region I people. He waited in line to use the single pay phone outside the center but he was unable to reach anyone. All he got were busy signals. 66/

Thursday morning Abraham was welcomed to the office of Paul Critchlow, Governor Thornburgh's press secretary. Critchlow provided Abraham a desk, two phone lines, and some secretarial support; until the arrival Friday afternoon of Harold Denton and Fouchard, this was the NRC's public affairs office on-site.

Throughout Thursday Abraham was getting most of his information from Strasma in Region I and from the IRC in Bethesda. But since he was in Critchlow's office, he also had access to information coming to the governor from the control room of the plant through William Dornsife, a nuclear engineer with the State Bureau of Radiation Protection, who was in touch with Met Ed operators. 67/

Yet Abraham was isolated from NRC activity to such a degree that he did not know that a group from Bethesda headed by Richard Vollmer had been sent up to the site Thursday afternoon. 68/ Vollmer says he was given no instructions by Fouchard or anyone on how, or whether, to deal with the press on-site. At the time, he did not know Karl Abraham and did not know he was at the site. 69/ Vollmer had no formal contact with the press until much later in the accident when he replaced Denton and Stello as briefer in the Middletown press center. Yet, on the Thursday of his arrival, he recalls he was not so busy that he could not have briefed the press. 70/ But the contact with Abraham was never made, and the opportunity to use Vollmer was wasted. Abraham continued to answer phone queries from Critchlow's office from about 10:30 a.m. Thursday until early Friday morning, when his job changed.

On Friday morning, as a result of a venting of radioactive gas by the utility, there was considerable confusion over whether the governor should order an evacuation. Recognizing that communications between Bethesda and the governor were precarious and that it was essential for the governor to be in direct contact with NRC Chairman Hendrie, Abraham stopped taking phone queries from reporters and kept a line open between his office and Bethesda. Abraham explains this decision as follows :

I said to the gals outside, "This is a tough thing to do under the circumstances, but. . .I'm not going to take any calls from the news media, because if the telephone situation is as bad as it looks, and if I've got a way to keep a line open to some part of the Governor's establishment and something really serious happened and there was no other communications, how could I justify loading that line because I was talking to a reporter?" 71/

Abraham switched from public affairs officer to courier from about 10:00 or 10:30 a.m. Friday until about 4:30 p.m. (He did, however, talk to reporters who walked in his door.) It is difficult to fault Abraham's decision given the stakes Friday morning and the communications problems, yet it meant that at perhaps the most confusing point of the accident, the press could not reach either Abraham, or Fouchard and Denton, who were en route to the site. Other than the MNBB operation and Jan Strasma in Region I, no one at the NRC was putting out any information during this Friday crisis.

That night, Abraham and Fouchard finally found time to talk when Denton came to brief Governor Thornburgh. Fouchard told Abraham to begin planning an NRC press center, and, for the next few days, until the center opened on Monday, Abraham played a logistics role. This was also a role two other key public information people -- Fouchard and Fabian -- adopted as nonpublic information people took center stage.

Harold Denton On-Site

On Friday morning at about 11:15, Governor Thornburgh received a call from President Carter. As Paul Critchlow reconstructs the conversation, the governor told the President how much confusing information he was receiving from a variety of sources. He asked the President to send a single person from the NRC who could speak with authority on technical matters. 72/ At Carter's request, NRC Chairman Hendrie spoke to both Harold Denton and his deputy Edson Case and said that one or the other had to go. Denton volunteered.^{73/}

Later on Friday, Critchlow and Jody Powell discussed the division of labor on the public information front, as envisioned by the White House. "Powell and I talked and . . . his proposal," says Critchlow, "was that. . . the Governor's office will speak to everything that impacts on the population, emergency preparedness. The NRC -- specifically Harold Denton -- will speak to everything that involves technical conditions at the plant. And the White House press office will coordinate all statements from the swarm of federal agencies moving into the area." 74/ This arrangement was confirmed in a memo from national security advisor William E. Odom to Zbigniew Brzezinski detailing the results of a meeting of an ad hoc White House committee on the accident that met Friday afternoon. Odom said the following decisions had been made in the area of public information:

- a. All information about the situation at the plant will come from or through Harold Denton (NRC) who is on the scene and who will have direct communications with Governor Thornburgh, the NRC, and the White House. The main objective is [to] prevent confusing and contradictory reporting.
- b. Jody Powell will coordinate all press releases in Washington and, to the extent possible, in Pennsylvania.^{75/}

Denton says that, with one exception, he had never before briefed the press. 76/ (The exception was the NRC-ordered shutdown, a month before the TMI accident, of five nuclear plants located in earthquake zones.) Denton says he thought he was only:

flying up to take my normal role as head of the safety review of the plant ... I didn't even perceive of the coming press aspects. It had not even been discussed with me when I left, and it was kind of ad hoc generated 77/

Even the first full-fledged press conference with the governor on Friday night came as a surprise: ^{78/}

I didn't realize what a press conference really was. The Governor said, "Let's go brief the press," and he had a statement prepared . . . and I said, "Sure," and so we go out into the press briefing room and he reads a statement and I'm standing there, sort of staring at the ceiling waiting . . . and he finishes and says, "And Denton will answer your questions."

Despite this hesitant beginning, Denton quickly switched from the technical management of the accident to full-time briefer, with Joe Fouchard at his elbow. His main clients were the NRC commissioners, the President, the governor, and the press.

Denton praises Fouchard for "insisting from day one that I go out there and tell [the press] why I was there . . . and what I intended to do . . . and that I'd get back to them later." ^{79/} He credits Fouchard with forcing him to brief the press later in the week, despite his exhaustion. ^{80/} Finally, he says Fouchard pushed the NRC's technical staff to answer press inquiries that were coming to him. And, despite the fact that "Fouchard was generally seen by the technical staff as a hindrance," ^{81/} he kept pushing to get the information. Yet much of Fouchard's time was not spent directly in behalf of the press, but rather in shielding Denton between briefings and keeping him at his rounds as a key communications link between the governor and the White House. And Fouchard himself admits that on Friday morning, just before he went to the site, he abandoned his public information role entirely -- as had Abraham -- in order to try to facilitate communications between Hendrie and Thornburgh.^{82/}

Given that the decision to invest Denton with such importance was made virtually on the spur of the moment, in the absence of any plan that calls for such an NRC presence on site, his cool performance was a welcome surprise.

Reporters interviewed by the task force praise his soothing manner and twangy, natural speech patterns. Denton managed to win over the Boston Globe's savvy political reporter Curtis Wilkie, who said, "It's rare that I'm inclined to believe a government official."^{83/}

But apart from style, Denton's briefings and reliance on technical jargon were strongly criticized by a number of reporters. David Salisbury of the Christian Science Monitor says;

Denton, like many engineers, had trouble talking without using jargon. This confused a number of reporters and also resulted in a great deal of time being taken up with questions seeking clarification.

When more substantive questions were asked they were often not answered, or answered obliquely. For instance, I asked repeatedly for the results of samples taken of the contaminated primary coolant water and never got a satisfactory answer. In addition, follow-up questions which are often necessary on technical issues were extremely difficult to squeeze in.^{84/}

"Denton's press briefings were largely credited with calming people in the area, but I'd say this was because of his demeanor rather than the information he gave us," says Richard Roberts of the Harrisburg Patriot:

The information was very difficult to understand, very technical, and was as full of jargon as the language Herbein used. We'd come out of a press briefing with Denton and 90 percent of what he said had gone over our heads. We just tried to pick out what we realized were the important points. 85/

Adds Casey Bukro of the Chicago Tribune:

Denton was the hero of Harrisburg because he was the only one talking. But he should learn to talk English like the rest of us. 86/

Tom Baxter of the Atlanta Journal says the NRC tried to "snow" the press with technical language. 87/

Press Center in the East-West Towers in Bethesda

When Fouchard left Bethesda for TMI on Friday with Harold Denton, the public affairs staff back in the Maryland National Bank Building lost its link to the technical staff. Fouchard asked his assistant Frank Ingram to replace him at the Incident Response Center. Such was the state of Ingram's knowledge of events at TMI that morning that he was unaware of the 8:00 a.m. release of radiation or of the NRC's evacuation recommendation and its attendant confusion. 88/

Early in the afternoon, Ingram was told to set up an NRC press center in the East-West Towers building. The request, oddly, did not come from Fouchard, but rather from Commissioner Gilinsky, who says it was suggested to him by Jody Powell, who thought there would be less chance of error if the press was briefed as a group, rather than individually by phone. 89/ Ingram set up the center two floors above the IRC, thus making it easier for public information officers to obtain answers to press questions directly from technical experts. At 1:30 that afternoon, Ingram sent out a notice on the wires that the new NRC press center was open for business.

Ingram also had some help. Ken Clark had flown in from the Region II office in Atlanta and had been working the phones at the MNBB on Thursday; Jim Hanchett had come in from Region V in California. Ingram told Lee Gossick, who had set up the IRC, that he would need some people willing to brief the press on technical developments, so Gossick designated Dudley Thompson (who had already been playing a briefing role) and Brian Grimes from the Division of Operating Reactors.90/

With some exceptions, this press center was the best effort the NRC had made to further the flow of public information during the accident. As Ken Clark describes it, he would take questions from the press, go downstairs to the IRC, and gather responses from John Davis, Lee Gossick, Ed Case, Dudley Thompson, and others. Clark says he had no trouble

obtaining up-to-date information from them.^{91/} Ingram is not quite so sanguine. He says he had difficulty finding out what Denton was saying on the site on Friday and Saturday, so that coordination of press center information with his statements was difficult. On Saturday afternoon, when Hendrie held a press conference at the center, Ingram had to tell his staffers at the MNBB to abandon their phones and come over to East-West to hear what the chairman had to say. ^{92/}

However, the East-West press center came to grief for other reasons. On Friday afternoon, Grimes and Thompson were brought up to the fifth floor to brief reporters on conditions at the plant. They were baited with "What if?" questions that led them down the path toward statements about meltdown. Out of this briefing, a UPI story was written, quoting Dudley Thompson as saying that the reactor faced "the ultimate risk of a meltdown. . .within the next few days. . ."

The next day, in a press conference at the center, Chairman Hendrie, under pressure from Ingram and the press to make himself available for questions, mentioned publicly for the first time the potential explosiveness of the hydrogen bubble in the reactor and the fact that the NRC was thinking of ordering an evacuation as far as 20 miles from the site. That evening, working from Hendrie's statements and information from Ed Case, Frank Ingram, and an anonymous NRC source, the AP put out a story stating that the gas bubble "is showing signs of becoming potentially explosive" and that a "critical point could be reached within two days."

The news emanating from the East-West press center was clearly pessimistic, particularly the Saturday AP story, which had an unsettling effect on the people living near the reactor. The NRC in Bethesda was working against the effort to establish Denton as the primary source on plant conditions. This angered both Governor Thornburgh and the White House, especially because the information from Bethesda was more pessimistic than that coming from Denton on-site. (Had the information coming from Bethesda been more optimistic than that coming from the site, it is interesting to speculate what might have happened.)

After the AP story appeared, Presidential Assistant Jack Watson says he talked to Chairman Hendrie and Commissioner Gilinsky and "asked that they tighten and improve control of the NRC public information process out of Washington." ^{93/} Case says he was called by Gilinsky and, in the conversation referred to earlier, was asked to answer all queries himself or come up with some method of aligning information from the site and from Bethesda. ^{94/} Case says Gilinsky's suggestions "didn't make sense at all," ^{95/} but shortly thereafter he was told by Eugene Eidenberg, Watson's deputy, that all NRC communications were moving to the site. ^{96/} Case and Hendrie debated by phone whether to contest the authority of the White House to shut the East-West press center, but in the end, Case decided he had enough to do without answering press queries. ^{97/} Case then told Ingram that his press center was being closed, and Ingram returned to his work as liaison between the IRC and the HNBB. ^{98/}

Middletown Press Center

Just before Fouchard and Denton left for Middletown on Friday, Jody Powell suggested to Fouchard that he find a way to deal with reporters in a group. "Have you all thought about setting up a situation," Powell asked, "so that we can just come out and brief rather than trying to deal with everybody by phone call?" ^{99/} Fouchard answered, "We have thought about this, but it's such a fast-moving situation right now that I think we've got to assess it a little bit later on."^{100/} By Friday night, Fouchard agreed that the NRC had to set up some sort of press center to accommodate reporters on-site, and he set Abraham to the task.

The space Abraham selected was the basketball court in the Middletown Borough Hall. Abraham had to assemble from scratch all the logistical support -- xerox machines, amplification systems, phones, tables -- without a knowledge of the community and, because of the NRC's cold war with Met Ed, without any advice from the utility.

Abraham found the task so time-consuming that he subsequently collected the Yellow Pages from communities surrounding all the nuclear facilities in his region; using them, he intends to assemble a file of names and companies so that, in the event of another TMI-type accident, he can pull together a press center anywhere in the region on short notice.^{101/}

The Middletown press center, which opened on Monday, April 2, was a vast improvement over the Met Ed public information facilities in the area. Reporters were provided with table space and the opportunity to rent phones. Denton held a briefing each day. Two technical briefers -- Bernero and Elsasser -- were set up on the basketball court to answer basic questions about the reactor, to explain the latest Denton briefing, and to explain the PN's, which were being used as press releases. (Despite his scorn for the PN's as communication tools, Abraham says there was not time to prepare better press releases. The PN was says Abraham:

a document designed to serve an altogether different purpose than informing the news media, but they were the only things that enough people had agreed were reasonably accurate, that one could dare take a chance on giving out to the news media without having to come back an hour later and say, "Hey, what I told you was wrong."^{102/}

Also providing background information and shuttling questions from reporters to the NRC's command trailer on-site a couple of miles away were the public affairs officers from the other four regions of the NRC and one of the MNBB regulars.

The press center provided a focus for media attention. It was particularly valuable because it allowed reporters direct access to two NRC technical people. Says Bernero:

If I could do over the whole situation. . . I think it would have been better if I went to the site Thursday or Friday, or even Wednesday. . . to serve the very same [briefing] function.^{103/}

Even on Monday, the sixth day of the accident, Bernero found many reporters who needed his basic lecture on how the reactor worked, how hydrogen forms in the reactor, how it can burn or explode, and how the reactor was to be cooled.104/

The only instruction given to the briefers was that they were not to scoop Harold Denton. The briefers were to explain his statements, translate the PNs into English, and provide technical background information on the reactor. But they were not to give out new information, which was to come from Denton. They could, however, check out rumors or questions raised by reporters with technical people in the NRC's command trailer.105/

Bernero ran afoul of this rule once when he provided some information on radioactive iodine to Christine Russell of the Washington Star. The information was from a PN not yet available to the press or to BRP officials. Bernero was told by Fouchard that in the future he should not make information available to the press until he was certain the appropriate people in state government had it.106/

As much as the press center represented an improvement, there were still serious shortcomings. Bernero had no screen or projector on which to show diagrams of the plant. Fouchard had not supplied him with any graphic material. (Only by coincidence did Bernero happen to have with him some drawings of TMI-2 which he had used in his previous decommissioning work. From these drawings he produced a valuable xerox handout for the press.)107/

By Abraham's own admission, the first press conference on Monday was a mob scene. He took the advice of a television cameraman and permitted broadcasters to set up their equipment in the front, thus blocking everyone else's view of Denton and making it difficult to hear.108/ According to Denton and a number of reporters, the chaos continued beyond the first press conference. Recalls Denton:

[During] the first few press conferences, I think I made a mistake because I ended up selecting the people who asked the questions. I didn't know who to select out of the screaming mobs, and it usually was the loudest or most vocal, and one of the things we did right. . . is eventually I let Fouchard select the questioners. 109/

Mary Bradley of the Harrisburg Evening News provides a reporter's view of a Denton press conference:

Everyone would crowd into the room -- print, broadcast, cameras and lights -- and everybody was limited to one question. It was a shotgun approach. If a question came up about a bubble, Denton would answer it. You'd get one sentence about that, then someone would ask a question about something completely different. We'd never get a full explanation of anything, just a mass of individual answers. Then you'd come back and ask, "Did he answer this or was it a follow-up to that?" There was no continuity.110/

The press center was exclusively an NRC operation. Neither the state nor Met Ed was in evidence. Abraham is opposed to a press center shared by the NRC and a utility, but he would be willing to set up shop with the state. He believes the goals of the state and the NRC are compatible, but not the goals of the NRC and a utility. "I don't know what the goals and objectives of a private corporation may be before the fact,"^{111/} he says. Abraham disapproves of the idea of a press center "bazaar," where representatives of all institutions with a stake in the accident could present their views. He thinks this would lead to reporting by confrontation, with the media playing off one spokesman against another.^{112/}

A final problem with the NRC press center was that Fouchard was not able to arrange more technical briefings for those science writers who wanted more detailed information. All the briefings were pitched at the same low level, and only two briefers were available to the hundreds of reporters who came through the center. Fouchard says he does not know how he could have arranged such a briefing without offending the reporters not invited. In addition, "The senior technical people I had who would have been the ones to do the briefing would have been the Dentons or the Stellos. They were so goddam busy on the site," Fouchard says, "it just wasn't possible."^{113/}

Denton, Abraham, and Fouchard concede the logistical problems at the press center and the fact that it was late in opening. The charges by some reporters that Denton could not always be understood can be confirmed by reading transcripts of his press conferences. But as an information source, Denton proved, with three important exceptions, to be reliable. The information he gave out was generally accurate, but he sometimes provided less information than he could have to explain a confusing situation.

The first exception came Saturday night when Denton denied to reporters there was a serious split in thinking between NRC in Bethesda and NRC on-site. This was not so. The split was the cause of the confusing information on the explosiveness of the bubble.

The second exception occurred on Sunday and Monday when Denton made a decision to take a conservative approach on the size of the hydrogen bubble and was therefore late (or later than Met Ed) in announcing its disappearance to an anxious public.

The third exception occurred on Monday, April 2, when Denton passed over the miscalculations of the Bethesda bubble group so that reporters did not follow up on what he had said. Denton never flatly admitted that some NRC officials had goofed and that much of the bubble scare had been unnecessary. At a time on Monday when he knew that the bubble was not explosive, and had not been explosive, Denton told the press that the likelihood of an explosion was "diminishing."^{114/}

Despite these shortcomings, the Middletown Press Center quickly became the dominant source of information on the accident -- just what the White House and the governor wanted.

Met Ed

Reading

Met Ed's Three Mile Island Emergency plan pays scant attention to public information. It states that personnel at the utility's headquarters in Reading, Pa., "will provide technical support" to Public Relations and Information Services, and that "All information given to the press or radio stations, regardless of what category of emergency exists, shall be issued through Met Ed Communication Services Department."^{115/} No further details are spelled out.

While Met Ed's effort to publicize the accident Wednesday morning can be described as lethargic or misleading, it cannot be said that the utility attempted to avoid the press or its public information responsibilities altogether. At 8:30 a.m. Met Ed President Walter Creitz was taking calls from reporters over the phone, ^{116/} and he was still fielding calls Wednesday evening. ^{117/} Creitz appeared on both NBC's "Today" show and ABC's "Good Morning America" on Thursday, while Jack Herbein, vice president for generation, was on the CBS morning news. Early Wednesday afternoon, when Herbein left the Observation Center across from the plant, he encountered a large group of reporters. He stopped to talk to them, he says, in part because he felt he had to, but also because he felt he ought to. ^{118/}

Two releases were also prepared Wednesday morning for use by public information people; one by Herbein (who was in Philadelphia) and Fabian in Reading; the second by GPU's communications vice president William Murray (who was in Washington) and Robert Arnold, GPU's vice president for generation, which was sent on to Creitz in Reading. The Herbein release was also distributed by Bill Gross at the Observation Center. (In contrast, Babcock and Wilcox, the company that built the Three Mile Island reactor, refused to answer any queries from the press during the first few days of the accident.^{119/}

In Reading, Fabian and the three public information people he had on hand (only one of whom dealt regularly with the press -- and he had worked at Met Ed only a month) were overwhelmed from the outset. "I didn't even have time to finish telling my staff what was going on before. . . every phone in the place had an incoming call on it," says Fabian, who adds: ^{120/}

The worst thing that can happen in public relations or communications work is not to be able to get answers to people and get back to them. The pile (of return call slips) was so deep you couldn't get three slips down through that pile. The minute you hung the phone up to make the next call, an incoming call would buttonhole you. ^{121/}

Mary Bradley of the Harrisburg Evening News was on the receiving end of this treatment Wednesday. She called Reading for a statement "but everybody in their PR department was in a meeting," she was told. "So I couldn't get a statement. They didn't call back until late that afternoon after all my deadlines were passed."^{122/}

To make matters worse, the information coming into Reading from the plant was scanty, and some of it not even intelligible. Two of Fabian's staffers could not understand the Murray/Arnold release because of its technical language and thus never used it in their dealings with the press.^{123/} Admits GPU's Arnold:

We had people who were assigned and dedicated to communicating with the state. We had people who were assigned and dedicated to communicating with the Nuclear Regulatory Commission. We didn't have anybody assigned and dedicated to communicate with Mountain Lakes [where he was located] or Reading.^{124/}

Adds Richard M. Klingaman, manager of generation engineering, who did some technical briefing during the accident:

There was no flow of information on any kind of formal, structured basis. Frankly, I believe that the people. . .from communications services didn't have a very good understanding of the status of what was going on. ^{125/}

Nor did they feel at liberty to try to find out. "One of our concerns at the time," says David Klucsik of the public information staff, "certainly was that we weren't going to try to call the plant and clog things up here any more than they were already clogged." ^{126/} By 2:30 p.m. on Wednesday, Reading was still working from information received at 8:00 a.m. Fabian recalls telling the staff, "To hell with it. I'm going over to the Observation Center (a trip of about 60 miles) and I'm going to get there in the control room and get this information and I'll call you back." However, says Fabian,

it didn't work.^{127/} The people over there were just too crowded, they were too busy. All I could do was pick up bits and pieces from this person and from that person. . .and I sure as heck wasn't going to gamble on putting bits and pieces together and making a statement of it. The only way I could get a statement . . . was find the time that Herbein could stop for ten minutes and work something up together with him. ^{128/}

Reporters, of course, did not know Reading was in the dark, and the calls kept pouring in. On Wednesday evening, reinforcements arrived from the rates and consumer services departments, along with technical briefers from generation. At one time three of these technical briefers were talking with three different AP reporters. ^{129/} Judy Botvin, a member of Fabian's staff, says she was learning more about the accident from reporters calling in than she was from her own organization. ^{130/} Fabian himself learned about the general emergency from a wire service reporter. ^{131/} Nor did Fabian know that Jack Herbein had given the company's first press conference at the Observation Center Wednesday afternoon, so his staff could not even repeat to the press what Herbein had said. When Fabian learned from reporters that Herbein had held the conference, he sent someone to radio station WHP for a tape of a newscast that contained some of the Herbein material. ^{132/}

The Reading operation was so overmatched that there was no system for separating calls from members of the public from media calls. Nor did Fabian have a "spotmaster" unit that permits multiple incoming calls to be answered by a tape recording of the latest information. The recording can be updated repeatedly if necessary. 133/ (Sports information departments at most major colleges have such units to satisfy sports writers who all want to talk to the football coach.)

Jack Herbein

Just as the main spokesman for the NRC was a technical person, the main spokesman for Met Ed was Jack Herbein, vice president for generation. Herbein briefed the press on Wednesday at the Observation Center; on Thursday in Hershey; and on Friday in Middletown. On Saturday as part of its effort to centralize communications, the White House asked Met Ed to cease discussing developments at the plant, 134/ and Herbein held his last press conference on Saturday.

Herbein had been actively involved in the release of all information pertaining to the generation of electricity at Met Ed prior to the accident. Thus it is not surprising that he stepped to the fore on Wednesday, March 28. Herbein explains it this way:

I felt that somebody had to do it. As the senior generation official for Metropolitan Edison, I had talked to the press before. They -- the local press and the media -- knew of me, and had heard from me before on energy related matters. I felt it was my responsibility to communicate what I understood and what I knew to the public in the best way I knew how.135/

Was Fabian inadequate to the task? "The word 'inadequate' doesn't do justice to Blaine," says Herbein:

It's true that Blaine doesn't have the technical background that I do. It's also true that we had a very complex set of circumstances which were not only difficult to, initially, attempt to understand, but were also difficult to set in perspective and properly convey to the general public. And I didn't feel that it would really have been proper to ask Blaine to be the spokesperson. I felt it was a difficult situation and that it called for me.136/

What Herbein faced beginning Wednesday was not a single reporter, or a small group of local reporters, but the national press. Was he the right man for the job? Bob Bernero, the NRC's technical briefer, thinks not:137/

He was the station superintendent when TMI-1 was licensed, and I had many, many arguments, fights, disagreements and. . .very vigorous exchanges with the man. I have a high regard for him as a station superintendent. He's conscientious, honest, straight, hard working, but mean. He's a tough guy. He's the last man in the world -- knowing him personally, having dealt with him professionally -- he is the last man in that organization I would ever have picked to be a

public spokesman. . . Jack has a very tough, condescending attitude. He's a very sharp man himself. And he's the sort. . . you would want to avoid, a very strong-willed, assertive expert who has little patience with ignorance or with slow understanding. [His attitude is]: "I'm going to give you 25 words to explain this problem and if you don't understand it with those 25 words, out you go, you don't get another word." You know that attitude is just destructive, it's counterproductive.

After Thursday's press conference, Met Ed President Walter Creitz knew Herbein was in trouble with the press and that he needed some advice from Fabian, 138/ but Fabian felt he was not in a position to offer advice. "Quite frankly," Fabian says, "our executives are not accustomed to having that kind of PR advice, or accepting it."139/ Fabian was with Herbein Friday when Herbein made his damaging statement to the news media that "I don't know why we need to. . . tell you each and every thing we do. . . "140/ Fabian says he knew that statement would give Herbein problems, but he did not think he ought to try and straighten it out with the press. "We don't operate as that kind of company," he says. "Herbein was the spokesman and we, the public relations function, are not the overpowering operation in the company."141/

Nor is it clear that Herbein would have taken the advice, were it offered. "I don't know that anybody has the bottom line on how to deal with reporters," he said some four months after the accident.142/

Hershey Motor Lodge Press Center

Mid-afternoon on Thursday a decision was made to set up a press center nearer to the site and to divert calls from Reading. The site chosen was the Hershey Motor Lodge, a prime tourist resort in Hershey about 9 miles from the plant. The choice of location is an odd one given that the utility had already held some of its press conferences in the American Legion Hall in Middletown itself. The Legion Hall has a large parking lot, an adequate public address system, and a space big enough to accommodate the growing press corps. The local phone company was able to provide adequate phone service for the press at the NRC's press center at Middletown Borough Hall, so presumably the same could have been done at Legion Hall. And, of course, Legion Hall is 7 miles closer to TMI.143/

Hershey makes sense only when one realizes that this was a press center to which the press was not invited. It was strictly a telephone operation. The "center" was really two connected motel rooms stripped of furniture, with 10 telephones and duplicating equipment. The phones were answered by a rotating group of public affairs staffers headed by Ken McKee of GPU and Howard Seldomridge of Met Ed. Fabian had little to do with the center after setting it up on Friday morning. (Late Friday afternoon Fabian essentially stopped functioning as a public information officer and devoted himself to the logistics of setting up the "trailer city" to house the specialists pouring in to aid in the recovery. He was setting up a commissary, renting trailers, booking motel space, renting cars, and the like. Thus Met Ed lost its top public information official on the day of its greatest public relations crises. Fabian

defends his decision to switch jobs by saying he was best able to make the necessary plans, given his familiarity with the vendors in the area.^{144/}

Three technical briefers were also in the Motor Lodge, the most important of whom was George Troffer, manager of generation quality assurance. A representative from Hill and Knowlton, the public relations firm, was also in Hershey. He had been in Harrisburg on utility business on Wednesday and volunteered his services. Also present was a representative of the Atomic Industrial Forum who provided some technical advice.

In the same way that briefers at the NRC press center were ordered not to scoop Denton, briefers in Hershey were not supposed to scoop Herbein. Troffer says that the center was intended to serve three functions: to recount for reporters what Denton and Herbein had said in their most recent press conferences; to explain information that reporters had but did not understand; and to provide background information on the reactor.^{145/} What they were not to do, but what they were sometimes pushed into doing by the press, was to speculate on the meaning of what Herbein and Denton had said.^{146/}

One improvement over Reading was that Troffer and the other technical briefers had better lines of communication to their colleagues in the control room. But this did not result in a more efficient operation. Troffer says he still learned many things from reporters who called and asked him to confirm or deny something they had learned from another source. That is how Troffer first learned of the potential explosiveness of the bubble and that the NRC was thinking of an evacuation out to 20 miles.^{147/} The volume of calls was too great for the staff to handle. Klingaman recalls that 60 or 70 call slips piled up overnight when the press center shut down.^{148/} "After the second day their telephone service wouldn't tell you anything," says Richard Lyons of The New York Times. "They didn't know or they would get back to you. But they never did. It became sort of a sham."^{149/} There were not enough people to monitor media coverage of the accident in any systematic way; as a result, the staff was unaware of discrepancies in coverage from medium to medium, and thus unable to try to correct them. ^{150/}

One must sympathize with George Troffer, thrown as he was into a public information role of great complexity without any training or experience. Even after Met Ed was officially silenced as a source of news, the Hershey press center continued to field calls to provide background information. On Monday, April 2, however, Troffer got the jump on the NRC by announcing that Met Ed calculations showed the hydrogen bubble had disappeared. Troffer was bawled out by Fabian for giving this information to a reporter. When Troffer next talked to that reporter, he asked him to "retract" the statement. The reporter asked him if he had, indeed, made the statement about the bubble. Troffer said he had, but that he had no right to do so. "I'm not a press releaser," Troffer said. "I'm an explainer. . . Please withdraw that." The reporter refused. Troffer said, "Well, can I retract it?" The reporter, sensing a good story in the making, said he could retract it. Twenty minutes later, Troffer said, he heard a report on the radio that "George Troffer retracted his statement."

"That was pretty embarrassing," he says.151/ "I was never meant to be a Walter Cronkite." 152/ At one point, Troffer suggested that the entire Met Ed public information operation be turned over to the Atomic Industrial Forum in Washington, but that idea never took hold.153/

Many of Met Ed's problems in Reading and Hershey are summed up by Blaine Fabian. "Being a small utility, we didn't operate in the big leagues that we woke up to on the 28th. . .We were never playing in Yankee Stadium until that morning."154/

The State of Pennsylvania

Paul Critchlow, press secretary to Pennsylvania Governor Richard Thornburgh, had one thought uppermost in his mind throughout the TMI accident. He was determined to protect the credibility of his boss so that if it became necessary for the governor to order an evacuation or other life-protecting measures, he would be believed. 155/ Critchlow, a former Philadelphia newspaperman, seems to have noticed the potential for confusion among information sources earlier than most, and he moved quickly at the beginning of the accident to centralize information for the state in the governor's office and to insure that the governor was receiving the best information possible.

The most likely sources of information for reporters within state government were three: Critchlow's press operation within the governor's office; the Pennsylvania Emergency Management Agency (PEMA) and the various county civil defense directors associated with it; and the Department of Environmental Resources (DER) and within it the Bureau of Radiation Protection (BRP), headed by Thomas Gerusky. By the third day of the accident, only a part of Critchlow's press staff and the governor himself functioned as sources for the press. Everyone else was silenced. In addition, Critchlow was a strong advocate for silencing Met Ed 156/, closing the East-West Towers press center in Bethesda 157/, and getting Harold Denton to the site as the sole NRC spokesman. 158/

On Friday, Critchlow ordered John Comey, the public information officer for PEMA, not to talk to the press. Critchlow told PEMA that all statements were to come out of his office and that PEMA was to comment only on the technical aspects of evacuation. But they were not to get into the specifics of evacuation plans. 159/

Critchlow borrowed David Milne, the DER press officer, and used him on his own staff, leaving DER without its spokesman. Critchlow also told BRP's Gerusky, who was collecting information on radiation releases, not to talk to the press as of Friday.160/

The primary function of Critchlow's own press office was to collect information for the governor, not give it out to the press. Critchlow, Milne, and Roland Page, all former newsmen, played a reportorial role during the accident, and a public information role only insofar as some of what they fed to Governor Thornburgh was passed on to the press at his press conferences. 161/ The governor's office became a sort of fact-checking operation. 162/ Critchlow himself rarely provided information to the press.

The press office that Critchlow did maintain for the media was similar in many ways to the Met Ed Hershey set-up and to the NRC's Maryland National Bank Building operation. It was a telephone center, not intended to handle journalists in person. It was staffed by junior people who were under instructions to discuss only what the governor had said at his last briefing and when the next briefing would be. The decision was made to comment only on the area of decision-making directly under the governor's control -- evacuation -- and not to discuss the other areas. 163/ According to a number of reporters, it was difficult to get through to this press center, and it did not figure as an important source of news.

David Milne comments on the tight control of information coming out of the governor's office:

I know, I was a reporter. We have a propensity to quote. . . official-sounding sources, especially on a story like this where you are really [trying] to find out what happened. And I think [quoting various official-sounding sources] happened in this case in Washington. It didn't happen here because only one or two or three people were answering questions. And while I don't necessarily believe in muzzling -- in fact, I'm opposed to it -- but under these circumstances, every time somebody said something different. . . people started running out of restaurants screaming. It seems to me in a case like this that a certain amount of control over the dissemination of information is necessary. 164/

Two by-products of the Critchlow policy should be mentioned. First, because BRP was silenced, the press had no single source with accurate and up-to-date radiation figures. Second, the effort to silence PEMA was so vigorous that no information was flowing from the governor's office to PEMA headquarters. As a result, the county civil defense directors were often in the dark about developments at the plant and were unable to answer queries from the public. Kevin Molloy, director of the office of emergency preparedness in Dauphin County, was not happy about the situation: 165/

This is one of the true tragedies of the whole thing. . . It's sad that the chain of command fell apart and that the press conferences were held by the Governor, Harold Denton, and so forth, and they did not take the time to make sure that we got the word as to what was going on prior to the public learning. . . The general public would call and say, "We just heard this on radio or television. What's the story?" We would call back to the state and say, "Hey, we just got a call and what's the story?" "Well, we don't know. We'll have to check and get back to you." Somewhere up at the state level between the Governor's office and PEMA and some of the other agencies, there was a total breakdown. . . . It caused quite a headache for us.

Molloy was angry enough to do two things. On Saturday night, at the height of the confusion between Bethesda and the site over the bubble, he called the White House and bawled out Presidential Assistant Eidenberg, telling him he:

would appreciate it if the clowns in Washington would stop and think about what they are saying before they go telling the news media because they were just making statements without any concern for the people in the affected area. 166/

Also on Saturday night, Molloy told Lt. Governor Scranton's office that because of the lack of information coming to Molloy's office he was thinking of ordering an evacuation on his own. 167/ Molloy was eventually mollified by a personal visit on Sunday from Scranton.

Critchlow, who is generally pleased with the way he handled information within the governor's office, admits that the failure to keep PEMA abreast of developments was a problem. "If local civil defense authorities can tell people -- the more they can tell them that is reasonable and responsible -- it has a calming affect." 168/

E. DISASTER PUBLIC RELATIONS

While the task of communicating with the public during a TMI-type situation is an imposing one, it is not impossible. The NRC and Met Ed did not have on their staffs (and still do not have) individuals skilled in "disaster public relations"; that is, individuals who know what needs to be said, and the most efficient way of saying it, in such situations as hurricanes, floods, airplane crashes, natural gas explosions, and the like. There exists, however, a small cadre of specialists in this field, working for government agencies whose primary responsibility includes disaster preparedness and relief. These people can also be found in accident-prone industries, such as transportation, petrochemical, and public utility. They also work for fire and police departments.

The American Red Cross has given disaster public relations training to its PR and disaster operations personnel for 17 years. The Federal Disaster Assistance Administration (now part of the Federal Emergency Management Administration) conducts workshops for government and part-time PR personnel who are hired just for disaster assignments. A variety of other groups conducts "emergency information" workshops that are open to all comers.

Parts of private industry have developed their own approach to disaster or crisis public relations. One of the most impressive programs is Gulf Oil's "Crisisport" training program. In its manual Public Relations and the Major Emergency, Gulf says: 169/

We cannot, and should not, dismiss or ignore the public's attention to our activities or events affecting those activities -- even when the circumstances are unpleasant and difficult... It is the duty of designated personnel during an emergency to (a) gather and coordinate the release of factual information and (b) keep the public informed.

The manual includes such basic principles as establishing a centralized information center, designating an information center coordinator, notifying the nearest public relations representative of the company, treating news media representatives well, and releasing factual and verified information. It delineates management and PR staff responsibilities.

Gulf also has an intensive training program in which each plant's management and PR staff are put through a hypothetical accident situation which includes handling press queries. Daniel Prewitt, assistant director of disaster services for the Red Cross Eastern Field Office and the man who directed Red Cross plans for a possible evacuation, summed up the responsibilities of all concerned parties in a June 12 memorandum to the organization's Pennsylvania state liaison in Harrisburg:170/

A . . . lesson that most concerned parties learned was the almost overriding need for centralized communications during the emergency. I cannot think of any situation that is more prone to misinformation, hysteria and general confusion than a nuclear accident. The event at TMI showed quite clearly, I believe, that strong, effective planning needs to be done in order to ensure that the ebb and flow of information to agencies and the public at large must be coordinated and consistent. Without some method for consistent, accurate and timely information sharing, any reasonable response to the emergency can almost certainly be expected to fall short of its desired objective.

F. SPECIAL COMMUNICATION PROBLEMS ASSOCIATED WITH TMI

In addition to the myriad inadequacies of planning, training, and coordination that the preceding analysis suggests, the TMI accident posed three other problems.

Briefing Congress

The NRC's Office of Congressional Relations, headed by Carlton Kammerer, was in touch with 50 to 60 people during the accident who had expressed an interest in being kept informed. 171/ Most of these were Pennsylvania congressmen along with members of Congressional committees that the NRC deals with regularly. Congressional Relations had a representative at the IRC during the accident, playing much the same role as Fouchard -- feeding information back to headquarters. In addition to the personal phone calls, briefings for various Congressional committees and their staffs were held during the afternoon. An NRC technical person would take part in these telephone briefings.

One official who played this role was Edson Case. Case also did some briefing of the press. His view of the differences between the two briefings is instructive. Says Case, "I would say you tended to tell Congress more of the speculative things that you wouldn't volunteer to a press guy." If Case had heard early in the course of the accident that the feedwater valves had been improperly shut, he explained, he would have volunteered that to Senator Gary Hart (whom he was briefing) but not to a reporter. He would have told a reporter only if the reporter had specifically asked. 172/ Met Ed's George Troffer had the same attitude: he told some members of Congress as early as 1:00 p.m. on Wednesday that there had been core damage, 173/ but was reluctant to discuss this information publicly.

Quite apart from the question of whether members of Congress are entitled to hear information denied to the general public, this policy creates another problem. Many reporters relied on members of Congress

and their staff as nonofficial sources of news. The potential for confusion is obvious: reporters were hearing one thing from official sources and another from Congressional sources.

Kammerer says there was no coordination of information between the Office of Congressional Relations and Fouchard's public affairs staff.^{174/} Indeed, the public affairs people are in Bethesda and the Congressional relations people are on H Street in the District. Kammerer says his office shunted all press calls to Fouchard's people. They did not try to get information for reporters, nor did they attempt to resolve conflicts or contradictory information.^{175/}

Optimistic Versus Pessimistic Information

From the outset of the accident, the understandable eagerness of Met Ed spokesmen to underestimate the seriousness of events damaged the utility's credibility. President Walter Creitz describes this as a belief that the utility was always on the "downhill side" of the accident.^{176/} George Troffer admits, "We certainly set as a goal optimism instead of pessimism."^{177/} For Richard Klingaman the situation was somewhat more complicated "I think each and every one of us did have the attitude that unless we had final, accurate information, we didn't want to give it out."^{178/} But what constitutes final, accurate information? As illustrated elsewhere in this report, the more damaging the information, the more "sure" Met Ed had to be before acknowledging it. When the utility had good news to release, it seemed to require less confirmation.

Herbein recognizes that this tendency to play down the bad news hurt the utility. "The fact that you can be optimistic and, perhaps, not fully understand the situation and then lose credibility because of that, that's acknowledged," he said. "I think that's probably what happened."^{179/}

Ken Clark, the NRC's public information officer for Region II, says that anyone who expects a utility to behave differently is a "fool."^{180/} Adopting the most optimistic tone possible without actually lying is not unique to Met Ed, Clark says. The utilities in his region do the same thing regularly, and for incidents much less serious than TMI. Clark suggests that one function for the NRC is to ensure that the utility perspective is balanced by a more realistic, and if necessary, pessimistic view.

In addition, a more savvy press could learn to spot this tendency and discount it, without writing the utility off entirely, as happened at TMI. A Washington correspondent for a national news organization says, "I would not expect many utilities to comply with total honesty, and I would not expect any large institution to admit a major failure." It is possible to recognize the difference between overoptimism and lying. Had the press and public been able to do this at TMI, some information coming from Met Ed later in the accident which was of real value might not have been met with such hostility.

Dealing with an Ignorant Press

Despite the gradual *increase in coverage* of *nuclear power* throughout the 1970s, TMI marked the first time that large numbers of reporters were eyeball-to-eyeball with NRC and utility officials for a long period of time during a breaking news story. Each side has much to learn about the other.

To the engineers, press ignorance of reactors and nuclear technology was frustrating. John Hilbish, who works for George Troffer at Met Ed and who briefed the press, describes this experience:

I really didn't have very much experience with the press before. It's very, very hard to explain what went on in the first thirty minutes, or two hours [of the accident] so that you can write it in a paragraph. On Thursday night I spent two-and-a-half hours on the phone, with one reporter, invited him to our home office the next day, and spent three or four more hours with him, and probably over the next two or three days three or four more hours with him. Based on all that, he finally felt he understood just what happened. But by now it was the weekend and it was too late and he never wrote a story. 181/

NRC briefer Bernero says he was surprised that when he arrived on the scene Monday much of the press corps still needed his basic briefing on how the reactor worked. 182/ The NRC's Roger Mattson is blunter: "I guess one thing TMI taught me is that the media in this country have little or no capability to report or handle technological information." 183/

Denton found that the two most difficult things in dealing with the media were handling "what if" questions, which inevitably forced him to go through the meltdown scenario, and the media's demand for timely information:

[There] was this feeling that you couldn't ever have even a second . . . or five minutes to reflect on [a new development]. *People* kind of wanted an instant reaction. And engineering does not work that way all the time. You would get a fact and you need a little time to do some calculations and reflect on the thing. So . . . people [were not] happy with the fact that it took time to answer something. 184/

Herbein's traumatic encounters with the press produced some excellent insights into the differing perspectives and priorities of journalists and engineers. Among these are:

- o the pressures of a reporter's job to be precise, even when the state of knowledge is very imprecise and engineers cannot be more precise;
- o a reporter's instinct to try to find out whom to blame, as opposed to the engineer's instinct to try to figure out what to do about an accident; and

- o a reporter's desire to draw conclusions from incomplete information when an engineer would not draw such conclusions. 185/

To many of the engineers, the press was as much a mystery as the reactor was to the reporters. They did not realize that the press needs to be fed information regularly because, as Karl Abraham put it, "Newspapers don't print blank pages and a TV news program is not going to run a half-hour of recorded music." 186/ This accounts for the press's vigorous search for sources and information when precious little was coming from the utility and the NRC in the first few days of the accident. Nor, says Abraham, do engineers recognize what makes a good reporter: 187/

If [the NRC's engineers] worked in a newspaper office for any length of time, they would be forced to admit that most newspaper reporters probably know more about a great many subjects than our technical people do but nuclear technology does not happen to be one of them, and that, by and large, the news media are horrendously stupid when it comes to technical knowledge and extremely clever when it comes to recognizing public controversy regardless of the subject matter. Good newspaper men get hired by their newspapers because they can smoke out controversy, not because they can explain how one calculates linear heat generation rates.

Had Met Ed and the NRC recognized this, they might have handled the flow of information in the first days of the accident with a good deal more wisdom.

As bad as the flow of information was at TMI, however, things could have been worse. From a logistical perspective at least, as Bernero points out, the accident could not have happened in a better place. TMI is close to both Region I in King of Prussia and the NRC headquarters in Bethesda, to two airports and interstate highways, as well as to the state capital. "The response was still inept," Bernero charges. "You ask yourself, what would have happened if this same accident happened at Brown's Ferry . . . or [at one of] the many reactor sites far more remote and far less accessible?" 188/

VI. FLOW OF PUBLIC INFORMATION ON
FIVE KEY EVENTS DURING THE
ACCIDENT AT THREE MILE ISLAND

A. INTRODUCTION

In the narrative that follows, the Public's Right to Information Task Force has attempted to trace the flow of information during the accident at Three Mile Island from employees at Metropolitan Edison, to NRC, state, and federal officials, and, ultimately, to the press and public.

In order to focus this effort, the task force selected 20 key issues and events that occurred during the course of the accident. These were selected with the help of members of the Commission's technical staff. In a series of nearly 100 in-depth interviews with prominent participants in the accident -- from the utility, the NRC, and state and federal agencies -- the task force went over these events. It asked the subjects of the interviews when and how they heard about each event, who told them about it, and to whom they passed along the information.

From additional interviews with journalists who covered TMI, and with the help of transcripts of telephone calls to and from the NRC's Incident Response Center in Bethesda, the task force was able to reconstruct, in part, what the key participants knew and when they knew it. Comparing this information with the transcripts of press conferences and press releases it was then able to determine what the various sources were saying publicly about what they knew.

Of these 20 issues and events, detailed discussions of five appear in this volume. They are:

1. Met Ed declares a general emergency on Wednesday morning, March 28, and monitoring of radiation releases off-site begins.
2. Officials discuss causes of the accident in terms of operator error or equipment malfunction.
3. Met Ed dumps industrial waste water into the Susquehanna River on Thursday, March 29.
4. Met Ed vents radioactive gas measured at 1,200 mrem/hr on Friday morning, March 30, precipitating confusion over evacuation.
5. Engineers discover a hydrogen bubble in the reactor, leading to fears by some, on Friday, March 30, of meltdown or an explosion.

These five items were selected for inclusion in this volume because they highlight some of the most serious public information shortcomings during the accident and because they illustrate vividly the difficulties reporters faced trying to keep up with events. The narratives reveal which events were late in reaching the news media and the public, and which never reached them at all during the first week of the accident. They also point out the inaccurate information being passed along and the general state of confusion on the part of all participants.

Complete accounts are available in the Commission's archives of these additional events:

1. Officials discuss necessity of evacuation on Wednesday morning, March 28.
2. The degree of damage to the core is debated beginning Wednesday, March 28.
3. Met Ed starts a reactor coolant pump Wednesday evening.
4. Governor Thornburgh advises pregnant women and young children to leave the area.
5. The state brings in a supply of potassium iodide.
6. The White House asks Met Ed to stop giving technical information on the reactor to news media and the public.

B. MET ED DECLARES A GENERAL EMERGENCY, MARCH 28, 7:24 A.M.

Harrisburg-area residents first heard about the accident at Three Mile Island when WKBO, a local radio station, broadcast the news at 8:25 a.m. Shortly after 9:00 a.m., the Associated Press sent out a report over its national wires announcing that a general emergency had been declared at the site at 7:24 a.m. that morning. The declaration of a general emergency by Met Ed set the public information stage for the entire accident: neither the utility, nor the NRC, nor the state explained clearly what a general emergency was. Indeed, some public information officers at the utility, the state, and the NRC did not understand the term or its implications. The declaration of a general emergency was not mentioned in any of Met Ed's press releases on the first day of the accident. Not until Met Ed President Walter Creitz and Vice President for Generation John Herbein held a press conference in Hershey on Thursday morning, March 29, did any spokesman for the utility specifically state that a general emergency had been declared. And, even then, utility officials provided no clear definition.

At 6:15 a.m. Wednesday morning, more than an hour before declaring a general emergency, Met Ed had declared a "site emergency." According to the utility's emergency plan in effect at the time of the accident, a site emergency is declared when there is the possibility of "an uncontrolled release of radioactivity to the immediate environment."¹⁸⁹ Although a site emergency raises the spectre of a "potential off-site hazard," the plan stated, "notification of the public is not a high priority item. After termination of the [site] emergency conditions, the public will be notified in the normal manner through the Met Ed Communications Services Department."¹⁹⁰

Under the plan, the utility is required to upgrade a site emergency to a general emergency when the possibility exists for "serious radiological consequences to the health and safety of the general public."

Among the conditions that trigger a general emergency are readings of 125 mrem/hr at the plant boundary or high radiation in the containment or the coolant.^{191/}

Once a general emergency has been declared, the utility must initiate off-site monitoring and notify the state and the NRC. According to the emergency plan:

It may also be deemed necessary to notify the general public that an abnormal operating condition exists at the Three Mile Island Nuclear Station All information given to the press or radio stations, regardless of what category of emergency exists, shall be issued through Met Ed Communications Services Department.^{192/}

A general emergency represented the most serious form of emergency at Three Mile Island -- a warning that radiation measurements had been found, or could be expected, off-site. The next move -- whether to order an evacuation -- was up to the governor. But the manner in which news of the general emergency and subsequent radiation measurements travelled from utility to state to NRC officials highlighted serious communication problems that continued to arise throughout the accident. The first of these problems was Met Ed's reluctance to publicize the general emergency.

Met Ed Declares a General Emergency

At 7:03 a.m. on Wednesday, March 28, George Kunder, a Met Ed superintendent, called the Pennsylvania Emergency Management Agency (PEMA) to notify state officials of the site emergency at Three Mile Island. The PEMA duty officer reached William Dornsife of the Bureau of Radiation Protection (BRP), who called his superior, Margaret Reilly, who in turn called Thomas Gerusky, the head of BRP, and Kevin Molloy, Dauphin County Civil Defense Director. Dornsife called Met Ed back at 7:06 a.m. Utility officials in the control room told him that no detectable radiation levels above background had been measured on-site and that evacuation was not necessary.

Gerusky, Reilly, and Dornsife spoke to Kunder in the control room again at 7:24 a.m. The message was still that no radiation was being measured at the plant boundaries. But while they were on the phone, Gary Miller, the control room manager, declared a general emergency. Radiation readings in containment had reached a level requiring that he do so. Kunder immediately informed BRP officials and the four discussed the need for an evacuation. Richard Dubiel, the plant's health physics specialist, was against it^{193/} and no one seemed to disagree. Met Ed and GPU press releases made no mention of these discussions. They reported simply that the appropriate authorities had been notified and that evacuation was unnecessary.

The first the NRC heard about the general emergency was at 7:41 a.m. when an operator at the Region I office in King of Prussia, Pa., logged a call from Met Ed officials. Sometime between 8:30 a.m. and 9:00 a.m., Region I Director Boyce Grier reported to NRC headquarters in Bethesda that radiation inside the containment was 200 rems per hour. The

unidentified NRC official in Bethesda, on the other end of the line, exclaimed, "Holy Jesus! Man, they got a release inside. 200 rems per hour? At the top of the dome? Keep us posted. That's a serious, serious damn event." 194/

This concern, however, was not reflected in any of the NRC press releases issued March 28. None of them even mentioned that a general emergency had been declared. A preliminary notification issued at 3:45 p.m. did mention this fact, but it is not known whether any reporters saw it. (The preliminary notifications were not yet being used as press releases.) In any event, the PN was more than eight hours late in reporting the general emergency.

At about 7:40 a.m., Reilly called Kenneth Lamison at PEMA to notify him of the news from Met Ed that the site emergency had been upgraded to a general emergency. Lamison immediately notified PEMA Director Oran Henderson, who in turn alerted officials of the surrounding counties and Lieutenant Governor William Scranton, III. Scranton, who serves as head of PEMA's governing body, said he thought it was an "on-site emergency,"^{195/} and although he gave three press conferences that day, he did not mention anything about a general emergency.

Several state officials did not even know what a general emergency meant. David Milne, press secretary for the Department of Environmental Resources, was one of them. "I was very new at the job," he said. "I started here, the first week of March." 196/ Dauphin County Civil Defense Director Kevin Molloy mentioned that one of his dispatchers described a call from Three Mile Island as a "slight emergency." 197/ Governor Thornburgh's press secretary, Paul Critchlow, did not remember hearing about a general emergency at all on Wednesday. 198/ And at an 11:00 a.m. press conference, PEMA Director Henderson neither used nor explained the term.

This confusion on the part of state officials may be the result of a lack of coordination between emergency plans for the Department of Environmental Resources, PEMA, NRC's Region I, and Met Ed. The two state plans, for example, grade emergency severity in opposite numerical order. While the PEMA plan calls the worst kind of crisis a "number one," the Department of Environmental Resources calls it a "number four."

At about 8:00 a.m., Gerusky, who understood the implications of a general emergency, requested off-site readings from Met Ed. After taking measurements from a helicopter, the utility informed Gerusky that there was no detectable radiation off-site. Gerusky then called PEMA back at 9:25 a.m. to say that the "problem" at TMI had been contained and that the counties' civil defense people could be released from standby.^{199/}

Shortly thereafter, Dornsife received a report from the plant that radiation levels in containment had gone up still further -- to 800 rem per hour. High radiation in containment means a risk of off-site radiation in the event of a leak. Based on the design-leakage rate,

Dornsife (a nuclear engineer by training) calculated a potential 10 rems per hour thyroid dose in the nearby community of Goldsboro. "At that point," he said, "we were considering thinking very seriously about evacuation."200/ BRP had had some previous experience with radioactive iodine. Iodine-131 had shown up in milk produced in the Harrisburg area during the 1976 Chinese fallout episode.201/

But Dornsife's calculations, based on the high containment readings, never materialized. Met Ed's monitors failed to detect any radioactivity off-site, and DER finally decided that evacuation was not necessary.202/ Milne and Dornsife passed the decision on to Scranton.

Despite the assurances from DER, Scranton continued to be preoccupied with evacuation. 203/ He said:

In the first few days we weren't really concerned with who did it or what the technical details were, beyond what we really needed in order to have a rudimentary understanding. Our concern was what was coming out [of the plant] and what is likely to come out of there before we can evacuate people.204/

Scranton characterized Wednesday as "radiation day." Mark Knouse, Scranton's executive assistant, concurred: "The questions that we kept asking were, 'Is there a need for evacuation? Do we have to start moving people? Are there things we should be doing to get ready to move people?'"205/

Meanwhile, at 9:00 a.m., Dubiel, Met Ed's health specialist, had recorded a positive reading of iodine-131 in Goldsboro. The reading was above background, but "well below any level that would cause concern."206/ Because the sample was analyzed by field equipment, which is often unstable, he asked Reilly to arrange to have it reanalyzed in a BRP lab. The lab found no detectable iodine and told Dubiel so, probably by early afternoon.207/ At around 9:45 a.m. however, word of the supposed off-site iodine measurement reached Gerusky, 208 who told Dornsife, who was in Scranton's office at the time briefing the lieutenant governor prior to his 11:00 a.m. press conference.

Scranton, at his press conference, announced that the utility had released radiation into the atmosphere, but that "no increase in normal radiation levels has been detected." But during the question-and-answer session, Dornsife corrected Scranton: "Before we came up here, I got word that they detected a small amount of radioactive iodine in the ground . . . levels are less than one millirem per hour."209/ Dornsife's announcement came as a surprise to Scranton.210/

Present but undetected at Scranton's press conference were two people from GPU, Public Information Officer Ken McKee and a colleague. McKee had recently been promoted from his previous job as Fabian's second-in-command at Met Ed to work with GPU's Vice President for Communications, William Murray. Under normal circumstances, McKee is the only GPU public information official who speaks regularly to the press. That morning, he had traveled to Harrisburg for a meeting with

Scranton on another matter. Not until he had arrived at Scranton's office had he learned of the accident at Three Mile Island. He immediately sought out GPU President Herman Dieckamp, who was also in the Capitol that morning making an annual presentation to the Public Utility Commission. Dieckamp had already heard the news. McKee then phoned his office in Parsippany, N.J., which was in the process of putting out the following statement:

PARSIPPANY March 28 -- General Public Utilities Corporation today announced that a malfunction had occurred at its Three Mile Island #2 Nuclear Generating Unit, which is operated by Metropolitan Edison Company on behalf of itself and the other GPU affiliated Electric Utilities. That incident resulted in a shutdown of the plant following a feedwater system malfunction which began outside of the primary nuclear system. The loss of this system caused the reactor to shutdown.

A series of automatic pressure relief systems then operated to accommodate the high pressure and bring down the temperatures within the nuclear reactor. During this series of events, radioactive water was released into the nuclear containment building. In addition, GPU is presently monitoring some low level release of radioactive gas beyond the site boundary as a consequence of the plant condition following the operation of the emergency core cooling system. Because of the low levels of these releases, the Company does not believe the level constitutes a danger to the health and safety of the public.

Because of the existence of above average radiation levels within the plant, steps have been taken to protect employees. The company does not believe that any worker at the site was exposed to any level of radiation above that permitted by plant operating procedures and Nuclear Regulatory Commission regulations.

The release of radiation in the reactor building caused a monitoring system to be activated, and, in accord with operating procedures, local and state police and Pennsylvania Civil Defense officials were informed of the situation. The Nuclear Regulatory Commission was also informed of the incident and is participating in its evaluation.

The higher than normal radioactivity levels in the reactor containment building may be an indication that some damage to the fuel cladding may have occurred. The Company has not yet had an opportunity to evaluate whether or not this is the case. It is not possible at this time to say when the plant may be returned to service. The Company is working with the NRC and state and local officials and is taking all steps necessary for the protection of the public.

Unit 1 of the Three Mile Island plant is out of service for refueling during this incident and was not involved.211/

The GPU release talked about off-site radiation, high radiation levels in containment, and notification of state officials, but never mentioned that the utility had declared a general emergency. McKee said he assumed "this was by design, since the general public would not understand what a general emergency is as opposed to a site emergency."212/

McKee relied on Parsippany to take calls from the press and to get in touch with Blaine Fabian in Reading. "We were not in a position, from a communications standpoint, to assist to any great extent," he said. The two GPU men spent the rest of the day in a Holiday Inn,213/ standing by in case Scranton's staff called on them.

At Scranton's 11:00 a.m. press conference, reporters asked a number of questions about the nature of the emergency at TMI. PEMA Director Henderson did not use the term "general emergency" or define it. "At 7:00 this morning," he told reporters, "when my watch officer received the information, his first call was to DER, to alert them. Now, we received a call from the supervisor on duty at Met Ed with only one statement, 'We have an emergency,' no details. We don't have technically qualified personnel to understand what the emergency was, except it is a bona fide emergency...."214/

While Scranton, Henderson, and Dornsife were talking to reporters, Gerusky learned that the plant had been venting radioactivity. A DER field team traveling along the 10-mile route from Harrisburg to the plant had discovered that the closer they got to TMI, the higher their readings were. But the highest reading, 10 millirems per hour, was still well below levels requiring evacuation. Gerusky also noticed that the geiger counter on his window sill was recording low-level radiation in downtown Harrisburg.215/ Later, at about 1:00 p.m., he learned from the plant control room that a release of radioactive steam that had begun around 11:00 a.m. had just ceased.216/

Immediately after the morning press conference, Critchlow, Scranton, Henderson, and Dornsife met with Governor Richard Thornburgh to discuss evacuation. It was Dornsife's impression that "Thornburgh was thinking about evacuation the whole time, from the first call."217/ Gerusky called Milne in Scranton's office around 1:30 p.m. and told him that radiation had gone beyond the plant boundaries and had even reached Harrisburg.218/ Dornsife recalled: "They had found other measurements along Route 441, east of the plant. So then we knew we had not only an iodine problem, but a gas problem as well."219/ According to Critchlow, the state officials were incensed because "we were being told by Met Ed that there had not been any significant releases of gas . . . We called Met Ed and said, 'Send someone up here as soon as possible. What's going on?'"220/

Met Ed Public Information at the Site

While Met Ed was privately admitting to the state that radioactive iodine had been measured off-site, the utility's credibility was damaged because its public information staff was saying on Wednesday morning that there had been no off-site releases, and that none were expected.

The first person to be confronted with the task of passing on the news of the general emergency was Bill Gross, a former high school English teacher and basketball coach who had joined Met Ed's public information staff full time in June 1978 as a tour guide and slide lecturer based at the Three Mile Island plant.221/ Before he left his home that morning at about 7:00 a.m., Gross knew there was something wrong at TMI. He can see the cooling towers from his driveway. That morning only a feeble wisp of steam was condensing in the cold air instead of the normal spreading plume.222/

When Gross arrived at the plant gate at approximately 7:45 a.m., he found it locked. He drove to the Observation Center on the Susquehanna River bank, opposite the island. There, he found a group of workers who had been locked out of the plant. Gross deduced that there must have been a site emergency.223/

At 8:30 a.m., two reporters arrived from the downstream community of Lancaster. They had been monitoring the state police scanner and had heard about the general emergency. When news of the general emergency went out over the AP wire just after 9:00 a.m., other journalists began calling on the Observation Center phones. To Gross's growing surprise, 40 or 50 reporters soon joined the 200 to 300 MetEd employees milling about outside the Center.224/

Neither Gross nor Bill Parker, the plant's supervisor for administration who was also at the Center, dealt regularly with the press.225/ But around 9:30 a.m., Gross phoned Gary Miller in the control room and requested an official statement. Miller dictated the following:

We had a turbine trip early this morning due to a feedwater problem in the secondary side of the plant -- not a nuclear problem. This caused the reactor to trip on high pressure, which was followed by the pressurized relief valve relieving, which resulted in a radioactive water release in the reactor building. Since this radioactive coolant water was released inside the reactor building, this led to the emergency plan implementation.

Radiation monitoring teams have been dispatched on- and off-site to monitor for possible external radioactive releases. None has [sic] been found, and we do not expect any.

We are presently bringing the plant down to an orderly cold shutdown condition with no consequences to the public expected.

At approximately 6:30 a.m. that morning, Miller and Kunder had phoned news of the accident to Herbein, Met Ed's vice president for generation, who was in Philadelphia on reserve duty.226/ A press statement drafted by Herbein and Fabian around 7:15 a.m. was remarkably similar to the one Miller read over the phone to Gross. Herbein, the utility's chief spokesman throughout the accident, may have written or dictated both to Fabian and Miller.

The problematic sentences in this Miller-Gross release are:

Radiation monitoring teams have been dispatched on-site and off-site to monitor for possible external radioactive releases. None has [sic] been found, and we do not expect any.

Since they are engineers, Miller and Herbein both knew that radiation might show up in the outer atmosphere at some point. There is a hint that Met Ed was aware of this in the announcement of the dispatch of the monitoring teams, but to a reporter without a background in nuclear technology, it is not a broad hint.

Gross read this statement from Miller first for the press at "the right angle with the sun and all that for the cameras," 227/ and again for the employees. He also dictated it over the phone to a secretary in the office of Blaine Fabian, Met Ed's public information manager, at the company headquarters in Reading, Pa. (Fabian said that he never saw it). He was obliged to keep repeating his statement as more reporters arrived at the Observation Center, and he was pressed for further clarification and explanation. 238/ Although Met Ed had sent Gross to Oak Ridge, Tenn., the previous summer for a crash course in nuclear engineering and management, 229/ and although he felt comfortable addressing groups, he was unable to withstand the cross-examination. "One problem," he says, "was that many of the people that came down to cover the story were not technical people. Some actually thought the cooling towers were the reactors." Other reporters asked questions Gross did not feel prepared to answer because they pushed him beyond Miller's statement:

What they wanted to know I don't even think they would have found out if they were in the control room, so I answered a couple of questions and I just said, "Excuse me, I don't have any more. We will get more for you later."230/

Around 11:00 a.m., Herbein arrived from Philadelphia. Inside the Observation Center, he picked up the phone that Gross had taken off the hook, and talked to Miller for about 2 hours. Overhearing the early part of Herbein's conversation, Gross learned about the general emergency, which the statement he had read aloud about an hour earlier had not mentioned. 231/ Nevertheless, Gross was not able to remember it. Around 6:30 or 7:00 that evening, Gross told Peter Hackes of NBC radio -- on three occasions -- that there was only a site emergency at the plant.232/

Herbein made a 2:00 p.m. appointment at the State Capitol in Harrisburg with Lieutenant Governor Scranton to discuss the emergency. Before leaving, he answered reporters' questions for 30 to 45 minutes outside the Observation Center at an impromptu press conference. According to Gross, the press "wanted to know about the releases, off-site releases."233/ Although there is no tape or transcript of this conference, Herbein was quoted the next day in The New York Times as saying that radiation levels "at the plant" were 7 millirems. The Harrisburg Patriot quoted him as saying that the 7 millirem measurement was taken "at the plant's boundaries." Herbein subsequently told Scranton that "We did see some indications off-site just before 11:00 a.m.,"

so when he answered questions at the Observation Center, he knew that radiation had gone beyond the site boundaries.234/

Word of the General Emergency Reaches Reading

During Scranton's 11:00 a.m. press conference, some reporters had heard from the public information staff at the utility's headquarters in Reading, Pa., that there was no off-site radiation. Scranton recalled:

I remember some news people wanted to ask me about it, and I told them to my knowledge, there was off-site radiation. I was sticking with my story.235/

At DER, Milne had been telling callers from the press all Wednesday morning that radioactivity had indeed been vented into the atmosphere, meaning off-site. One reporter told Milne that Reading had said 5 minutes earlier that no radiation had escaped from containment. Milne called Reading, where one public information staffer, Don Curry, told him that no radioactivity had been discharged. Milne, of course, had gotten his information from Gerusky at BRP, who had gotten his from the site.236/ After the state's 2:30 p.m. briefing with Herbein, Reading called Milne back to say that their earlier information had been incorrect.237/

The first news of the accident reached Reading around 7:15 a.m., when someone from the Island called Richard Klingaman, an engineer in the generation department under George Troffer. He was told about the site emergency, and that it was based on extremely high readings in containment. Klingaman called the office of Walter Creitz, president of Met Ed, and gave the word to his secretary. 238/

Met Ed's Vice President for Communications, Ernest Schleicher, was in Hershey at a meeting and did not return to the Reading offices until Saturday.239/

Klingaman also told his boss, George Troffer, who said his reaction to the news of the high readings was one of "instantaneous concern -- like having a pistol put in my face."240/

Around 8:00 a.m., Troffer reached Robert Arnold, an engineer who is vice president of generation at GPU.241/ William Murray, GPU's vice president for communications, was in Washington on business. About 8:30 a.m., Herbein, who was still in Philadelphia, called Arnold. Shortly thereafter, Arnold dictated a statement about the accident to Murray in Washington, and he also passed it on to Creitz's secretary. He intended Fabian's staff to use it, since Herbein was not available to assist them with the technical language needed.242/ Arnold's statement read as follows:

At 4:00 a.m. this morning, there was a malfunction of main feed-water valves which caused the main feed pumps to trip, interrupting the flow to secondary side of steam generator. Loss of feed

resulted in a high pressure incident in the reactor coolant system, lifting safety valves in the reactor coolant system which discharged to a drain tank in the reactor building. The buildup of pressure in the drain tank caused the drain tank release system to actuate discharge reactor coolant into the basement of the reactor building as designed. The reactor coolant water that discharged into the reactor building contained some radioactive gas. This actuated a radiation monitor in the reactor building which, by procedure, caused the plant staff to declare a site emergency. During the transient there apparently was a slight leak in one of the steam generators from the primary side to the secondary side. The reactor coolant water that leaked from the primary to the secondary side also contained some radioactive gas which was eventually released from the main condensor to the atmosphere.

Due to the combination of circumstances, the plant staff notified the state police and the civil defense of the problem and the possibility of a general emergency.

The steam generator that had the leak has been isolated and the plant staff is returning to normal condition.

All safety systems worked as designed.

Although this statement does not say that a general emergency had indeed been declared, it does talk about the site emergency.

It also mentions radiation releases, in terms of a primary to secondary leak, into "the atmosphere," without clarifying which "atmosphere."

While to a layman this phrase generally connotes the surrounding environment or the open air, an engineer may interpret it as meaning indoors or outdoors anywhere on-site. The "atmosphere" may mean the auxiliary building or the open air immediately above the stack.

Therefore an announcement of radiation in the atmosphere may be followed shortly by measurements of radiation off-site, in amounts ranging from the slight to the dangerous. Met Ed certainly did not spell out these implications to the public or the press in press releases or press conferences.

Arnold said that he did not mention any measurable levels of radiation off-site in his 9:00 a.m. statement because he did not hear of any until 11:30 a.m. or noon.^{243/}

Around "nine-ish," Fabian brought Arnold's statement from Creitz's office^{244/} to his own staff to use as a telephone advisory, along with three other statements Met Ed eventually issued on March 28. Two members of Fabian's staff, David Klucsik^{245/} and Judith Botvin^{246/}, both said that they did not read Arnold's statement to callers because, in Botvin's words, "I didn't understand it. I didn't feel that I could explain it to anyone."

Fabian had first heard about the accident from Herbein, who called him from Philadelphia around 7:15 a.m.^{247/} Together they drafted a two-sentence statement:

The nuclear reactor at Three Mile Island Unit 2 was shut down as prescribed when a malfunction related to a feedwater pump occurred about 4:00 a.m., Wednesday (March 28). The entire unit was systematically shut down and will be out of service for about a week while equipment is checked and repairs made.^{248/}

This statement is a short version of the one Gross read at 9:30 a.m. at the Observation Center -- a statement of which Fabian said he was unaware.^{249/} Although Herbein may have dictated the same statement to Fabian and Miller, he does not appear to have coordinated it with Arnold's release.

Fabian was well aware that "when you start talking about release to the environment, [you have to be careful] that you define what environment you are talking about." He asked Herbein about releases to the atmosphere; Herbein replied that there had been none. Fabian did not ask whether such releases were to be expected.^{250/}

Once Fabian's staff had arrived, shortly after 8:00 a.m., he gave them the statement from Herbein. Reporters had already begun to call. "I took the first call that came in," Fabian said. "I think it was AP. And that's when I learned that there was a general emergency, that it was on the civil defense radio. I said, 'You're telling me something that I don't know to be a fact.'"^{251/} Fabian's ignorance illustrates another pattern that persisted during the accident: Reading staff, like Congressional staff,^{252/} heard many of the developments first from the media.

Fabian shortly received another call from Herbein, "who told me that things were more extensive, he didn't know the details and he was leaving for Three Mile Island."^{253/} About 8:30 a.m., Fabian tried to obtain more details himself by calling Gary Miller, but he could only reach Kunder in the control room.

In a conversation that Fabian's staff heard on his speaker phone, Kunder told Fabian that there was a possibility of core damage and that some external releases had occurred.^{254/} Fabian said he took Kunder's words as "speculation and personal conversation."^{255/} He did not want to accept the opinion of Miller's subordinate as an official release of information.

Another early caller was Mike Pintek, news director of WKBO radio, a major station in the Harrisburg area. Pintek had heard about the accident from his traffic reporter who, like Bill Gross, had noticed there was no steam coming from the cooling towers. After calling the plant control room and being told, "I can't talk now; we've got a problem," Pintek called Fabian. "He was in a meeting," Pintek recalled.

I told them to get him out of the damn meeting.

Fabian came on and said there was a general emergency . . . a "red tape" type of thing required by the NRC when certain conditions exist.

What conditions?

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."

WKBO put this story on the air at 8:25 a.m.256/

Shortly afterwards, about 8:30 a.m., Fabian departed for Creitz's office to verify Kunder's news of core damage and external releases, leaving the ringing phones to his staff. Botvin typed up a basic press statement, based on Fabian's information:

At 4:00 a.m. Wednesday, the reactor at TMI Unit 2 was automatically tripped and shut down due to a mechanical malfunction in the system. All procedures dictated by the state and regulatory authorities have been followed, including the routine notification of state Civil Defense, Environmental, and police authorities.

In accordance with procedure, radiation levels are being monitored in and around the plant. At this time, there have been no recordings of any significant levels of radiation, and none are expected outside the plant.

No evacuation of the local population is indicated at this time. The reactor is being cooled according to design by the reactor coolant system and should be cooled by the end of the day. There is no danger of meltdown.

Unit 1 at TMI is presently out of operation for a routine refueling. The two units together produce about 1700 mw of electricity.

There were no injuries either to plant workers or to the public.

Botvin distributed this statement to those who were answering phones: Howard Seldomridge, department manager and Fabian's deputy, who normally deals with the press but had arrived at the company only a month earlier; Don Curry, a writer who had joined the staff on February 22; and David Klucsik, a former reporter who edits the Met Ed System, the company house organ. Neither Curry nor Klucsik spoke to the press regularly. Will Vollertsen, the department's accountant, secretaries, and staffers from the consumer services department all volunteered to help out; they had never dealt with the press before.

Botvin herself usually writes press releases and has limited contact with the press. Of her Wednesday morning statement, she said,

I remember purposely saying that the reactor was being cooled "according to design," because it was plain that it was not being cooled normally, but according to the design for an emergency.257/

She admitted that her description of mechanical malfunction "proved to be a very inept definition of the feed weater pump, but I didn't understand what was happening there, and that was the way I summarized."

Although she had also spent some time at Oak Ridge, she did not feel she had enough experience to explain the statement, and did not try. She and Seldomridge said the term "general emergency" meant little to them at the time.258/

Press reaction to their lack of knowledge was strong:

People were enraged that we didn't know everything. Reporters were very indignant. They would say, "Well, if you don't know, what is this? Met Ed doesn't know?" I would say, "Well, I'm not saying Met Ed doesn't know. I'm saying that this is all the information we have, and that the people that have to put answers together are busy with the emergency at the plant." "Well, let me talk to Jack Herbein." "I'm sorry, I can't put you through. He is busy." And they didn't want to accept that. Each one wanted to talk to Jack Herbein.259/

Botvin tried to organize telephone answering so that local media calls would be returned first, and so that pregnant women and other callers with health questions would be handled by the consumer services staff.260/ But because the public information staff was so small, and because once a receiver was put down the phone would immediately ring again, it was impossible to work according to any system.

In another effort to verify Kunder's information, Fabian had dispatched Howard Seldomridge to see Troffer. "Fortunately, Howard was sharp enough to pick up a tape recorder and take it with him," Fabian says.261/

About 9:30 a.m., Seldomridge taped Miller's report to Troffer of the information Miller had given Dornsife, who was en route to brief Scranton before his morning press conference.

Miller told Troffer that he had told Dornsife:

. . . we experienced a turbine trip . . . due to the high pressure we had some relief valve lift which released from the reactor coolant to the building floor . . . That gave us indication of reactor building radioactivity because of the reactor coolant being released to the floor of the building. It's got radioactivity in it . . .

I was on the phone with a nuclear engineer over there so he knows about fuel pins. I said, yes, we may have had some fuel pin leakage . . . He asked if I had any melting of fuel. I said I don't have

any indication of melted fuel, but I may have had some fuel pin leakage which is not abnormal in the industry . . . I did say that we had reactor coolant released in the building which was giving radioactivity on the monitor.

When we get that, I said our emergency plan mandates that when I see it in the reactor building, I assume it's getting out. Therefore, I go into general emergency. I fully gear up like I already got an emergency in the public.

That means that I put people on stations, I close the gates, I get the state police, I make all the phone calls [to state agencies] . . . From the time the incident started, we have had no releases to the environment especially above background . . .

We do not expect any additional or any release. We are in the process of taking the plant to a cold shutdown to evaluate the situation . . .

Nobody had an overdose or an overexposure . . . We have taken reactor coolant samples afterwards. We may have used up a lot of quarterly doses of some people . . . 262/

Clearly, Miller understood and communicated to Dornsife and Troffer the possible consequences of high radiation in containment: off-site radiation measurements.

While Seldomridge was taping this conversation, Fabian spoke to Chip Miller of ABC radio around 9:20 a.m., presumably from Creitz's office, and stated: "There has been some release outside containment, but I don't know to what extent . . . we followed normal precautionary emergency procedures."263/

Around 10:30 a.m., Fabian took Arnold's statement back to his office where his staff had been telling callers that there had been no off-site releases. Fabian told them that he had heard from Creitz, via Arnold's statement, that there had been a small release into the atmosphere. Seldomridge countered with Gary Miller's report that there had been no radiation measured. Troffer arrived in Fabian's office and confirmed Seldomridge's version. (It is not clear whether Troffer or Seldomridge communicated Miller's concern that "when I see [radiation] in the reactor building, I assume it's getting out.")

Troffer and Fabian left again for Creitz's office in search of clarification. In Fabian's absence, his staff concluded, in Botvin's words [from her log], that

because information is unclear, we would say that was no release until information is confirmed. We are to find out from reporters that Fabian has already announced to the press that there was a release. Resulting confusion is frustrating to both staff and reporters.264/

In one example of such confusion, Seldomridge told Chip Miller around 10:25 a.m.:

There was no off-site radiation releases, so that at no time has the public been in any danger. There have been no overexposures to radiation among our plant employees. Now there was a radiation leak, within the reactor building, but it is in containment.265/

Another reporter, Wally Hudson of the Reading Eagle, called Fabian to ask about the general emergency. Fabian told Hudson, as Hudson recalled, that there was a problem at the plant, that a valve had blown, and that there had been some release into the atmosphere--exactly how much was unclear. At 9:15 a.m., Hudson called back again and reached Botvin, who said that she understood that radiation had been released into the containment building, not into what Hudson called "the general atmosphere." Hudson asked for confirmation, but "nothing happened." He called Creitz "a few minutes after eleven," and Fabian answered, saying he did have off-site readings. He gave some to Hudson, who decided afterwards that "Fabian must have been incommunicado. Judy [Botvin] had been left to fend for herself." But he felt "p. o.'ed" at Botvin, and "ruled her out" as a source of information. 266/ Botvin tells a similar story.267/ None of this helped Met Ed's credibility with the press.

Fabian was asked a number of questions by a Commission interviewer about the accuracy of the information Met Ed was putting out Wednesday about radiation releases. The following exchange is drawn from that interview:

QUESTION: "All procedures dictated have been followed. Radiation levels are being monitored. No recordings of any significant levels of radiation and none are expected outside the plant."

FABIAN: "No significant."

QUESTION: I'd like to look at that sentence if we can, because it's an interesting one. It says, "Radiation levels are being monitored in and around the plant. At this time, there have been no recordings of any significant levels of radiation."

FABIAN: Right.

QUESTION: "And none are expected outside the plant." Now, it seems to me that's a carefully crafted sentence. At that time, in fact, you had very high radiation in the plant and radiation, though not significant radiation, outside the plant.

FABIAN: That's correct.

QUESTION: Okay. Did you think that's what the sentence says?

FABIAN: Well, of course, not what the sentence says, but you added to it.

QUESTION: But do you think that's consistent with the sentence? Okay, what you know as of noon is that radiation in the plant is extraordinarily high. The radiation --

FABIAN: I don't believe --

QUESTION: -- outside the plant is above background, but not dangerous. If you walked into the containment building at noon Wednesday, you died.

FABIAN: You wouldn't walk into the containment building. No -- I don't believe they knew what the level was in the containment building.

QUESTION: Oh, surely they did. I saw that meter on my tour yesterday.

FABIAN: They didn't know, they didn't know the exact level at that time in the containment building, I don't believe.

QUESTION: But --

FABIAN: Even so, they did know, I have to agree, they did know it was high, a high level of radiation.

QUESTION: They knew they had very high radiation in the containment, okay?

FABIAN: Right.

QUESTION: And you tell me at this time, by this time, they knew that they had radiation above background, though not very high, in the atmosphere?

FABIAN: That's correct. And that's what we were concerned about for the public.

QUESTION: Okay, and the sentence we get is, "Radiation levels are being monitored in and around the plant. At this time, there have been no recordings of any significant levels of radiation."

FABIAN: That's right.

QUESTION: Well, I think you have significant levels in the plant. And none are expected outside the plant.

Now, you already have radiation outside the plant, though perhaps not significant, in your judgment. I would read, as a reporter, I would read that sentence as meaning, no significant radiation anywhere, and no radiation at all outside the plant.

Okay. Is that what you meant it to be read as?

FABIAN: If -- I don't know what another reporter would read it as. We meant it to be read, just as it was said.

QUESTION: I mean, does it seem different to you from "At this time there is extraordinarily high radiation in the containment and radiation above background, though not significant, outside the plant?"

FABIAN: Well, certainly it's different.

QUESTION: Why was this one written rather than the other one?

FABIAN: I don't know as I can answer that. That was written because we felt that was the information that was necessary to be put out at the time . . .

QUESTION: So, high radiation in the core and containment didn't seem like an important thing to put in the statement, is that right?

FABIAN: I don't recollect that it did. In retrospect, I guess it would have been important.

QUESTION: And low radiation above background, outside the plant, didn't seem like an important thing to put in the statement, is that right?

FABIAN: At that point, as I understand it, there wasn't any expected.

QUESTION: Right. All right, but is it correct, did it seem more important to say that there is no significant radiation outside the plant than to say that there is some radiation outside the plant?

And what this statement doesn't say, is "Yeah, we have radiation in the atmosphere," which would have seemed to me a news peg.

FABIAN: Well, there are a lot of other things that could have been said, I suppose.

QUESTION: Now, there's another sentence that's interesting.

"The reactor is being cooled according to design by the reactor coolant system and should be cooled by the end of the day."

Was that the current state of your knowledge?

FABIAN: Obviously, yes.

QUESTION: Okay, now, you knew that valves had stuck open at that time? Is that right?

FABIAN: Yeah.

QUESTION: And that the pumps couldn't be made to work and that they were recirculating in a very unusual way?

FABIAN: I think so. I -- I, in other words, this is information that technical people give to us that we interpret.

QUESTION: I'm intrigued by the interpretation when the technical people say "Well, we think we've got it under control but really weird things are happening. The pump's not working, the valve's stuck open, the electromatic valve is screwed up," and the interpretation of that for mass audiences is that "the reactor is being cooled according to design."

And certainly, Mr. Herbein didn't feel that things were going according to design. . .

FABIAN: Mr. Herbein was, probably when this was being worked on, was probably in a helicopter between Philadelphia and Three Mile Island.

QUESTION: You would say that you and Mr. Creitz felt that things were going according to design?

FABIAN: The information Mr. Creitz got, based on Arnold's information and Arnold, with whom he was speaking, and Gary Miller with whom he was speaking, felt this way. That's why we put it together this way.268/

The release does not say that the utility does not expect to find radiation outside the plant, but that they do not expect to find significant radiation outside the plant. A reporter must scrutinize the wording closely to see this fine distinction. Essentially, the utility was hedging by using the word "significant," and by saying no radiation had yet been measured. They knew it was there; they simply had not yet measured it.

An afternoon press release finally admitted to off-site levels -- low, but indisputably there. This release opens with a comment from Creitz, and is the most straightforward of the three March 28 statements from Reading on the subject of radiation:

After a build-up of radiation in the containment building was detected by the equipment, teams were dispatched on-site and off-site to monitor for possible external radiation release. Initially, there was not enough radioactivity off-site to alter the normal levels of measurement. Subsequent monitoring showed increases of several millirems per hour at the Observation and Information Center at the edge of the plant site. Background radiation is normally less than 1 millirem per hour.

Also in this statement, attributed to Crietz, is a vague explanation -- the only one that emerged from Reading on Wednesday -- of a general emergency:

Under the very conservative operating procedures, the circumstances in and around the reactor containment require our declaring a site emergency or a general emergency; that is, notifying the Nuclear Regulatory Commission, the Civil Defense and Department of Environmental Resources in the event there would be any need for public concern.

This sentence tries to satisfy the need for a definition of a general emergency with a list of the agencies the utility calls when conditions for a general emergency exist; it does not detail what those "conditions in and around the reactor containment" are. Use of the conditional in the phrase, "in the event there would be any need for public concern," indicates that the utility wished to convey the impression that there was no cause for alarm.

Because of contradictory statements about radiation and the fact that the public information staff did not explain the general emergency, the credibility of the company, as represented by Herbein in Harrisburg, and by Fabian and his staff in Reading, was damaged beyond repair -- at least in the eyes of several reporters and officials -- by 3:00 p.m. on the first day of the "incident" (Met Ed statements did not refer to an "accident") .

In Reading, early Wednesday afternoon, Fabian assumed the role he played for the remainder of the accident. He became preoccupied with logistics -- preparing for Creitz and Herbein's appearances on news programs Thursday morning, setting up the Hershey press center, and setting up the "trailer city," from which the accident was managed.269/

Herbein had already assumed his own role, as Met Ed's chief spokesman and source of technical information. But no organized channel existed to funnel his knowledge back to Fabian and his staff. Fabian's subordinates, left to manage themselves, had some ideas that might have helped, but no chance to translate them into action. They were so disorganized that, one Met Ed chronology of the accident noted270/, a Wall Street Journal reporter, Dan Machalaba, was able to make his way into the information office, and, by following one staffer to the third floor, into Creitz's office. Here he interviewed Creitz and Troffer, passing information back to John Emshwiller, the Journal's energy reporter in New York. Met Ed's chronology said that Machalaba "stayed well into the evening, observing the activity."

For the remainder of Wednesday, Fabian's staff remained out of touch with Herbein and with sources in the control room who might have updated them. It was also difficult for the generation staff to explain technical information to them. George Troffer complained that in the late morning or early afternoon, "I went up there prepared to brief them and it was just too much turmoil for people to sit down and listen."271/ They were too shorthanded to monitor the media, though Botvin later dispatched a secretary to monitor the wires from a local newsroom. Thus they had little idea of the issues reporters were addressing, or how the accident was being portrayed.

Pending Herbein's press conference Thursday morning, the information staff had no new information. They did not know what Herbein had said at the Observation Center or in Scranton's office. Troffer said he and his staff in the generation department "weren't specifically trying to relay information to Blaine Fabian. That did happen; we did have some conversation . . . but no one [was] formally told, 'You do this' or 'You go check that out,' or 'Keep this or that guy informed.' That sort of organizing was not going on."272/

Botvin's chronology amply illustrates the plight of the isolated public information staff. She noted that at 9:30 p.m. on Wednesday, John Hilbish, an engineer in the generation department under Troffer, received a long call from TMI and updated the other engineers, "but it is not clear what new information is available for us to communicate. The engineers have been clarifying points for us as they arise, but the whole scenario is still difficult for us to understand. When we comment that [the engineers] would have been useful to us that day to answer calls, they counter with, 'Why didn't you ask us?'"273/

There was no coordination of public information between Met Ed and the state. Nor was NRC Region I helpful: Botvin said she heard from Karl Abraham once; he wanted to know about hotel rooms in Harrisburg.274/

Herbein Meets with the State

On Wednesday, by the time Herbein arrived for his 2:30 p.m. appointment with Scranton, state officials, already annoyed that they had not heard Gerusky's radiation readings before the first press conference275/, felt hoodwinked by Met Ed. Gerusky told Critchlow "around two o'clock, maybe, that the BRP had monitored off-site radiation between 11:30 a.m. and 2:00 p.m." Critchlow said that this meant that "even as Scranton was holding his first press conference, the utility began to release radioactive steam into the air -- even as Scranton was standing there saying, 'There have been no serious or significant releases.'"276/

During the 11:00 press conference, word was already out among reporters that the Met Ed staff in Reading was saying that there was no off-site radiation. Scranton recalled, "I remember some news people wanted to ask me about it, and I told them that to my knowledge, there was off-site radiation. I was sticking with my story."277/

Critchlow was already so skeptical of Herbein that he asked a lawyer from the state attorney general's office to attend the briefing in Scranton's office, along with the lieutenant governor, Critchlow, Gerusky, Milne, Scranton's aide Mark Knouse, and other state officials.

Knouse remembered that:

Herbein was trying to calm everyone down and make sure that he could restore what was, at that point, our rather tarnished faith in Met Ed . . . The Lieutenant Governor said directly to him, "Have you been venting radiation?"278/

Herbein recalled, "I indicated that the off-site releases were minimal."279/ But Knouse said that "Herbein had to be pinned down before he would answer in the affirmative. Someone in the meeting asked him, 'Did you tell the press this large release had been made?' And he said, 'No, they didn't ask me,' or words to that effect." 280/ According to Gerusky, Herbein and Miller were trying to downplay the incident. It appeared like they were saying, 'Ah, it's no big deal; it's only a little bit of exposure, and we got it under control.'"281/

Because Herbein had to be pinned down about off-site releases, and had not volunteered information, he instantly lost credibility with the state. Knouse confirmed that this encounter established Herbein in the minds of those present as someone who would not produce information unless pushed -- in other words, a less than reliable source.

Knouse realized that "The problem was getting pretty large and we really couldn't count on anybody at Met Ed for any type of information."282/ Critchlow added, "I think we just almost instinctively preferred to deal with NRC people."283/

The NRC

Although Reilly had the impression that the NRC in Bethesda did not seem to have much radiation information, it was not her responsibility to keep them informed; they got figures from their people on-site.284/

Actually, on Wednesday, the NRC in Bethesda got the first word of radiation news ahead of Gerusky. Between 9:01 and 9:30 a.m., the Incident Response Center (IRC) was told: "Now we got one iodine sample in the plume, at the site perimeter."285/ Between 1:01 and 1:30 p.m., an NRC representative in the control room told Victor Stello, then at the IRC:

Airborne activity . . . at Front and Market Streets in Harrisburg [close to the Capitol] you are picking up one mR per hour. At the Harrisburg Mall, you are picking up 5 mR per hour. At the turnpike exits they are picking up 25 mR per hour.286/

Stello said that the NRC's Public Information Director, Joseph Fouchard, was in the IRC and "would have heard whatever discussions there were on the amount of activity that was coming out of the containment."287/ But while the NRC's PN's regularly identified radiation measurements on- and off-site, the NRC's 10:30 a.m. press release on March 28 said there had been no radiation detected off-site. On Wednesday afternoon, the NRC was reporting high radiation in containment, and low but extant off-site readings to Senator Gary Hart, chairman of the Senate Subcommittee on Nuclear Regulation.288/

The NRC's second Wednesday release, at 5:00 p.m., reported radiation readings of 3 mrem per hour about one-third of a mile from the site. At 5:30 p.m. Frank Ingram, Fouchard's subordinate, gave Chip Miller of ABC

radio the same information, the first figures Miller had been able to obtain all day.289/ Neither Ingram nor the NRC press releases talked about the high levels of radiation in containment, which John Davis reported to Senator Gary Hart between 5:00 and 5:30 p.m. on Wednesday.

Much of the news available to Karl Abraham in Region I's public information office was "just numbers. It was meaningless.. .the pressure was 1,835. The next one said it was 1,830. Well, it's going down, but what the hell does that mean? It wouldn't mean much to me, so it wouldn't mean much to a reporter."290/

Scranton's 4:30 p.m. Press Conference in Harrisburg

After Herbein confirmed to Scranton that the utility had been venting radiation and that readings had been measured off-site, Critchlow recalled that someone suggested, "Why don't you have Herbein hold a press conference with Scranton?" And Critchlow said, "No, I have deep suspicions about Herbein, and I'm not going to associate the Lieutenant Governor with him."291/

At 4:30 p.m., Scranton held a second press conference to announce the off-site measurements of radiation. "That was the first time we let it be known that we were a little bit concerned about the information that was coming out of Metropolitan Edison," he said.292/ In his opening statement, Scranton said:

Metropolitan Edison has given you and us conflicting information. . . There has been a release of radioactivity into the environment. The magnitude of the release is still being determined, but there is no evidence yet that it has resulted in dangerous levels. The company has informed us that from about 11:00 a.m. until about 1:30 p.m., Three Mile Island discharged into the air steam that contained detectable amounts of radiation. . . The levels that were detected were below any existing or proposed emergency action level. We are concerned most about radioactive iodine which can accumulate in the thyroid, either through breathing or through drinking milk. Fortunately, we don't believe the risk is significant because most dairy cows are on stored feed at this time of year.293/

Gerusky talked about the readings he had obtained from the geiger counter on his office window sill:294/

REPORTER: How far away from the plant have increased radiation levels been detected?

GERUSKY: Our surveys indicate that we saw increased radiation levels right here in the middle of Harrisburg for a very short period of time. Just slightly, but they were there.295/

This was the first straightforward statement that low-level radiation from the plant had reached Harrisburg.

Scranton tried to make information about radiation exposure more accessible to reporters, most of whom were local press, by offering a chest X-ray as a comparison.^{296/} The idea came from Gerusky:

I came up with the chest X-ray thing, and that was probably a mistake, but I didn't know how else to relate it at that point ... We had come up with the idea that probably no one over the course of the accident received an exposure of 100 millirems. I think I said that the first day and we were lucky it worked out that way. But then [the reporters] said, 'What does that mean?' ... I tried to explain, 'Well, it's two or three chest X-rays,' or 'a chest X-ray to the whole body' -- and then it isn't because the depths are different and so forth. It was real difficult.^{297/}

The state did not present radiation figures at the beginning of press conferences, or write them up in press releases, probably because officials and politicians were less concerned with actual figures than with whether they indicated that evacuation was in order. Precise figures were certainly available, because beginning Wednesday, radiation specialists from Met Ed, the state, and, after 10:30 a.m., the NRC, were monitoring radiation on-site, at the plant boundaries, and off-site. Plant manager Gary Miller made sure that a telephone link to transmit this information from Dubiel in the control room to Dornsife at BRP was "firm" all day.^{298/}

By Friday, March 29, and Saturday, March 30, reporters were primarily concerned with other issues, like the dumping of slightly radioactive water into the Susquehanna, or the potential explosiveness of the bubble. But throughout Wednesday and Thursday, they were anxious to know the latest radiation readings. In press releases and press conferences, neither Met Ed nor the state presented radiation information clearly. None of these groups apparently felt that its role was to manage, coordinate, and release this kind of information.

After Dornsife trod on politicians' toes by scooping them at Scranton's first press conference, Gerusky was aware that it was important to keep the governor and lieutenant governor informed about radiation.^{299/} Gerusky had learned during the 1976 Chinese fallout episode that BRP "couldn't get data and talk to the press at the same time."^{300/} But Milne had moved into Thornburgh's press office as a reporter for the governor; he was not serving as a public information officer.^{301/} As of Friday, BRP was told not to talk to the press^{302/} because Critchlow wanted to coordinate the flow of information from the state, establishing Thornburgh and his office as the chief source. While there was a radiation information hotline in the governor's press office^{303/} there was no formal way for BRP to update Milne.^{304/} Reilly said, "We were sending [calls about radiation] to the Governor's press secretary, and I kept wondering at the time, 'Who is keeping that guy up to speed?'"^{305/}

MacLeod could not say where reporters would have gotten radiation information; he only knew that they would not have gotten any from the Health Department.^{306/}

This method affected PEMA as well as reporters and the public at large. Henderson complained that he had to search out information and his best source was the media.307/ Williamson got periodic calls with information from Reading "which we appreciated and which we noted, but still didn't do much with it" because as far as PEMA was concerned, information was official only if it came from BRP.

The only definitive radiation figure PEMA seems to have gotten was the 1,200 mrem burst on Friday. Until Friday, BRP was too busy to pass radiation information along to PEMA, and after Friday, the governor's press office took over information flow.308/

As of 5:00 p.m. on Thursday, March 29, Joe Deal was the senior DOE representative on-site. Every hour or so, he received updated radiation reports. But he had been ordered by John Harris, in charge of public information at DOE, not to talk to the press. Deal stayed in a hanger at the New Cumberland airport, protected from the press and public by security. At 5:00 every evening, he held regular briefings at the airport for all federal groups collecting radiation information, who met and compared notes. State groups sent representatives to Deal's briefings, but nothing was released to the public.309/

Perhaps the nadir of public announcements concerning radiation occurred on Thursday evening after Scranton had visited the plant, as a "credible layman," 310/ accompanied by his aide, Mark Knouse. Since only one person was allowed inside the auxiliary building311/ Scranton went in alone, wading through the radioactive water on the floor. Afterwards, he claimed at a press conference, which was televised, "I feel fine."312/

The ludicrousness of his so-called "investigation" did not escape Bethesda313/:

DAVIS: The Governor mentioned that his Lieutenant Governor Scranton was out at the plant today and saw the auxiliary building floor, you know, and he got 80 mR, and the Lieutenant Governor said he felt fine.

VOICE: (Inaudible phrase due to laughter)

DAVIS: Hell, he's probably a Republican and they always feel fine.

Conclusions

The declaration of a general emergency and word of off-site measurements of radiation were alarming news. From Met Ed especially, but also from the NRC and the state, such news travelled a slow and circuitous route to the public. On Wednesday, Met Ed did not directly announce to the public that it had declared a general emergency. At Thursday's press conference, Herbein finally said that the utility had declared a general emergency because of high radiation readings in the reactor building. At no time did Met Ed specifically link a general emergency with the possibility of off-site radiation.

As for specific radiation measurements, they were available from utility or state spokesmen, and later from Denton. But reporters usually had to ask for them. There was no office a reporter could call regularly for radiation updates. Many reporters had the impression that public information people did not really have current figures; Abraham and Met Ed's people truly did not. And because of continuous variance between the NRC's numbers and Met Ed's (for example, at 10:00 p. m. Wednesday, the NRC said that radiation in the TMI containment building was 1,000 times the normal rate, while Troffer said it was only 10 times normal) 314/, the press assumed that, for some reason, radiation figures were being kept from them. In reality, radiation information was falling through the cracks as it was passed from group to group; or was stagnating at points like BRP or DOE, where no knowledgeable public information officer was making it available to reporters; or it was being overlooked by officials like Scranton, who were concerned with evacuation.

C. CAUSES OF THE ACCIDENT: EQUIPMENT MALFUNCTION OR HUMAN ERROR?

Most people at Met Ed and the state who received word of the accident early Wednesday morning said they heard its causes described as equipment malfunction. 315/ While Met Ed remained cautious about mentioning human error as a cause, the NRC in Bethesda was discussing the issue privately as early as Wednesday morning.

Aside from an understandable disinclination to besmirch operators' professionalism, the utility had a vested interest in portraying the accident as the result of equipment failing on its own, completely unprovoked by human hands. If the accident appeared to be due to mechanical error, the utility could lay blame on the manufacturer for reasons involving both insurance and public relations. For its part, the reactor manufacturer, Babcock & Wilcox (B&W), implied in one early story (The New York Times, March 29) that human error was the cause. Throughout the accident, the NRC was alternately cautious and straightforward about human error.

The initial emphasis on equipment had important consequences for public information. By steering the press and the public toward the machine error theory, the NRC and the utility managed -- deliberately or not -- to at least temporarily distract attention from the real story at TMI: that confusion among the operators was significant and at various points individuals in charge did not know what was happening.

In the control room at TMI-2 early on Wednesday morning, Kunder knew "we were in a transient that I couldn't explain, so in that sense I was aware of equipment malfunction from the beginning."316/

Plant manager Gary Miller's 9:30 a.m. conversation with Troffer, reporting on his briefing of Dornsife, mentions abnormal functioning of the relief valve.317/ Around noon, after Herbein had spoken to Gary Miller from the Observation Center, he told Troffer, Klingaman, and Hilbish back in Reading that there were equipment problems at TMI, notably with the electromagnetic relief valve. There was no discussion of human error.318/

At Scranton's morning press conference on Wednesday, the state repeated what it had been told by Met Ed, that "the incident occurred due to a malfunction in the turbine system."^{319/} In response to reporters' questions, Dornsife described "a turbine trip; some fault in the nonsafety system, [in] the turbine plant, or in the electrical system caused the valves going to the turbine to shut."^{320/}

At 2:30 p.m., when Herbein and Miller briefed the group assembled in Scranton's office, Miller "hotly denied that there was any operator error"^{321/} and Herbein said that equipment malfunction was part of the accident.^{322/}

Of the state's reaction to the 2:30 p.m. briefing, Scranton said:

There was no discussion as to who screwed up and what caused it. All we were talking about at that time was a turbine trip. It was the technical aspects of it, not the human aspects. I don't think [Herbein] knew. We at that point were not real concerned about who screwed up.^{323/}

The NRC on-site also presented the accident as the result of equipment and machinery failure. When Higgins and Gallina, the NRC inspectors from Region I, briefed Governor Thornburgh late Wednesday, they were optimistic about the situation and mentioned equipment malfunction as a cause.^{324/} According to Milne, Gallina said, "We have no evidence at this time that there was operator error involved."

At Scranton's 10:00 press conference on Wednesday night, Higgins and Gallina answered questions. Higgins explained the accident by saying:

There were some equipment failures. It appeared that the [relief] valve which did lift the initiation of this entire sequence then stuck open, which allowed the primary pressure to decrease considerably.^{325/} In response to reporters' questions, Gallina said, "There has been absolutely [no] indication of human error at this point."^{326/}

These statements did not differ substantially from the descriptions that Fabian's staff had been repeating over the phone all day Wednesday in Reading. The written telephone advisories from which Fabian's people were working termed the accident "mechanical malfunction," or "malfunction related to a feedwater pump," or they referred to the plant as being "out of service until the feedwater and valve problems are analyzed and corrected."

GPU also issued a release on Wednesday, the first sentence of which announced that a "malfunction" had occurred at TMI. Bob Arnold dictated a statement to Murray, which was passed on to Creitz and Fabian:

At 4 a.m. this morning there was a malfunction of main feedwater valves which caused the main feed pumps to trip, interrupting the flow to secondary side of steam generator. Loss of feed resulted

in a high pressure incident in the reactor system, lifting safety valves in the reactor coolant system, which discharged to a drain tank in the reactor building. The buildup of pressure in the drain tank caused the drain tank release system to actuate discharge reactor coolant into the basement of the reactor building as designed.

In this, the most complete description of the accident that surfaced from the utility on Wednesday morning, the use of the passive voice almost entirely disassociates human presence from the scene of the accident. The tone of the release suggests that everything that occurred during the accident happened automatically, according to design.

Similarly, Seldomridge used the passive voice when talking to Chip Miller of ABC radio at 10:26 on Wednesday morning: "A coolant relief valve was opened and the valve stuck. There was some release, but it was contained."327/

The emphasis on machinery led to state officials' legitimate concern about shutting down other Babcock and Wilcox-designed reactors, and also resulted in at least one press story that implied that human error was involved by quoting differences of opinion between the utility and the manufacturer. The first report on the TMI accident in The New York Times, by Donald Janson, ran on March 29 and said, in part:

Jack G. Herbein, a vice president of the Metropolitan Edison Company of Reading, one of a number of utilities that operate the power plant, said the accident began with the failure of a valve in a pump in the cooling system.

But officials of the company that manufactured the pump, Bingham-Willamette Company of Portland, Oregon, said that could not have been the cause since "we have no valve in our pump."

And late last night an engineer with the NRC suggested that malfunction in "polishers," which he said were filters, were at fault, not a pipe or a valve. He did say, however, that that was still "supposition."

A sidebar story headlined, "Federal Experts Suggest Filters Caused Accident; Utility Differs" by Richard D. Lyons, quotes "engineers at the Babcock & Wilcox Company in Lynchburg, Virginia, insisting that there had been no pump, valve or pipe failure." Herbein is quoted from his impromptu 1:00 p.m. press briefing as saying that "A valve failed in a shut position in a feed pump that squirted water around the reactor."

The responses of Met Ed personnel to reporters' questions about the possibility of human error were along the lines of Gallina's answer at the 10 p.m. press conference Wednesday. "Of course, we haven't gotten into a detailed investigation because we are still getting the plant into a stable condition." 328/ Miller and Herbein indicated that their immediate concern was over the effects, rather than the causes, of the accident: they were involved with the job at hand -- bringing the plant

to a stable condition. 329/ Both Knouse and Herbein felt that human error was more the press' interest, 330/ a "typical reporter question," said Herbein. In his view, "Engineers are trained to think, 'What should we do about it?'; reporters are trained to think, 'Whose fault is it?'" 331/

Nevertheless, at least one technician at Met Ed on Wednesday was well aware of the issue of operator error, and was in a position to voice his concern to the press, had he been willing to do so. Although Gary Miller told Troffer in Reading around 7:00 p.m. on Wednesday that he was "quite pleased and proud of the operators," 332/ Troffer, an engineer, had deduced earlier that operator error had been a factor in the accident. But until he heard, at Thursday's press conference, that Herbein was thinking along the same lines, Troffer would not have been willing to talk about operator error:

I remember thinking in discussions with others that perhaps the cause of all our distress were those valves left shut during the opening stages of the accident. [But, he added] something like that, operator error, you would want more than pretty darned good confirmation of that sort of information before you put it out. If Gary Miller had told me that sort of thing, I'm sure I would have felt I needed to tell it to Blaine Fabian and Walter Creitz. 333/

Troffer, in his own judgment, had "pretty darned good confirmation" on Thursday, when Herbein said at his press conference in Hershey that he "would not rule out" the possibility of operator error. 334/

Troffer's reticence on the subject, until Herbein had spoken, is analogous to Fabian's disinclination to report Kunder's information about off-site releases until he had checked it with Miller or Creitz.

Troffer's colleagues, Hilbish and Klingaman, echoed their superior's caution. "Even though we may have discussed the possibility of operator action contributing to it, I honestly do not believe that I would have indicated that to the press" Klingaman said.335/ For his part, Hilbish said that during the first two days of the accident, he never told callers that there had been any operator error. Instead, he said that, based on the information available, it seemed the operators had followed their procedures and training and had done what they were supposed to do. 336/

Meanwhile, in Bethesda early Wednesday, NRC personnel who learned about the accident from Met Ed were talking openly among themselves about the possibility of operator error. When Darrell Eisenhut heard that Met Ed operator Frederick had turned off the emergency core cooling system (ECCS), an act that significantly added to the seriousness of the accident because it resulted in the core's eventual uncovering:

I went out on a limb and said human error. It [turning off the pump] was unusual timing: they couldn't have checked out enough to know that the core was cooling and the pump could be turned off. 337/

But the NRC press release issued at 10:30 a.m. Wednesday said simply that the ECCS was "being used to provide water to the reactor." This was true, but it omitted the fact that the pumps had been turned off earlier that morning. A PN issued at 3:45 p.m. talked about Frederick's action, but not so that anyone unfamiliar with the reactor's systems and safety procedures would recognize the incident as unusual: "All ECCS components started and operated properly. Water level increased in the pressurizer, and safety injection was secured manually approximately five minutes after actuation. It was subsequently resumed." Later in the day, at 5:00 p.m., another press release mentioned that "emergency core cooling systems are continuing to provide water to cool the fuel." This time the NRC offered no indication that the pumps had been turned off earlier.

The task force received memorandums from Stello and Denton about the vagueness in these releases and the PN. Stello's response reads in part:

The technicality in the Press Release and the PN is the statement that "Emergency core cooling systems are continuing to provide water to cool the fuel." One can argue the accuracy of that statement since on the one hand the HPI pumps are a component of the ECCS and on the other that placing the ESF in bypass or manual caused ECCS to be inoperable because no automatic initiation can occur. We believe the statement in the Press Release and PN was consistent with NRC understanding at the time, that HPI, a component of ECCS, was supplying cooling water to the reactor, albeit in the throttled position.^{338/}

Denton wrote in part:

The technical staff members in the NRC Incident Center with whom you cleared the press release of concern (and their support staff in the Phillips Building) were informed by the licensee through IE representatives at the site that the ECCS pumps were on. The IE report confirms the fact that the pumps were on. It was also known at the time, although not mentioned in the press release, that the ECCS pumps had been turned off for a period of time early in the accident.

It is not clear, from the recollection of the principal NRR staff involved in the IRC activities, when they knew on March 28 that the flow from the ECCS pumps was being manually throttled by the operators. We have not examined the IRC voice tapes to answer this question. (Emphasis added).^{339/}

We believe the press *release* was accurate in the following sense: the ECCS was providing water to cool the fuel, to the best of the knowledge of the technical staff at the time.^{340/}

There was much discussion of "errors in judgment" in the IRC Wednesday morning, specifically among Stello, Case, and Fouchard.^{341/}

Around 5:00 p.m., Case briefed Senator Gary Hart and various other senators and staffers:

The safety injection system came on, refilled the system with water, and got to the point where everything was in good shape. Then apparently someone manually turned off the safety injection system because they thought the water level was high enough in the reactor coolant system.^{342/}

Senator Peter Domenici of New Mexico, a member of Hart's subcommittee, asked, "Do I understand that you think then that this could be a human error that was built onto [what was] already happening?"^{343/}

"Yes, sir," Case replied.^{344/}

Thus on Wednesday the NRC in Bethesda was telling Hart that human error had contributed significantly to the accident, while Higgins and Gallina, NRC's representatives on-site, were saying at the 10:00 p.m. press conference that human error was not a concern. In a later interview, Case said that by Wednesday afternoon, he felt that the ECCS had been turned off indicated operator error or, rather, "operator action... It's tough to say an operator error."^{345/} Although he would have honestly answered a reporter's question about operator action or equipment malfunction, Case said he would not have volunteered information on these points. "The real difficult question is how fast do you pass on this information, because it might be wrong. Christ, if you tell somebody, it's printed, and you're off to the races."^{346/}

By Thursday the NRC began, very gently, to voice its recognition of human error as a cause of the accident. At 10:00 a.m., Eisenhut briefed the NRC commissioners in their downtown Washington offices.

EISENHUT: The ECCS system did actuate as it was designed to, we believe. It injected water into the reactor vessel system. Some information we have also indicates that some moments later, the safety injection system of the ECCS system was manually secured.

COMMISSIONER GILINSKY: Turned off.

EISENHUT: Turned off, yes, sir.^{347/}

At a Capitol Hill hearing held on Thursday to inform Congress about TMI, Hendrie described a series of mechanical failures, but as he talked about the ECCS being turned off, he also raised the possibility of human error.^{348/} And the NBC Nightly News that evening quoted Eisenhut: "About five minutes after the ECCS went on, it was turned off. We don't know why and we don't know the details at this point, but it was turned off."

Meanwhile, Met Ed held the line on equipment malfunction. On NBC's "Today" show Thursday morning, Creitz was confronted with Senator Hart's opinion that operator error was involved.

Creitz first explained how the valve failed, then added, "When the pressure dropped to a certain level again, the automatic system took

over and opened valves so that the pressure would not exceed the value that we said would be maximum."

TOM BROKAW: You mean there was no human error involved at all?

CREITZ: There was no human error involved in any of that procedure.349/

Creitz, like Denton, added that a complete study would be done. He did not deny operator error. He simply said there was no operator error in the which Creitz examined the broadcast transcript, he admitted that "I was a little too positive on that one" and that he did not answer Brokaw's broad question.350/

At his press conference on Thursday morning, Herbein said only that human error was a "possibility," that he "wouldn't rule it out."351/ At 1:00 p.m., Herbein briefed Senator Gary Hart and other members of a congressional delegation to the site. Richard Vollmer, who had just arrived at TMI from the IRC, heard the first detailed description of the causes of the accident. It was then apparent to him that, as the NRC in Bethesda had discussed, operator error had played a major role. But Vollmer admitted that Herbein's language at the briefing would have been confusing to a layman: "He did not try to say that the operator had done this or the operator had done that."352/ Vollmer's impression is supported by Jim Asselstine, a staff member of the Senate Subcommittee on Nuclear Regulation, who attended the briefing.353/

Scranton, who was spending that afternoon wading through radio-active water on the auxiliary building floor, sent a representative to this briefing who taped the proceedings, but neither Critchlow354/ nor Milne355/ remember hearing about operator error until Denton arrived on Friday. At a press conference at 10:20 p.m. Thursday night, Gallina repeated that, "A preliminary evaluation has indicated that no operator error occurred."356/

At Denton's press conference on site at 10:00 p.m. on Friday, Denton sidestepped a reporter's question about human error:

We haven't attempted yet to go back and look at that aspect. We will prepare a full report on the topic. At the moment our number one focus is to understand the status of the core, the amount of damage, this bubble, and what the implications are.357/

The first time that NRC people on-site openly admitted operator mistakes was at Denton and Mattson's press conference on April 2. Mattson said, "There were failures of equipment and there were operator actions on the initiation of safety equipment," adding that these problems would be investigated to prevent them from happening again.358/

Denton himself did not address operator error in public until his April 4 press conference:

I think that the critical aspect of this is that the auxiliary feedwater pump should have been in action and was not at the time of the transient. There would have been an entirely different outcome if it had been in operation as it should have been.

In a later interview, Denton explained why he had hedged about the question of operator error at Friday's 10:00 p.m. press conference. He claimed that he had no interest in protecting Met Ed operators or Met Ed itself:

I guess I had never thought that it might be perceived as protecting operators. It was more a lack of knowledge. I guess we know it wasn't as simple as fire the operators and get new operators. The machine was a little bit at fault, as we began to understand it.

He recalled briefing Representative Udall on Thursday, when he said that the fact the valves were opened indicated operator error. "The first few days, I thought it was all operator error, that it must be. The machine was great and everything else was fine," but when he got to the site he began to realize that "what I knew in Bethesda wasn't the whole story."359/

While the NRC was dropping hints about operator error during the week after the accident, they would not confirm the story in public. Casey Burkro of the Chicago Tribune says he had an April 3 "an exclusive that the accident was made worse through human error. I got it through talking to people in the industry." Richard D. Lyons of The New York Times read Burkro's story and "tried to find out to what degree there was operator error," but he could find no one at Met Ed, in Thornburgh's office, or in the NRC, to confirm, so he abandoned the trail.360/

In the introduction to the NRC's Office of Inspection and Enforcement (I&E) report of August 1979, "Investigation Into the March 28, 1979, Three Mile Island Accident," Stello echoed Hilbish's statement about the operators at TMI.

Stello is of the opinion that both equipment and operators were at fault, but the operators' errors were the result of their training rather than carelessness:

Perhaps the most disturbing result of the I&E investigation is confirmation of earlier conclusions that the Three Mile Island Unit 2 accident could have been prevented . . . The design of the plant, the equipment that was installed, the various accident and transient analyses, and the emergency procedures were adequate to have prevented the serious consequences of the accident, if they had been permitted to function or be carried out as planned. For example, had the operators allowed the emergency core cooling system to perform its intended function, damage to the core would most likely have been prevented . . . On the other hand, had certain equipment been designed differently, it, too, could have prevented or reduced the consequences of the accident. The results of the investigation make it difficult to fault only the actions of the operating staff. There is considerable evidence of a "mind set," not only by TMI operators but by operators at other plants, as well, that overfilling the reactor coolant system (making the system solid) was to be avoided at almost any cost. Undue at-

tention by the TMI operators to avoiding a solid system led them to ignore other procedural instructions and indications that the core was not being properly cooled. Without this "mind set" they might well have acted to preclude or better mitigate the accident. . .361/

At TMI, according to Robert Bernero, who arrive on site on Monday, April 2, to help brief the press, the NRC was anxious to lay to rest the spectre that discussion of human error raised: that incompetents had been and were still running the plant.

BERNERO: I was told that I was quoted [in a story] as saying the reactor was "out of control" for 16 hours and that triggered a reaction that was amazing. Joe Fouchard the next morning asked me did I say that, and I said, "No, I don't think I would have." Even now, I wouldn't say the reactor was out of control....

QUESTION: What you said is that they weren't controlling it?

BERNERO: Yes, yes, and it's a normal distinction. The only thing I could conjecture -- and I don't know this to be true, but it's just my perception -- "out of control" has the implication that the control room is full of inept idiots and they are still there running this thing. There is fear that no competent people are running the plant even now [in August 1979], and if it was out of control Wednesday night, what assurance do we have that it's in control now?

QUESTION: Is it possibly bigger in that it leads to the implication that this is a technology that can be out of control, or is out of control?

BERNERO: Oh, yes, that's a pervasive concern, that this technology cannot be controlled.362/

The possibilities of either equipment malfunction (a complicated technology run amok) or human error (a potentially destructive form of power in the hands of inept personnel) can be equally disquieting. At TMI, the NRC knew enough about the accident on Wednesday morning to deduce "operator action." Because the source of its information was Met Ed, the utility was in a position to make the same deduction. For a variety of reasons, neither Met Ed nor the NRC chose to speak openly of human error for the first 24 hours of the accident, preferring to attribute the plant's problems to equipment malfunction, frustrating the public's right to know.

D. MET ED RELEASES SLIGHTLY CONTAMINATED INDUSTRIAL WASTEWATER INTO THE SUSQUEHANNA RIVER, AFTERNOON, MARCH 29

On Thursday, March 29, Met Ed released some industrial waste water slightly contaminated with noble gases into the Susquehanna River. The confusion surrounding this event illustrates communications and public information problems that recurred throughout the accident. A minor

incident was blown into a major event because: 1) Lower-level staff at both the utility and state agencies were initially insensitive to the public relations consequences of dumping contaminated water during a major nuclear accident. As Thomas Gerusky of BRP reflected, "We learned quickly that the public relations aspects of the problem were probably more important than the technical aspects." ³⁶³/; 2) In contrast, the NRC was very sensitive to its public image. As a result, behind-the-scenes political jockeying between the NRC and the governor's office resulted in the alienation of one key public information officer, Paul Critchlow, from another, Karl Abraham; 3) No party was willing to be frank with the press about what was actually going on; and 4) Misinformation and poor communication among all parties characterized the entire incident.

As a result, the public did not receive timely information. The media were not given an official release until 10 hours after the discharge of water began. As Edson Case of the NRC said about the dumping incident, "It was a microcosm of the whole goddamn [TMI] situation." ³⁶⁴/

After the accident first occurred on Wednesday morning, Met Ed stopped its routine discharge of industrial waste water as a matter of prudence. By 2:30 Thursday afternoon, approximately 400,000 gallons of water from toilets, showers, drains, and laundry facilities had backed up in the sump, or sanitary tank, of the plant's turbine building. Both Met Ed and NRC staff on-site were concerned that the undiluted waste water would overflow the tank into storm drains, and from there into the Susquehanna River.

According to Met Ed's Richard Dubiel:

The only alternative would have been to block the floor drains in all buildings in the plant. But doing that would jeopardize equipment, in that you could flood out the low elevations of several buildings. ³⁶⁵/

By 2:30 on Thursday afternoon, Met Ed personnel, with the NRC on-site staff concurring, decided to dilute and release the water into the river. The NRC had sampled the water and found levels of xenon 133 and 135 below maximum permissible concentrations (MPC) of noble gases dissolved in water for plants during normal operations; the concentrations were also below the proposed technical specifications for TMI.

Although there is no formal notification system for such a discharge, Dubiel called Reilly at about 2:30 p.m. Dubiel said that the water contained small quantities of noble gases. Reilly responded, "It doesn't give me any heartache." Reilly said she thought she had given the site about "60 percent" permission to dump. ³⁶⁶/ Around 4:20 that afternoon, after the release had begun, Reilly got another call about it from Region I. Again she indicated she was not opposed.

About the time of Dubiel's call to Reilly, George Smith at NRC's Region I office called the IRC and spoke to Larry Cohen and Leo Higginbotham:

I got a problem here. Water is starting to back up over at Three Mile Island and it's beginning to be released into the storm drain system that goes into the river. It's leaving at 10 or 10 microcuries per millilitre. We have 2 samples . . . we only identify xenon 133 or 135 . . . I think what we have to have is some kind of permission to make this release.367/

Smith thought that either the waste water was being released in an uncontrolled, undiluted fashion or that the sump had overflowed and waste water was pouring into the storm drains. Smith thought he needed permission from headquarters to okay the release.368/

While Smith was talking to Higginbotham, Gerusky was talking to Region I. Smith was told that Gerusky felt the responsibility to approve the release was the NRC's. Higginbotham told Smith, however, that the NRC in Bethesda was "not in a position to tell them what to do."369/ The above conversation between Smith in Region I and Higginbotham in Bethesda shows that the NRC in Bethesda knew about the release; that Smith thought permission from headquarters was needed; and that the state had indicated no concern about the release, although Gerusky recognized the NRC could stop it.

In the IRC, Case remembered the Emergency Management Team being told about a 2:30 p.m. call from the utility, "checking with us" about releasing some water that was within NRC technical specifications. Case had the impression that the release had not yet begun. He immediately thought the dumping was "a dumb thing to do, because it's a political question, not a technical question . . . and my gut said you're going to get a ruckus about it . . ."370/ But, because dumping was not Case's area of authority, he simply advised against it.

Gossick, head of the Emergency Management Team (EMT), and Davis, whose area of authority was radiation, agreed that the release was technically satisfactory; they gave the go-ahead to an unidentified IRC staffer who had told them about the utility's call. At about 2:45 p.m., Met Ed began releasing the water with the knowledge of Region I, some people in the IRC, Gerusky, and Reilly. No downstream localities or media were notified.

At the IRC, examples of garbled information about the release are legion. Telephone conversations at the NRC refer to the dumping of "radioactive waste" and to water from "the floor of the auxiliary building" -- meaning contaminated water released during the accident. There is confusion as to whether the utility needed a permit for the release. Others thought the NRC had to approve it.371/

The confusion is understandable, given the modus operandi of the IRC. News about TMI came in to the IRC via telephone to whomever picked up the line. Members of the IRC Emergency Management Team received bits and pieces of uncoordinated information. Shift changes among telephone operators and managers also contributed to the spread of misinformation. When Chairman Hendrie and the NRC Commissioners found out about the dumping, they, not suprisingly, lacked certain facts about the discharge.

It is not clear how Hendrie first found out about the release. But by 5:46 p.m. Thursday, Hendrie and Commissioner Ahearne called Case and Davis in the IRC. The following discussion illustrates Hendrie's main concerns:

HENDRIE: What's going on with this dump down at Three Mile into the Susquehanna? . . . I just got a report they'd released 400,000 gallons of slightly contaminated water into the river.

DAVIS: Mr. Chairman, we aren't certain of that. We had a report at 2:30 this afternoon that they were releasing some controlled release into the river at about 10 to the minus 3, 10 to the minus 4.

HENDRIE: Okay. That's consistent with the report that's come through. Now, where did that come from?

DAVIS: The licensee. It comes from the licensee. Now it's our understanding that it is a controlled release, and what our staff is attempting to determine right now is, does it meet tech spec limits, or does it meet NRC limits?

AHEARNE: Are we letting them do it?

HENDRIE: Have they done it, or what is the situation?

DAVIS: It was my understanding they were in the process of controlled release. Whether the 400,000 gallons have gone out, I don't know; we'll have to check.

HENDRIE: I thought they weren't going to do things like that without letting us know.

CASE: Well, they let, as I understand it, they let us know they were dumping . . . they maintained I gather that it was in the licensed limits.

AHEARNE: Did you perchance question them and tell them not to do it until they ask us a little bit about it?

CASE: That was one of the messages that went back at one point.

AHEARNE: Do you have a response to that question?

DAVIS: I don't really know, John.

HENDRIE: Who has got the lead down at the site?

DAVIS: Keimeg, one of our section chiefs.

HENDRIE: Now, if Three Mile were operating normally, then the licensee might find it within his license that he can go ahead and make this release. That would be all right. In the circumstances,

the impression everybody will have is that he is dumping the contaminated water into the river.

CASE: Bad PR, agreed. Why don't we just call them up right now and tell them to stop, if he hasn't stopped it?

HENDRIE: I think something like that would be more useful if we had started it a little earlier. This may be a separate set of water someplace, and if we can all agree and shake hands that, 'Oh, this is fine, you walk through a tank, this is another set of stuff; there is a trace of stuff in it, but it's well within limits, and so on, okay. But I don't find it very happy to have him just cranking a valve and running this stuff into the river. You know, supposedly, we've got a team down there that's keeping track of things and I'm going around telling congressmen we have good, close communications and that we and the state people and everybody else are working closely together so that we all know what is going on, all agreed on the steps, and I don't find that compatible with him just deciding what the hell, I'll dump 100,000 gallons, even if the level is, in fact, minimal, and . . . it's a perfectly acceptable release; he's not running a normal, everyday configuration down there, for God's sake.

CASE: Well, the word has now gone back through our chain to the licensee to stop.

HENDRIE: Okay. Well, maybe it will turn out he hadn't opened the valve and was checking. I don't know. So do you have any reflection down from the site about what the state people are going to --

CASE: The state was, as I understand, aware of it.

HENDRIE: Like us they were just told he was dumping it?

CASE: Yes.

HENDRIE: Jesus Christ! I bet they are calling the governor. Those goddamned fools down there are dumping their stuff in the river, they can't think what to do with it. Would you please get hold of the state people and find out what's going on or . . . what kind of information they have been given and so on?

CASE: All right, I'll do that. Right.

HENDRIE: At least a release like this at a time like this needs to be one on which both the state health and radiation people and we agree with the licensee is proper and needs to be done and it's okay to do it.372/

(During this discussion with Hendrie, Case left the phone long enough to tell staff in the IRC to order the utility to stop dumping until further notice.)

Hendrie's concerns were three. He was worried that the public would think that radioactive water released during the accident was being dumped into the river. He was not sure of the water's contents or origin. And he wanted to be sure the state had been notified.

This last concern may have stemmed from an earlier incident at the Beaver Valley plant on the Ohio River, where similar waste had been released. According to Karl Abraham, "It was a national ruckus -- complaints to the White House, threatened court actions -- and a commitment was made then by the NRC that if we were aware that these things were going to be done that we would let the public know."373/

About 6:00 p.m., shortly after Hendrie and Case's conversation, Morris Howard and Jim Sniezek of the IRC talked to Smith and others at Region I and told them to stop the dumping immediately. The IRC also wanted to know how much water had been dumped, what the curie content was, why the utility had to discharge the water to the river, and who had been consulted at the state level.374/ Smith wanted to make sure that the EMT (which, he was told, had ordered the dump stopped) knew that "this will cause liquid to start backing up into the turbine building."375/

The message was carried by an unidentified NRC staffer to the Director of NRC Region I, Boyce Grier. Grier called Met Ed's Gary Miller and told him the release was to be halted immediately until further notice. Because Grier had been given no explanation, he did not offer Miller one.

Miller explained the nature and necessity of the dump, adding that a sample had been taken and the state had been informed of its content. According to Grier, Miller was surprised at the NRC's request, but said he would stop dumping.

Grier then called the IRC **in** Bethesda to tell them that Miller had said the water had not exceeded limits; that the water was treated waste and that it had been analyzed; and that the state had been informed.376/

Thus, by 6:00 p.m., the NRC in Bethesda had ordered the site to stop releasing water pending further evaluation -- an order issued as a result of confusion and misinformation among top NRC officials. The chairman of the commission was not sure of the source of the water, or why it had to be dumped. He did not know that Gerusky and Reilly had agreed to the discharge if the NRC approved, as lower level NRC staff had done. Nor had Hendrie been told that Davis and Gossick of the EMT had essentially approved the release at approximately 2:30 p.m. No one was really sure how much the state knew about the dumping. The chairman thought it important to find out what part they had played, if any.

Case told Chairman Hendrie the following shortly after 6:00 p.m.:

The story we are getting, Joe, is confused, and the communications are just terrible. We ask questions back and we just don't get answers. I don't know where the hell [the water] is coming from. I can't find out, and we can't get any communication with [our senior man at the site] except by pay phone.377/

In Region I, Smith told Sniezek at the IRC shortly after 6:00 p.m., that:

At 1430, as we reported, we called Pennsylvania and talked to Gerusky. We informed him what was happening. His comment was "Dump it and warn downstream users." Those were his exact words during the conversation. However, he stated, "We have no problem with it. Whatever you do, we go along with it." This was reported to headquarters. We then went back to the state at 1620 and talked to Reilly. We informed her of the decision by TMI to dump. We have here 400,000 gallons of water but they are not going to dump that much; told her what the dissolved gases were. She sees no problem with this item. We also notified the licensee as per our instructions that we were in no way authorizing any dump, nor were they authorized to make any releases which exceeded MPC's.378/

This information about state involvement did not reach Case and the chairman.

After 6:00 p.m., Hendrie, Case, Davis, and Fouchard talked frequently. Fouchard nagged Hendrie about a statement for the press, since he had already received a number of inquiries about the release. Hendrie told him:

I wish I was in a position to feel that we understood what was going on and agreed that [the dumping] was reasonable and necessary, and that the state people were in it, too, and had thought about it. I'm not in communication with the licensee. I'm in communication with the Response Center and as far as I could tell, the communication from the Response Center to the licensee is sufficiently poor that who the hell knows who is in communication with anybody.379/

Hendrie and Fouchard agreed that for the time being they would respond to press queries with "We're checking with the licensee," a true but greatly abbreviated statement.

Later, at about 7:15 p.m., Fouchard called Gossick at home and discussed press interest in the dumping. Fouchard said:

We have had several inquiries on allegedly spilling material into the Susquehanna, and what we have told them is that the plant has some industrial liquid waste which has low levels of activity. The utility began controlled discharge of this waste [in] to the river this afternoon. In order for the NRC and the state to evaluate the matter further, the utility has stopped the discharge. This is not water released from the reactor coolant system during the accident.

Now, with respect to a press release tonight . . . I would prefer to stand Denton up at a briefing tomorrow on this situation rather than try tonight to construct words which, by the time we got them out, would be too late to help anybody.

Gossick mentioned the importance of being "forthright" about the whole event. Fouchard agreed, but noted, "There are lots of ways to skin this pussycat."380/

The following conversation, around 8:00 p.m., among Hendrie, Fouchard, and Case, further illustrates the poor internal communication at the NRC, as well as Hendrie's concern that the press be told that "we were aboard" on the decision to release the water:

HENDRIE: Okay, now, I've just been talking to Lee [Gossick] about it and it is his impression, although I didn't get that impression when I talked to John [Davis] and Ed [Case] earlier on, about six o'clock, that the release has been discussed by the licensee with both the state people and the NRC.

FOUCHARD: We told them it's not to exceed our limits. That's my understanding.

HENDRIE: Okay, because when we got that notice in the --

FOUCHARD: I understand.

HENDRIE: -- appearing late in the afternoon --

FOUCHARD: It was very confusing.

HENDRIE: Why, it just sounded as though the licensee unilaterally started the discharge. And I was going to say that, you know, [during] normal operations, that may be a very appropriate thing for them to do. But in this circumstance, why, they can't go ahead and do things like that without us and without the state being aboard.

FOUCHARD: Yeah.

HENDRIE: So I guess it's a tempest in a teapot. I think it would be useful for --

FOUCHARD: Well, I --

HENDRIE: -- the press to know we were aboard and the state people were aboard on it.

FOUCHARD: I think you had better talk to Ed, because we're getting word here that the governor himself wants to have a finger in this pie.381/

When Case told Hendrie the state had no problem with the release, "but the governor himself is going to make this decision," Hendrie replied, "Let the governor decide whether we are going to dump the crappers in the water."382/

By 9:00 Thursday night, Hendrie was willing to allow the governor to make the decision to continue the dumping, even though the chairman had

stopped the release 3 hours earlier. 383/ Later conversations among Hendrie, Case, Denton, and other IRC staff, confirm that Hendrie wanted to wait and see what the governor planned to do.384/ But as Dudley Thompson **put** it, the NRC was "in a very sensitive position now. Having gotten ourselves in a box, it's going to be very difficult to get out."385/ Once the NRC ordered the dumping stopped, someone had to approve its resumption. Chairman Hendrie was willing to let the governor make the decision to resume the release -- a decision entirely political, not technical.

The 6:00 p.m. order from the NRC to stop dumping came as a complete surprise to state officials of the Department of Environmental Resources. "We were reacting from a technical point of view," Gerusky said, "and we were not considering the public relations aspect of the problem."386/

Even though one of the reasons the NRC stopped the dumping was to make sure that the state -- especially the governor -- was "on board," Thornburgh and his staff found out about the event indirectly sometime after 6 p.m.

David Milne, the DER press secretary, had not heard about the release prior to a call he received after 6:00 p.m. from a reporter in Washington. Reilly and Gerusky had apparently not thought the matter important enough to discuss with Milne. His reporter friend had heard from an undisclosed source that Met Ed was about to discharge 400,000 gallons of radioactive water into the Susquehanna River.

Checking with Gerusky and Reilly, Milne learned that the dumping had started earlier in the day, but had been stopped by the NRC, even though the water's content was not objectionable. Milne and Peter Duncan, the DER deputy secretary, then told the governor's press secretary, Paul Critchlow, about the incident.387/

For the next 6 hours, the dumping incident preoccupied the time of almost everyone at the state capitol. The governor's staff (especially Critchlow), the lieutenant governor and his staff, DER, and the NRC Region I public information man, Karl Abraham, were all deeply involved in trying to straighten out the confused story. Reilly commented, "I thought, boy, if it were a real problem, what do you do then?"388/

When the governor learned of the dumping, he was not sure how much water had been dumped, whether it was really necessary to get rid of it, and who should give permission to resume dumping. Thornburgh was under the impression that the NRC had stopped the dump pending his approval. As Thornburgh explained, "If it was our decision, I certainly wanted to know everything that was going on . . . if it wasn't, we could input our own views into NRC's."389/

Milne and Duncan wanted to test a sample of the water's contents, but found that the state did not have the necessary lab facilities. At 8:00 p.m. they phoned Jim Sniezek at the IRC, who told them when the utility had started and stopped discharging. Sniezek assured them that the radioactive content was low and would dissipate almost immediately in the river.390/

Milne and Duncan began writing a press release based on Sniezek's information, and started notifying downstream users. According to Milne, they planned to say that DER approved of the dump, because at that point in the evening they thought the decision was up to the state.^{391/} The first sentence of the release reflects this: "The Department of Environmental Resources tonight authorized Three Mile Island Nuclear Power Plant to discharge into the Susquehanna River 400,000 gallons of waste water that has become slightly contaminated with xenon, a short-lived radioactive gas."

Communications between the state and the NRC were still messy. Because Reilly was hearing from the governor's office that Thornburgh had to authorize the dump -- the very impression Bethesda wanted to give -- she told Hal Gaut in the IRC, "It appears up here that the Guvvie may be getting choked up about putting anything in the river."^{392/}

Around this time, Milne began to suspect that the state did not have the ultimate responsibility to authorize the discharge. Earlier in the evening, Karl Abraham, who was in an office at the state capitol, had not spelled out to state officials that the dumping was not their responsibility. Milne said that Abraham told him that the NRC had stopped the discharge just to be "polite," and to allow the state to notify downstream users or make other arrangements they thought necessary.^{393/} But around 9:30 or 10:00 p.m., Abraham finally conceded that the governor did not have the ultimate responsibility for the dump. Critchlow said,

We had a question whether the Governor had authority which superceded the NRC's to permit or approve the dumping . . . After much pulling back and forth, [we] finally got Karl to acknowledge that no, he did not.^{394/}

The "pulling back and forth" over responsibility for the dumping took up the next 3 hours, during which Abraham was frequently on the phone to his boss, Fouchard, and other NRC people in Bethesda. Abraham's political jockeying will never be forgotten by those in the state capitol. "It was very clear to me," Critchlow recalled, "that Karl was trying to give the governor the stigma of having announced and approved the dumping of contaminated water in the river in order to remove it from the NRC, where it rightfully belonged."

"I now recall myself saying, 'Karl, I mean if the governor does have that authority, if it is his responsibility, then certainly I have no problems with having him approve it as we announce this action taken. But if he does not have the responsibility or authority, then I think it ought to be the NRC that announces this thing is happening or is going to happen.'^{395/} Abraham responded by suggesting that Lieutenant Governor Scranton take the heat.

"The Lieutenant Governor's Executive Assistant [Mark Knouse] was sitting there," Critchlow recalled. "He was just shocked. It was such a clear effort by someone at the NRC to take a public relations angle that would get them out from under this thing, and we were starting to get very concerned."^{396/} Knouse also remembers that episode: "I basically said

nothing, just sat back there and seethed quietly. Abraham didn't know who I was . . . Paul looked at me, and I think I just made some expression."397/

After Abraham had read Milne's first draft of the press release on the dumping, he handed Milne a pencil-edited, revised draft. "I looked at it," Milne said, "and I thought, why should we take the responsibility for this when, in fact, we don't have any authority over it? I threw [Abraham's version] out and wrote a totally new one."398/

Bethesda's crucial concern was over who was approving the dump, as a call between 9:30 and 10:00 p.m. illustrates:

ABRAHAM: This makes it sound like once DER says dump, they can go.

CASE: I know that, but I just want you to at least understand that that ain't the fact.

ABRAHAM: Well, the way they are quoting Sniezek, he's giving approval.

CASE: No, Sniezek is not giving approval.

ABRAHAM: Well, that's the biggest problem we've got then, because that statement --

FOUCHARD: Okay, but go get the draft and call us back.

ABRAHAM: Will do.399/

While the NRC's position at 6:00 p.m. had been that it had complete authority to stop the dumping, it preferred to hand the governor the trickier problem of restarting it.

After Milne threw out Abraham's edited version of his press release, he wrote a second one, which was released just after midnight. Neither Abraham nor Milne bluepenciled the statement saying that DER approved the dumping, so that according to the release, the state took ultimate responsibility for resuming the discharge. There was also no mention of the fact that the NRC had stopped the dumping earlier. The release said:

HARRISBURG (March 29) -- The following is a statement by Clifford L. Jones, Secretary of the Department of Environmental Resources:

Metropolitan Edison and the Nuclear Regulatory Commission have informed us there is an urgent need to begin discharging into the Susquehanna River waste water from the Three Mile Island nuclear power station that contains small concentrations of xenon, a short-lived radioactive gas.

The Department of Environmental Resources has reviewed the problem and reluctantly agrees that the action must be taken.

Officials from the Nuclear Regulatory Commission and the U.S. Department of Energy said the discharge can be made without harmful radioactive pollution of the river. Our own scientists agree.

The problem is that 400,000 gallons of the waste water have accumulated in the sump of the plant's turbine building. The water, not normally radioactive, comes from the showers, the laundry, wash basins and leakage from turbine steam lines.

There was no primary cooling water or water from the reactor's auxiliary building involved.

The water apparently became contaminated because of the radioactive gases released into the plant as a result of the accident.

NRC and U.S. Department of Energy officials advised the department that under normal operating conditions, the waste water is discharged routinely. However, discharges have been halted by the plant since the accident Wednesday morning.

Plant officials warned us that unless the discharge resumed, the holding tanks would fill up and undiluted waste water would run directly into the river through storm drains.

Plant and federal officials said they also needed the holding tanks to store other industrial wastes.

The NRC advised DER it expects there will be no detectable levels of xenon in the river a few miles downstream of the discharge. The xenon will either dissipate into the air or be rapidly diluted by the river water.

The NRC staff said the concentration in the discharge is only one percent of the proposed federal discharge standard for new nuclear power plants. There is no existing discharge standard for xenon for this plant.

The plant initially began discharging the waste water at about 2:30 p.m. But the discharge was suspended at about 6 p.m. for further review by state and federal officials.

DER wanted more assurances that xenon was the only radioactive element in the discharge. Tests at the NBC's mobile lab at the site confirmed that two types of xenon are present.

The department is notifying downstream municipal water systems of the discharge, but that there is no cause for concern. The state of Maryland is also being notified.

In retrospect, Milne thought he should have acted differently:

If I had it to do over again . . . I would have just told them that the NRC had notified us that there was a need, and I don't know [but] that I would have said that we "reluctantly" approved. . . .400/

. . . we were being had. We didn't want to take responsibility for something they had done. I don't impute any motives to [Abraham]. Maybe they were trying to be, you know, polite or whatever. I decided that I didn't want to take the heat for it, that DER didn't want to, although at the same time, we wanted to give the public assurances that we had at least attempted to check it out, that we had talked to the NRC.401/

Abraham's views on the dumping differed entirely from those of the state. Months later, he still maintained that the state was involved in stopping the discharge or at least "it was the state and the NRC . . . it wasn't very clear."402/

He also believed that the governor had the authority to restart the dumping and that the press releases were the state's own:

It started off sounding like it was something that the governor could review and if he didn't think it was in the best interest of the state to do it, he could stop it. A few hours later, it was a matter of urgent necessity and the governor really didn't have any choice in the matter. 403/

Given the problem the NRC had passed along to him, the governor had no choice but to become involved. Critchlow and Milne have no doubts that the NRC was engaging in some clever public relations. After Thursday, they had little trust in Abraham.404/

After 10 hours of delay, the press and public received the first formal notification of the event -- too late for some morning edition deadlines. In any case, the dumping was displaced in the news on Friday morning by the venting of 1,200 mrem of radioactive gas.

Shortly after midnight, after the state had authorized the dumping and had issued its statement, the NRC permitted the release to continue.

The Aftermath

The consequences of the dumping incident were far more serious than the event itself. In the governor's office, bad feelings developed toward the NRC in general, and Karl Abraham in particular. Critchlow wanted nothing to do with Abraham after Thursday night.

Although Met Ed had notified the state and the NRC about the dumping, the information never reached Thornburgh. The governor believed the:

discharge problem was annoying and troublesome because it was another confirmation that we weren't getting a straight picture from Met Ed . . . There was a developing sense on my part that Met Ed was, at the least, insensitive to our responsibility to both inform the public and to take appropriate action in response to what was going on at the site.405/

As for Abraham, he lost credibility with the state and with at least one member of the press, Richard D. Lyons of The New York Times. On Thursday afternoon, Lyons' desk in New York told him about a news service story that Met Ed was dumping some sort of water from containment. Lyons checked with Abraham, who, unaware of the waste water dump at the time, said that since water from containment would be radioactive, it certainly would never be dumped.

Later in the evening, when Abraham found out about the dump and the 40,000 gallons that had already been discharged, he remembered his earlier conversation with Lyons and immediately tried to reach him. Abraham told Lyons over the phone that the plant had discharged 40,000 gallons of industrial waste water. According to Abraham, Lyons said he was not interested in waste water; he had been told that the utility planned to dump a large quantity of radioactive water. Again, Abraham told Lyons that as far as he knew, Met Ed would not discharge anything like that.

When the final press release was brought to the newsroom, Abraham said that Lyons was furious with him. The two, who had known each other since the early days of the space program, met the following day in a hotel, where Abraham tried to explain. "I said, 'Will you give me another chance to tell you what happened?' and [Lyons] said, 'No.' He just wouldn't talk to me at all and I have not talked to him since." 406/

Fouchard's willingness to delay formal notification of the dumping until very early Friday morning infuriated the press. In an understated fashion, a 9:50 a.m. PN made note of this fact:

Representatives of the news media expressed concern that they were not informed of the planned resumption of the release prior to the permission having been granted.

The PN did not mention that the NRC stopped the release. It said only that, "The licensee released less than 50,000 gallons of slightly contaminated industrial wastes on March 29, 1979." And it added:

At about 12:15 a.m., on March 30, NRC gave the licensee permission to resume releases of slightly contaminated industrial wastes to the Susquehanna River. The action was coordinated with the office of the Governor of Pennsylvania and a press release was issued by the state.

On Friday morning, at Met Ed's press conference, the press vented its anger at being left out of the dumping episode. Unaware of the furor that the dumping had created, Herbein was totally unprepared for the grilling he received on the subject. When a reporter asked, "Why weren't we told about that for 10 hours?" a flustered Herbein answered with his much-publicized reply, "I don't know why we need to -- we need to tell you each and every thing that we do . . ." 407/

His remark was the final blow to Met Ed's already shaky credibility with the press. After this press conference, Herbein was not eager to

go before reporters again, and when the White House and NRC suggested that Met Ed hold no more briefings, the utility was happy to comply.⁴⁰⁸ But in truth, Herbein was sandbagged Friday morning by an event of which he was unaware.

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For an event that turned out to be of minimal consequence to public health and safety, the dumping incident of March 29 took up an inordinate amount of time and effort.

The alienation of the press from Herbein, and of Abraham from Lyons and Critchlow, the further erosion of Met Ed's credibility with the state, and the suspicion with which the state subsequently regarded the NRC -- all these consequences of the dumping are directly attributable to political concerns. As Bernero of the NRC said, "It was an appalling waste of everyone's time . . . the PR jockeying was a continuing nuisance."⁴⁰⁹

E. MET ED VENTS A 1,200 MILLIREM BURST OF RADIOACTIVE GAS INTO THE ATMOSPHERE, MORNING, MARCH 30

This incident is strikingly similar in several respects to the March 29th dumping of industrial waste water into the Susquehanna River. As in the dumping incident, information that reached the chairman of the NRC and the governor was poor and often incorrect. Decisions that had been made at lower operating levels were either contravened or agonized over for hours until political aspects were ironed out.

The venting episode on Friday morning is especially important in that crucial decisions regarding the population around Three Mile Island were being made, often based on inadequate and conflicting information. This poor information points up the serious breakdown in communications among the NRC, the state, and the utility.

Another result of the venting was that Met Ed further undercut its already damaged credibility by not being consistent with other agencies on the amount of radiation released. Moreover, Met Ed maintained that the vent was a planned, controlled release, while reports from the state and the NRC said that the release was uncontrolled and unexpected. This produced the very real and justifiable confusion Friday morning about the nature of the release -- whether or not the vent was indeed controlled or uncontrolled. The breakdown in communications about the nature of the vent and the amount of radioactivity released ultimately led to the precautionary evacuation of pregnant women and preschool children within a 5-mile radius of the plant.

The NRC

By 9:00 a.m. Friday morning, many senior NRC officials, including Denton, Case, Gossick, Davis, Collins, and Stello, had gathered around a large, horseshoe-shaped table in the Executive Management Team room of the Incident Response Center in Bethesda. Fouchard, the NRC public affairs director, was also present.

Shortly before 9:00 a.m., Radiological Engineer Lake Barrett was making rough calculations concerning the waste gas system of TMI-2. Barrett calculated that 63 curies per second would come out of the makeup tank directly to the environment. Davis, who happened to be passing by Barrett's desk, saw the calculations and invited Barrett into the EMT room to share his information with the directors.

Barrett explained that the waste decay tanks had filled up and were being vented and that "this appeared to be a continuous release that wouldn't be stopped until either the tanks were vented back to containment or the letdown was secured or decreased."410/

Barrett was asked what the off-site consequences of the 63-curie-a-second release would be. He roughly calculated that the release would be about a 1,200 mrem per hour dose rate. Although this number was a rough estimate, it was above the Environmental Protection Agency's Protective Action Guidelines which state that consideration to evacuate ought to be made at the level of 1,000 mrem dose rate per hour. The 1,200 mrem number thus elicited several "Oh, my God's" in the EMT.

Then, moments after Barrett presented his estimate, someone announced that the licensee was measuring 1,200 mrem per hour.411/ The source of the information from the site is not certain. One candidate is Karl Abraham, who called the IRC at 9:08 a.m. from his temporary office in the Pennsylvania State Capitol in Harrisburg. Abraham said:

somebody at the plant has informed the Civil Defense people that [the utility] had sometime this morning an uncontrolled release of airborne activity from a release point in one of the cooling towers. The measurement numbers that are being relayed by Civil Defense to the governor's office are 1,200 mrem per hour. The Civil Defense people are saying that if that's true, they are going to immediately start implementing some preparation for evacuation, although the governor has to give the final say on any actual evacuation. They are asking us whether it's true or not.412/

This new information from Abraham was alarming. Barrett recalled: "I think everybody was a little shocked." 413/ "That one seemed to trigger off everybody to sort of a state of panic, certainly a state of alarm," Collins remembered.414/

No one was certain where the 1,200 mrem reading had been taken. Denton remembered the reading as being "in a cloud over the containment. No one quite knew, it seemed, where it had come from or when it would stop."415/ Collins recalled the reading being "over a plant vent."416/ Barrett said the reading "was taken by many of the people to be at the north gate."417/

Case remembered how he felt at about 9:10 that morning. "It wasn't clear to me at the time whether it was either passing off-site or on-site. The only thing that impressed me was that it was the same number that this fellow [Barrett] had calculated." Case was also aware that the reactor was unstable, so he recommended evacuation. Denton concurred.418/

As the senior member of the group at the IRC that morning, Denton felt:

like it was my decision to make . . . if [the release] was really coming out and if it was that high and had an R per hour, it is an awful lot of radiation coming from a plant . . . it was important to evacuate quickly, because as the plume would begin to drift over populated areas, you couldn't wait two hours or five hours for a careful analysis. The exposure would already be there . . . I was making decisions in the face of uncertainty. 419/

No one present in the IRC remembers any disagreement in the discussions about evacuation. Says Barrett, "No one mentioned any opposition whatsoever to moving people. It was almost as if no opposition was an affirmative decision."420/

Foremost in the minds of Harold Denton and Ed Case were the two 1,200 numbers and Roger Mattson's concerns about the stability of the reactor itself. It was unclear whether this release would continue, whether more releases would occur, and whether the people at the site had a handle on the situation. The uncertainty of the situation was the critical factor in persuading Denton to go ahead with an evacuation recommendation. Since they had no assurances that another, and perhaps larger, release would not occur, they felt it wiser to be "safe than sorry."

Harold Collins put those 10 minutes on Friday morning into the best perspective:

I think it triggered some uncertainty in people's minds, as here again did we really have a handle on what was going on up there . and they wanted to be better safe than sorry. In other words, was this thing going to continue to percolate like a tea kettle, burping this stuff out periodically, and with virtually no way to control it or predict when its next burp was going to be? And how long was this going to go on, and would it get worse? Sporadic information [was] coming in; one piece of information didn't relate in the slightest iota to another piece of information.421/

After several minutes of discussion about the distance of the evacuation, the group decided that 5 to 10 miles was the best distance. As the logical candidate, Harold Collins of the Office of State Programs was instructed to inform the state of the NRC's recommendation to evacuate.422/

Collins said he was going to call Henderson, PEMA's director, because he would be the one to implement an evacuation.423/

By 9:15 a.m., only a quarter of an hour after the news of the 1,200 mrem puff had come in, Collins recommended to Henderson at PEMA that he begin to *evacuate people "out* to 10 miles in the direction of the plume . . . that is, of course, your option, but I certainly would start with at least that..."424/

Henderson also knew about the 1,200 mrem reading, which he thought was taken 600 feet above the stack. He concurred with the NRC's recommendation and said that he would "start with five, maybe."425/

No one in the EMT had any idea of the furor that this recommendation would create, nor did anyone doubt that the recommendation would be carried out.426/

The NRC commissioners, the press, and the public did not know about this evacuation recommendation. Because events had happened so quickly, the NRC staff in the IRC had made their recommendation without consulting the NRC commissioners. NRC Public Affairs Director Fouchard felt strongly that Chairman Hendrie should call Governor Thornburgh to let him know about the recommendation. But no press release or PN was issued.

Abraham called Fouchard at 9:25 a.m. to say that civil defense directors from the counties were calling the governor's office, wanting to know whether they should start an evacuation.

Abraham said, "The governor is saying he has not yet had enough information to give advice one way or the other, but he expects to have it very soon."

"These Civil Defense people, some of whom are in touch with the media, have indicated that the story they are getting now is that there is an unplanned and so far uncontrolled release from the site, and the best that we can do right now is to make sure they don't use the 1,200 mrem per hour number. I think you have to tell people that this news is on the way out."427/

After Collins relayed the evacuation recommendation, the NRC directors tried to contact the commissioners. At about 9:30 a.m., Denton was able to reach Commissioners Bradford and Ahearne. Denton said the release seemed uncontrolled and that the readings were "on the order of 1,000 mrem per hour at the site boundary potentially."428/ He told them, "We are encouraging evacuation also . . . so they initiated the evacuation plan. It just happened in the last 15 minutes."429/

Denton explained briefly the technical details as he knew them, but stressed that:

communication channels are pretty damned clogged. It's not clear why they [vented] . . . We have got so many damn people there you would think we would be right on top of it, but we're not.430/

The discussions that took place during the next several hours between the technical people in the EMT and the NRC commissioners had not been anticipated in emergency management. Case said:

I never dreamed that there would be a further evaluation of whether the recommendation of evacuation-was the right thing to do . . . I assumed, at least in my opinion, that the thing would be set in

motion by the call to [Henderson], never thinking that either the commission might have a different point of view, or that the governor wouldn't follow [Henderson's] recommendation right there on the spot.431/

According to those who spoke with the commission that morning, the five NRC commissioners were indecisive. Said Case:

... There ensued a great big discussion in which the commissioners said, "Now, where was this rad level? Who made this measurement? Are our planes up there? How long will it take to get them up there?" -- and all kinds of backs and forths that must have taken an hour or an hour and a half.432/

Denton remembered being asked many questions for which he had no answers.433/ The urgent decision made in minutes in the EMT dragged into lengthy discussion when it reached the commissioners.

The information the NRC had, both at the IRC and on H Street, was so poor that Chairman Hendrie was led to say, "It is operating totally in the blind."434/

Denton and Case repeatedly stressed that such releases could occur again because of the instability of the reactor. Denton told the commissioners:

As long as they keep fiddling around with pressurizer levels and blowdown and letdown, they are going to get a continual occasional case like this. I sure wish I had better data . . . we don't know what they are doing.435/

Given the lack of facts, Denton, Case and the others at the IRC felt justified in recommending a precautionary evacuation. Hendrie and the other commissioners, however, did not seem to agree -- despite such gloomy advice from one member of the IRC as, "There is a real possibility in another hour or two that we will face the same situation all over again."436/

Throughout these discussions, Fouchard was constantly urging the chairman to call the governor with a recommendation. Abraham had told Fouchard that the governor was getting ambiguous information and was waiting to hear from the NRC.

Hendrie finally agreed with Fouchard that he had to call the governor.437/ No one knew exactly what Hendrie was going to say.

Denton and Case still strongly urged evacuation; Brian Grimes was opposed. According to Hendrie, "His [the governor's] information is ambiguous, mine is non-existent, and -- I don't know, it's like a couple of blind men staggering around making decisions."438/

When the chairman of the NRC spoke to the governor of Pennsylvania at 10:07 a.m. Friday, it is fair to say that neither man had clear, accurate information. As Gallina of NRC Region I said, "I could have flipped a coin as well as they can."439/

Case had the impression that, at the very least, Hendrie would not go along completely with the staff recommendation.⁴⁴⁰ Case's impression proved correct.

Hendrie told the governor, "It appears to us that it would be desirable to suggest that people out in that northeast quadrant within five miles of the plant stay indoors for the next half-hour."⁴⁴¹

Hendrie was then interrupted by a call from the IRC with new information on radiological releases. This call confirmed that a reading of 1,200 mrem had been measured directly over the plant about 2 hours earlier and that the release had stopped.

Hendrie and the governor compared numbers; although the NRC's were higher, both men felt that the "stay indoors" solution was the best. Thornburgh then brought up the call from Harold Collins to PEMA at 9:15 a.m.

Even though all present in the EMT at 9:15 a.m. had concurred that a precautionary evacuation should be recommended, the chairman of the NRC was not sure who had made the call, to whom it was made, and what had been recommended.⁴⁴²

Although Denton and Case continued to urge an evacuation, they never made it clear to the chairman just what had transpired at 9:15 a.m.; it seems that they were not sure themselves whom Collins had called and what he had said. Things were happening so fast that morning that communication even within the IRC broke down -- and what got back to the NRC commissioners about the evacuation recommendation was sketchy.

Despite the IRC conviction that a precautionary evacuation was justified, the chairman of the NRC and the governor of Pennsylvania, by their deliberative actions, stopped the process by examining details and debating over information.

To many technical people in the NRC, this slow decision-making process did not make sense. Says Case:

I don't think [the commissioners] are in the habit of making up their minds on incomplete information, and sometimes you have to. They don't know how to do it, not this kind of decision. They're a deliberative body, used to all kinds of reports and studies. That's the way they usually make up their minds, and it just didn't work out very well in a situation like this . . . By the time you make up your mind, it's too late.⁴⁴³

Collins added, "The thing that saved us at Three Mile Island, if we got saved at all, is the fact that this was a very protracted long-term accident . . . You may not have that luxury next time."⁴⁴⁴

Denton, Case, and Collins still believe that they made the right decision, given the information they had. Case says, referring to Chairman Hendrie, "Maybe he was right and I was wrong; who knows. But I still would, under the same circumstances, recommend it again."⁴⁴⁵

Says Denton: "I didn't feel any restraint in recommending something to the governor when I couldn't find a commissioner to deal with... at the time I made the decision I thought it was appropriate."446/

After Hendrie's call to the governor, the NRC kept trying to find out what was going on at the site. They were not sure that releases had definitely stopped; in fact, information from Abraham indicated that another release would occur soon.447

Fouchard insisted that it was time to tell the press about recent events.448/ John Davis, however, said:

Our plight is this. We have advised the governor now of two different things. Earlier, Collins advised the governor's office to evacuate. We didn't say anything about that. We are now saying that we did advise people to stay indoors. If we are going to put out anything about what we advised, we ought to make sure the governor knows that we are going to do that.449/ Meanwhile, Case was still plugging for an evacuation because the plant was in a "tender state."450/

Sometime before 11: a.m., President Carter called Chairman Hendrie. The outcome of this phone call was the decision to send Harold Denton to Three Mile Island. Hendrie also requested and received Army Signal Corps help in improving communications with TMI.

At 11:35, Chairman Hendire called Governor Thornburgh again. He apologized for the earlier recommendation to evacuate and told the governor that, pursuant to his conversation with the President, Denton would be going to the site to coordinate the accident.

As Denton was gathering a team of people to accompany him, Case was still urging a precautionary evacuation. Up to the time of his departure, Denton himself was advocating evacuation.451/

Fouchard decided he would go with Denton. He told Abraham he was concerned that "We're not saying hardly anything here."452/ Abraham asked again about the release of radioactivity. Fouchard told him, "Don't talk [about it] with the media in the office." Abraham said, "Well, all right, but that's the question that's going to be asked."453/

From the NRC in Washington and the NRC's man in the State Capitol, nothing public had been heard about the events of Friday morning. The only news that the press had received was the "take cover" order. Not a word had leaked about the Collins call to Henderson at 9:15 a.m.

Met Ed: On-Site

The venting actually began with Jim Floyd, the Met Ed shift supervisor on duty in the operations center early Friday morning, who made the decision to vent gas from the make-up tank because "I was losing water from my emergency core cooling source." 454/ He said that the decision to vent this tank was entirely his own.455/

The make-up tank had been periodically "cracked open"^{456/} all night long, but because Floyd feared that he was losing water in the core, he decided to open the valve on the tank and leave it open.^{457/}

It is unclear who knew about the release of gas before the valve was opened. Floyd testified before the Commission that permission to vent the tank "in short bursts" was granted by "all interested parties." However, in a Commission interview, he said that he told "almost no one . . . and in fact maybe no one is the correct answer. I told the NRC inspector who was at my shoulder that I was opening the valve."^{458/}

Gary Miller, Floyd's boss, was not notified.^{459/} Gallina, the NRC Region I inspector on the site, did not remember hearing about any venting of gas until after the release had occurred.^{460/} However, William Dornsife said, "When I was down at the site, I paged through some of the NRC messages. About 2:00 or 3:00 a.m. there is a message saying they are planning on venting the make-up tank, so at least they informed the NRC."^{461/}

According to Floyd, he called PEMA as soon as he started venting the tank:

If my radiation levels went high, I could reclose the valve and protect the public, but if it failed to close, if Murphy [Murphy's Law] was at his best and decided to bite me right when I didn't need to be bit, then I would have needed the general public moved, and on that assumption I wanted to know what civil defense preparedness was to move people, and so I called them.^{462/} Floyd also sent the utility's helicopter downwind to record radiation levels.

Floyd's account of his call to PEMA (which, according to the PEMA log, came at 8:40 a.m.), is that he asked the PEMA duty officer whether they were prepared to evacuate.^{463/}

I gave him my name, my position, my company, the fact that we were probably releasing additional radiation, or that I expected to be releasing additional radiation, and would they be prepared to **evacuate people** if ~~we~~ needed people moved? He said that they were in fact prepared to move people, at which time I probably cordially thanked him and rang off the phone.^{464/}

Floyd said PEMA called him back, although he is not sure he spoke to the same person. He is not sure why this person "bothered to call."^{465/} In Floyd's words, the PEMA official said something like:

"Are you ready to evacuate," and I could have meant the people on the island or the people in the control room, and my answer would have been, "'Yes, we are in a state of preparedness. We are always ready to evacuate." I probably wouldn't have been that concise. He would have heard my yes, and probably wouldn't have heard anything after it. His question may have meant was I ready to evacuate the public, and my "Yes, we are always ready to evacuate" would probably have turned him on something fierce. I do know that at no

time did I intend an evacuation, or order an evacuation, of the public, and at no time did I order an evacuation of the Unit Two control room or of the island.466/

Floyd called the venting an intentional, controlled release:

because I monitored the activity levels from it very carefully, and when they peaked out above the stack at 1.2 rem per hour, I knew that by the time we got at least a factor of 1,000 dilution when it hit the east shore, it would be down to 1 mrem per hour, and that certainly is no reason to evacuate.467/

Floyd's description of the venting is substantially different from that of PEMA and the NRC. Almost simultaneously with Floyd's call to PEMA, Jim Cassidy of PEMA received a different call from the control room at TMI, stating that a release of radioactivity had occurred which was reading 1.2 rem 600 feet above the stack.

It is uncertain who at TMI made this call, which must have been placed after the helicopter had made the reading. PEMA has no record of the callback that Floyd referred to, but it did record one call from Floyd at 8:40 a.m., and one call from the control room at TMI, also at 8:40 a.m., which gave the readings of radioactivity.

Despite the release, news of Thornburgh's concern about evacuation was a surprise to the Met Ed staff.468/ At about 8:20 a.m. Friday morning, Gallina of NRC Region I was told by a Met Ed employee that there had been a release of radioactivity around 7:00 a.m., that it was under control, and that if the utility tried to vent again, they would let the NRC know.469/

Around 9:30 a.m., Gallina went back to the control room and asked the Met Ed coordinator about the release. He was told, "Yes, about 8:00 it happened again; we had the helicopter reading of the 1,200 mrem per hour above the stack." 470/ Gallina was also told, "We got 1,400 mrem at the site boundary and that dropped. Nothing happened. Whatever went up dropped right back down on site."471/

Gallina was not concerned about either the 1,400 or the 1,200 mrem reading. "The main concern was off-site, and there, there was hardly anything."472/

Gallina did not remember whether news of the release had been relayed to the state or the NRC. However, he called Phil Stohr of Region I on-site and told him that they might be having more releases. If so, Met Ed would inform the NRC. Gallina said that he also relayed this information to Region I headquarters. 473/ He also spoke to Dornsife of DER who, according to Gallina, said that, "We are aware of it [the release], and there are no problems."474/ Around 10:00 a.m., however, "all hell broke loose."475/

"A Met Ed worker came **in** the control room," Gallina recalls, "and said, 'I got a call from my wife. She heard on the radio that the NRC is ordering evacuation downwind.'"

"I said, 'You've got to be kidding.' 'No,' he replied, 'my wife is going to school to get our kids out of here.'"476/

Gallina immediately asked the TMI-2 control room whether the situation at the plant had deteriorated. He heard that "things were fine" and that no one had ordered an evacuation. 477/

Gallina then called Region I and told them of the radio report. George Smith at Region I told Gallina they would check it out.

Immediately afterwards, Dornsife called Gallina. "He was livid," says Gallina. "'Chick, what's going on?' I said, 'I am trying to find out.' He said, 'Doc Collins called Civil Defense. We are on the phone chewing them out. What are you guys trying to do?'"478/ Dornsife told him that Bethesda had received a 1,200 mrem reading, which they were assuming to be off-site, requiring evacuation.

Gallina was furious with NRC headquarters. "They were pulling the rug out from under the licensee. They were going to destroy the psychological welfare of the people."479/

Dornsife told him, "We've got to stop this somehow." Gallina called Region I again, where Smith was "trying to . . . prepare a press release to be given out at the site, to say that evacuation was not necessary."480/

According to Gallina and George Kunder, NRC staff on-site were astonished to learn of the evacuation order. Gallina then learned from George Smith at Region I that Hendrie planned to recommend to the governor that pregnant women and children be evacuated. Says Gallina:

I was thoroughly disgusted. I said, "George, we can't let this happen." He said, "Chick, it is a management decision. I don't agree with it. I agree with you 100 percent. This is uncalled for, but it has come down from the chairman that this is what they are going to do and we can't say anything about it."481/

Shortly thereafter, Gallina remembered, some Met Ed staff came to him, "yelling and screaming, 'What are you guys doing? Do you realize what it is going to do to us and to the industry? Do you realize what it is going to do to the people around here?'"482/ But Gallina did not attempt to contact Thornburgh because "we felt we would be undermining the whole system if we tried to call the governor after Chairman Hendrie."483/

During this commotion at the plant, two Met Ed officials, Herbein and Troffer, were unaware of the furor that had followed the venting of the make-up tank. Troffer was updating local officials in nearby Middletown when the group heard over the radio that the governor was considering evacuation. (What they heard was Kevin Molloy advising the public to stand by for a possible evacuation announcement.) Troffer called the Observation Center to verify plant status. Told that nothing had changed, he returned to the officials and said, "There's nothing [going on] here that would make you want to evacuate your families." 484/

Herbein, the spokesman for Met Ed, had received only a cursory briefing from the plant's technical staff before his 10:00 a.m. press conference. He did not know about Floyd's call to PEMA, the confusion that the release had caused at NRC,485/ or the 1.2 rem reading.^{486/} Hence, he was unprepared for the intensity of press questioning on both the dumping and the venting.

In direct contrast to state and NRC statements, Herbein told reporters:

This morning between 7:30 and probably a quarter after 8:00, we did have to vent one of our tanks that contained radioactive gas into the auxiliary building to prevent further pressure increase . . . There was an aircraft flying over the island that was able to measure the radioactivity that was released from the plant. At that time, he saw airborne levels, I think, around 300 to 350 mrem per hour.

Herbein also said that the release was planned, that the utility had recognized "over the last 24-48 hours that we were going to have to vent our makeup tank space."

When confronted with the 1,200 mrem readings, Herbein said, "I don't really have the resolution between 1,200 versus 350."

Met Ed also issued a statement from the Hershey press center at 3:30 Friday afternoon: "A controlled plant activity this morning about 8:00 resulted in increased radiation levels of 20 to 25 millirems per hour background in Goldsboro."

The ultimate result of Met Ed's statements and press conferences on the Friday morning release of radioactive gas was further loss of face with the press. Because the press had heard about the 1,200 mrem reading, they were convinced that Met Ed was lying.

The only utility official besides Herbein who was involved with Friday morning's events was Arnold, an engineer and vice president of GPU. He gave Hendrie his opinion about 10:30 a.m.: the releases were of no concern from a health standpoint. But Arnold did not disagree with Hendrie's precautionary recommendation to Thornburgh to evacuate pregnant women and children: ". . . since we could not identify at that time the causes for the perturbations from base level, I couldn't give him any assurance as to our ability to control that."^{487/} Arnold's "not taking issue" with the NRC's recommendation^{488/} differs significantly from the feelings of lower-level Met Ed employees (Floyd, Kunder, Dubiel, etc.), who thought that evacuation was unnecessary and unwarranted.

The State

It is unclear whether any Pennsylvania officials knew of Met Ed's impending release of radiation on Friday. Certainly, officials of the State's Bureau of Radiation Protection (BRP) were neither surprised nor particularly upset. Both Gerusky and Reilly of BRP recalled some contact with the plant about a release of radiation that day, though neither recollection is supported by the BRP log.489/

Says Gerusky:

We knew that levels were detected off-site, that the helicopter was up there tracking the plume. In talking with the plant and NRC and our people and DOE, there didn't seem to be anything that would have caused us to panic If the levels had not started to go down, we would have been concerned. Levels started to go down immediately.490/

While BRP was not surprised by the release of radiation on Friday morning, PEMA, Governor Thornburgh's office, and the State Department of Health were not expecting such a release. The first direct word probably came to Kevin Molloy at the Dauphin County Office of Emergency Preparedness.

At 8:34 a.m., Molloy received a call from Jim Floyd. Floyd had been trying unsuccessfully to call PEMA headquarters in Harrisburg, and wanted Molloy to send word over the teletype that PEMA should contact him at TMI.491/

"It was a very rapid conversation -- that they had had a release into the environment and would I have PEMA get in touch with him as soon as possible," said Molloy.492/

Before anyone at PEMA had a chance to respond to Molloy's request, two calls from TMI came in simultaneously at 8:40 a.m. Carl Kuehn took one call from Floyd. The second call, handled by Jim Cassidy, came from an unidentified person in the TMI-2 control room.493/

To PEMA, Floyd did not seem calm. According to PEMA Director Oran Henderson, "I think Carl Kuehn's words to me -- I would not swear to them -- were, 'Hey, this guy is going ape.' I gathered it was a very emotional, frightening report."494/

Floyd's message appeared in the PEMA log as "... call from Jim Floyd TMI -- uncontrolled release -- please call Radiological Isicl Health -- need help -- may have to evacuate downwind -- ... **will** remain in contact with this agency."495/

In contrast to the panic noticed in Floyd's message, the other telephone report from TMI was quite calm. "I would have to say to the best of my recollection that the individual was not excessively excited," Cassidy said.

I know that Carl Kuehn has indicated that Floyd sounded very excited ... the other call was certainly not a matter-of-fact phone call. He sounded as though it were a serious situation, but he did not sound like he was panicky or extremely excited about it.496/

According to the PEMA log, this call gave further details of the release: "Call from Three Mile Island control room -- release in progress began at 0832. A site emergency has been declared. Reading 14 MR at site fence. 600 ft. 1.2 rem/hr (1,200 mrem/hr) over facility."497/

The PEMA duty officer, Dick Lamison, told Henderson about the calls. Henderson quickly phoned the lieutenant governor, 498/ while Lamison called Margaret Reilly of BRP, as Floyd had requested. 499/ Henderson took Floyd's call very seriously: "I was about 90 percent certain that we were going to execute an evacuation."500/

Reilly had heard from TMI sometime before Lamison called. She could not say who at the plant had contacted her, but her caller had given the 1.2 rem figure, and the fact that it was taken from a height of 600 feet above the stack. And so when Lamison phoned at 8:42 a.m., he simply confirmed what she had already heard.501/

Scranton received Henderson's call at home at 8:40 a.m, and immediately called Thornburgh's office to announce the new developments at TMI.502/ Scranton also claims to have called together the members of the PEMA Council, a body whose approval is necessary to declare a state of emergency. This claim is not supported by the PEMA log, which says the PEMA Council members were not called until 10:40 a.m.503/

After speaking to Scranton, Henderson called the civil defense directors of Dauphin, Lancaster, and York Counties -- counties that would be involved in an evacuation. Henderson recalled that he told them that he thought "we have about a 90 percent chance of conducting this evacuation so I want to make certain that you are in as good a posture of readiness as you can be."504/ Paul Leese, Lancaster County director of emergency operations, and Leslie Jackson, his counterpart in York County, immediately placed all their units and county police and fire forces on alert.505/ Kevin Molloy, director of emergency preparedness for Dauphin County, also alerted his units, but decided to alert the public, as well.

"I called WHP," Molloy said later:

I went on the air and just stated that as a result of the incident at Three Mile Island, the possibility does occur that we might have to take some type of protective evacuation. If you have to leave, we'll tell you over the radio. . .but don't do anything until we give you the word.506/ Schools were to keep children indoors. The public was suddenly very much aware that something was going on, though it did not know what was actually happening.

Almost from the moment of Molloy's announcement over WHP, telephone service deteriorated as thousands of people tried to place calls at once. Over 103,000 calls -- more than six times the usual number -- were placed in the Harrisburg area following Molloy's radio message.507/

While Henderson got in touch with his county directors, and Scranton contacted members of the PEMA Council, the state made no immediate move to declare an evacuation. Instead, all parties involved tried to obtain more information about the release and the situation at TMI. Joe Deal, head of the federal Department of Energy (DOE) team on-site, called PEMA at 8:45 a.m. to confirm that he, too, had been told of the 1,200 mrem reading, and to say that it was not taken by a DOE aircraft, but more probably by a Met Ed helicopter.508/

Therefore, before 9:15 a.m., no evacuation order had been issued for any residents around Three Mile Island. State radiological health experts Gerusky and Reilly did not think such an order would have been justified.

Into this tense atmosphere came the 9:15 a.m. telephone call from Harold Collins of the NRC's Incident Response Center in Bethesda. Collins asked Henderson, who took the call, 509/ whether PEMA had received word of the 1.2 rem reading. When Henderson said that PEMA was aware of the release but that evacuation was not planned, Collins recommended immediate evacuation downwind for a distance of 5 to 10 miles, specifying that this recommendation came not just from him, but from the NRC.510/

Collins asked Henderson what PEMA understood to be happening at Three Mile Island. Henderson reported what he knew, including the facts that the 1,200 mrem reading was taken at 600 feet above the stack, and that Floyd had reported the station ready to evacuate nonessential personnel.511/

It was not standard procedure for the NRC to call PEMA to recommend an evacuation -- normally such advice would have gone to BRP -- but Henderson did not question Collins on this point.512/

At 9:22, PEMA's Williamson made a call to Gerusky about the NRC recommendation.513/ Gerusky later summarized his response to Williamson's call: "We said we knew of no such release occurring of any consequence. We knew there was a venting occurring, but we didn't believe it was of serious consequence."514/

Gerusky called Gallina, the NRC Region I team coordinator at TMI, and told him about the Collins recommendation. Gallina responded, "They didn't get it from us. I don't know where they got it. We don't think there is a need for evacuation."515/

While Gerusky was talking with Gallina, Dornsife and Reilly of BRP were talking to Collins. They did not understand the need for evacuation, and wanted Collins to explain the rationale for his recommendation, and who above him in the NRC had authorized it.

Collins would not say. "I don't know whether I should [name names] Margaret," he said. "You don't really need to know names at this point in time . . . We did what we were told."516/ To Reilly, Collins disclaimed personal responsibility for the original call to PEMA. He said:

People are telling me to do things. I'm doing them ... But the bottom line of the whole thing is, of course, it's up to the state to do whatever they are going to do. They can listen to recommendations till they are blue in the face, but the state still has to make the decision.517/

Though Collins denied responsibility, most of the state officials soon thought that the recommendation of evacuation had come from him

as an individual, rather than as a spokesman for his superiors at the NRC. Reilly and Dornsife determined that no NRC commissioners were at the IRC when the decision to recommend evacuation was made.518/

Following the call from Reilly and Dornsife, Collins made a second call to Henderson at PEMA at 9:39 a.m. to reaffirm that the evacuation recommendation came from the NRC.519/ As Henderson recalled, Collins said, "Ken, I just want you to know that that was not only my recommendation, but that it has the backing or the support of the commission. "520/

Minutes after the second call to Henderson, Thornburgh called the PEMA director. 521/ The governor did not know who Collins was, and wanted to know more about him. As he put it later:

I never heard of Harold Collins, and when some guy whom I have never heard of informs my top emergency management guy that we should carry out an evacuation, I want to find out who he is -- and now.522/

Henderson vouched for Collins: "I told him that we had worked together before, that Collins enjoyed a good reputation, that I did not personally know him except through discussions in the office." 523/ Thornburgh asked for Henderson's personal recommendation concerning evacuation, and Henderson said, "Governor, since I've not heard yet from BRP, I have no alternative but to recommend that we conduct a five-mile evacuation."524/

Meanwhile, in the office next to Henderson's, Williamson received a report from BRP at 9:35 a.m.525/ Gerusky told Williamson that the release had stopped, though other similar releases might follow.526/ This information was available at PEMA, though probably not in Henderson's possession, when the PEMA director made his own evacuation recommendation to Thornburgh.

In the governor's office at 9:45 a.m., a meeting was in progress. Initially present were Thornburgh, Waldman, Critchlow, Scranton, Knouse, and others, but neither Henderson nor Gerusky.

The information this group had to work with was that there had been an uncontrolled release of radiation from TMI; that there had been a 1,200 mrem reading made 600 feet above the stack; that a Met Ed shift supervisor had talked of evacuating non-critical personnel from TMI, but that this concern apparently was not shared by personnel in the control room of TMI-2, that both DOE and BRP had confirmed a release and that both agencies were skeptical of the necessity of evacuation; and, finally, that a little-known NRC official named Collins had called recommending a 5- or 10-mile evacuation downwind but, in doing so, had called the wrong state office and refused to indicate who among his superiors had authorized the call. Thornburgh was suspicious.

Henderson had recommended a precautionary evacuation, and the people of Dauphin County were already alerted. Pennsylvania's Secretary

of Health, Gordon MacLeod, was concerned about unborn children in the area surrounding the plant, and favored some action to protect pregnant women.527/

Thornburgh decided to call NRC Chairman Joseph Hendrie to determine the recommendation of the NRC commissioners themselves. As the governor put it:

If I had found out that [Collins] was the guy designated by Joe Hendrie, and that this was a commission decision, that recommendation [to evacuate] would have been made public and very quickly. We found out the recommendation was not the action of the commission, and therefore, we went on to deal with the real problem.528/

Thornburgh and Hendrie first spoke at 10:07 a.m. They compared radiological data. Thornburgh discovered that Hendrie did not seem to know who Harold Collins was, and would not take any responsibility for the Collins call from the IRC. But Hendrie did make a precautionary recommendation, that citizens stay indoors for the next hour.529/

The following exchange took place between the governor and the NRC chairman.

THORNBURGH: Was your person, Mr. Collins, in your operations center, justified in ordering an evacuation at 9:15 a.m. or recommending that we evacuate at 9:15 a.m., or was that based on misinformation? We really need to know that.

HENDRIE: I can't tell what the -- I can go back and take a check, Governor, but I can't tell you at the moment. I don't know --

THORNBURGH: Yes. We are not asking to be judgmental about it--

HENDRIE: Yes. I just don't know.

THORNBURGH: Okay. That would be extremely helpful, because if we get any such further recommendations, we really have to know what the basis of those are.

HENDRIE: Yes.

Later in the conversation, a third, anonymous, voice exhorts:

One last thing, if you could check out the question of that 9:15 a.m. recommendation for us, that is probably going to cause some problems here.

HENDRIE: Okay. Let me do that.

VOICE: All right, and if you would mind calling the governor back as soon as possible, it would be most appreciated.530/

But Thornburgh never heard any more from Hendrie on the subject of Collins.

Around 10:12 a.m., just after the Thornburgh-Hendrie call, Gerusky and Dornsife of BRP, Williamson of PEMA, and Randy Welch of the state Health Department, arrived at Thornburgh's office.^{531/} According to Gerusky:

We walked in, stated that we had tried to get back to Civil Defense, and to [Thornburgh] by telephone and that we couldn't; that a call had come in from Collins recommending evacuation, and that our indications are that there is no need for evacuation, and we would recommend against it.^{532/}

With Collins' recommendation undercut by Hendrie, and with Gerusky strongly opposed to evacuation, talk of a general evacuation soon ended in Thornburgh's office. A subsequent call from President Carter, Thornburgh claimed, offered additional support for his decision against evacuation.^{533/}

Yet the public in Dauphin County had been advised of the imminent possibility of evacuation by Kevin Molloy, and there had indeed been a release of radiation. Some state response was warranted, if only to deal with what Williamson recognized as "the position that the governor was in."^{534/}

Gerusky still opposed any sort of action involving the movement of citizens. Thornburgh and Hendrie spoke again, at 11:35 a.m. and Thornburgh decided, in response to MacLeod's concerns, to close schools and to advise that pregnant women and small children should leave the area around the plant.^{535/} When asked if he supported evacuation of pregnant women and small children, Gerusky responded, "No."^{536/}

Williamson recalled his thoughts at that time. "I thought momentarily, 'My God, Tom, you better get yourself organized and support the governor.' And then he [raised his head] out of his hands and indicated to the group that he understood."^{537/}

At 10:46 a.m., PEMA informed local media that a general evacuation was not imminent.^{538/} Thornburgh began a press conference at 12:30 p.m. with a statement announcing:

Based on advice of the chairman of NRC, and in the interests of taking every precaution, I am advising those who may be particularly susceptible to the effects of radiation, that is, pregnant women and preschool-aged children, to leave the area within a five-mile radius of the Three Mile Island facility until further notice. ^{539/}

Press coverage of the events leading up to Thornburgh's recommendation was minimal, probably because the inner workings of government -- the interaction of Met Ed, NRC, PEMA, BRP, and the governor's office -- were hidden from the press. That morning, the only public exposure of these inner workings was Kevin Molloy's announcement over WHP, but state officials expected more press coverage than actually occurred.

A few comments from Gerusky and Thornburgh about events preceding the evacuation recommendation did appear in the press. Gerusky contra-

dicted Met Ed by saying, "It was an unplanned emission. They were moving water from one tank into another tank, from one area to another in the reactor, and a valve went."^{540/} And Thornburgh made some note of his problems in evaluating the situation:

We are constantly checking. It's one of the reasons we are delayed in speaking to you about the situation. We want to get the best fix on what the facts are. There are a number of conflicting versions with every event that seems to appear- 541/

At the press conference, reporters did not ask Thornburgh why only pregnant women and preschool children were being evacuated, or how the 5-mile radius had been chosen. Ignorant of Friday morning's behind-the-scenes maneuvering, the press apparently accepted Thornburgh's statement that because further emissions might occur, the most susceptible segment of the population should leave the area as a precaution. By not questioning the basis of evacuation recommendations, the press missed a good story.

Conclusion

The principal public information consequences of the venting episode were Denton's arrival on-site and, by extension, direct White House involvement in the flow of information during the accident. Indeed, the venting set a precedent, allowing the White House to influence information flow once the bubble became a serious issue later Friday and Saturday night.

Interestingly, Critchlow said that the governor's office was not aware that the Friday morning recommendation to evacuate had come from Denton through Collins. If Critchlow had known, his attitude toward Denton might have been less welcoming.^{542/}

Yet, to this day, many of the IRC staffers who were in the EMT that Friday morning at 9:15 say that under the same circumstances, they would do what they did again.^{543/} These people were basing their recommendations mainly on what they did not know, and on what might occur, given the dearth of facts and the instability of the reactor. Hendrie, the other NRC commissioners, and the governor were basing their recommendations on what they did know, which admittedly was not much. As Collins said about the information that was available that morning, "The big picture was awful fuzzy. It was like looking at something with a piece of foggy glass."^{544/}

Neither the state nor the NRC told the press about the Collins call; Critchlow felt that announcement of the NBC's recommendation would have confused the public and caused unnecessary panic. Yet he and Milne were surprised that, considering the number of parties and agencies who were aware of it, the press did not learn about it.^{545/}

At 4:15 Friday afternoon, after Thornburgh's press conference, the NRC issued its first public statement about Friday morning's events in a Preliminary Notice (PN). The events of the entire morning, which had taken up the time and effort of almost everyone in Bethesda and Washington,

were condensed into one sentence: "At about 11:30 a.m. EST, the Chairman of the NRC has suggested to Governor Thornburgh of the Commonwealth of Pennsylvania that pregnant women and pre-school children in an area within five miles of the plant site be evacuated." In no public statement of the NRC's was the evacuation recommendation of 9:15 a.m. ever mentioned.

F. THE HYDROGEN BUBBLE

Friday

The first formal announcement of a gas bubble in the reactor vessel came from the Nuclear Regulatory Commission in a 9:50 a.m. Preliminary Notification (PN). The significance of the bubble was explained as follows:

The volume of the bubble in the reactor vessel is of interest [emphasis added] in assuring that sufficient volume remains in the upper head for collection of more noncondensable gases arising from continued operation in the present cooling mode as well as to assess the potential for movement of the bubble during a switchover to decay heat removal operation. 546/

The announcement of the existence of the bubble was timely, the NRC in Bethesda having confirmed on Thursday night Met Ed's suspicion that a large volume of gases existed in the top of the reactor vessel. 547/ But in explaining what the bubble meant, the above statement failed to convey clearly what technical problems the bubble presented and what risks to the public were involved in resolving those problems. The PN also neglected to say how much attention Bethesda was devoting to the bubble or how concerned NRC experts were about its existence, which was unanticipated and unprecedented in nuclear power plant history in the United States. Given this, to say that the bubble was "of interest" is a considerable understatement.

After this first announcement, those at the site and in Bethesda began to disagree about the potential danger of the bubble. In the control room, Met Ed's Gary Miller thought "we could take the gas out of the system... I never felt overly concerned about the hydrogen bubble."548/ As for the question of meltdown, Miller said in his interview with the Commission that throughout the weekend "I wouldn't have thought that there could be a meltdown... because I didn't ever see that we were near that."549/ Miller's conviction was not shared with Bethesda, because he was never in direct communication with Bethesda.

At his 11 a.m. press conference that morning, John Herbein made no mention of the bubble in his opening statement. When a reporter asked why it was taking longer than expected to cool down the core, Herbein replied, "It does appear to us that there is a gas bubble in the fuel assemblies in the reactor. It does appear to us that the fuel assemblies are covered and we're slowly removing the heat from the fuel."550/ Beyond this, Herbein offered no explanation of the bubble or the problems it presented, or any Met Ed plans to solve them.

At about the same time that Herbein was summarizing the bubble in two sentences, Roger Mattson, director of the Division of Systems Safety, was concerned about the bubble contributing to the possibility of a meltdown. The extent of Mattson's anxiety about this possibility is shown in two conversations, one with Chairman Hendrie and one with Commissioner Gilinsky.

Around 12:30 p.m. Friday afternoon, Mattson recommended an immediate evacuation to Chairman Hendrie: "I'm not sure why you are not moving people. Got to say it. I have been saying it down here. I don't know who you are protecting at this point. I think we ought to be moving people. 551/ At approximately 2 p.m., Mattson made the same recommendation to Gilinsky.

Gilinsky then asked Mattson what the result would be if Met Ed tried one of several suggested maneuvers to remove the bubble and it turned "bad:"

MATTSON: Hours.

GILINSKY: Hours before what?

MATTSON: Before you had a core melt.552/

After conversations with Mattson and other experts, Hendrie told Jody Powell, James Schlesinger, Henry Myers (energy consultant to Rep. Udall), and Governor Thornburgh that a meltdown was a real but remote possibility. At one point he placed the possibility of a meltdown at "one percent."553/

Fear in Washington and Bethesda about the bubble and the problems it posed was heightened by the fact that Met Ed had only one reactor coolant pump running. If that pump should fail, Mattson said:

that would tell you you needed to go to either a fast or slow blowdown [depressurization) situation, and you would have hours until you were generating fission products in a core-melt kind of situation.554/

Mattson's concern was shared by others in the Incident Response Center, including Grimes, Thompson and Case.555/ According to Eisenhut, it was Thompson who took the Incident Response Center's concern that meltdown was a real possibility to the public. "Roger was saying it's a horse race ... we passed that information to Dudley and Dudley took his understanding of it and talked." 556/ Thompson spoke at a press briefing Friday afternoon at the NRC's East-West Towers press center.

Earlier in the day, at the request of Commissioner Gilinsky, Frank Ingram, Fouchard's deputy, had converted two empty rooms on the fifth floor of the East-West Towers into a Bethesda press center. Ingram put an advisory on the wires that the center was open, and shortly thereafter reporters began to arrive. Ingram asked the Incident Response Center for two technical people to brief the press; he was sent Thompson

and Grimes. Without giving Thompson or Grimes any instruction on how to deal with the press -- what kinds of questions might be asked or how to field questions -- Ingram sent them to provide an update.⁵⁵⁷/

When the question of the bubble was raised, Grimes drew a schematic of a reactor on the blackboard and explained the problems involved. When a reporter asked, "Is a meltdown possible?", Grimes recalled that he simply said:

Yes, there is a possibility . . . I think everyone technical would have to concede that if the reactor was depressurized, and the hydrogen bubble expanded, that there was a possibility, not a likelihood, but a possibility that things could go wrong, or all the cooling systems quit.⁵⁵⁸/

Thompson confirmed Grimes' recollection of the briefing (for which there is no transcript):

In the course of the questioning, which was fast-paced and vigorous -- not at all surprising -- we told them that the bubble existed. I don't know who initiated the question about is there a possibility of a meltdown under these conditions . . . Brian's response was the first one, and it was a very candid one, and a very true one . . . yeah, there is a possibility of a meltdown.⁵⁵⁹/

According to Thompson, after several more questions, the meltdown issue came up again. This time Thompson answered:

If you mean in the grossest sense of a complete meltdown of the core, collecting at the bottom of the vessel... like they had in the "China Syndrome," the probability of anything like that occurring is essentially zero; it's not zero, but it is very, very small.⁵⁶⁰/

Fouchard said that the press' persistence on the meltdown question was not unique to this briefing: "Any time you are talking nuclear, you always get down to the bottom line, which is what is the worst that can happen."⁵⁶¹/ The answer reporters received from Thompson and Grimes, though, was unique to this accident up to that point. This was the first time that reporters were officially told meltdown was a possibility. David Milne, DER's press secretary, said that from the beginning of the accident he had been told by NRC staff on-site, "The NRC does not consider meltdown a legitimate scenario."⁵⁶²/ Just as the NRC's Friday admission about meltdown was big news to Milne, so it was to the press.

At 4:02 p.m. UPI put the following story on its wires:

Dudley Thompson, a senior official in the NRC Office of Inspection, said the threat is posed by a steam bubble inside the reactor that could increase in size as pressures in the reactor are lowered, leaving the core without vital cooling water.

"We are faced with a decision within a few days, rather than hours,

on how to cool down the core," Thompson told reporters at an NRC news center.

"We face the ultimate risk of a meltdown, depending on the manner we cope with the problem. If there is even a small chance of meltdown we will recommend precautionary evacuations."⁵⁶³/

The NRC has never disputed the truth of the answer Thompson and Grimes provided. As Chairman Hendrie said on Friday, March 30, "What Dudley said was not out of line."⁵⁶⁴/ Edson Case said on Saturday, "Meltdown is still the bottom line ...and those guys said nothing out of line."⁵⁶⁵/ Frank Ingram knew meltdown would be the lead-in stories resulting from the briefing -- a lead he had no quarrel with, given the substance of the Thompson/Grimes statements.⁵⁶⁶/

Friday afternoon at 5:15 p.m. in a White House briefing, Jody Powell confirmed the Thompson statement, and he discussed the problem of putting probabilities into a realistic context: "The possibility of a meltdown was mentioned. It is not an inaccurate report. The perspective on the matter is what we are dealing with... and we are doing our best to straighten it out."⁵⁶⁷/

Met Ed followed with its own statement at 5:30 p.m., which was to be read to reporters over the phone: "The situation is exactly as it was at 3:00. The reactor remains stable. Reports of a meltdown are unfounded."⁵⁶⁸/ In this manner Met Ed refuted the UPI story, but gave no facts to support its statement.

Because of the Grimes/Thompson briefing and the resulting UPI story, two decisions important to public information were made. First, the NRC decided that a release should be issued to undercut the UPI story. Second, the White House suggested that top NRC officials limit their accessibility to the media and public.

The first decision was made in a conversation around 5:00 p.m. between Powell and Hendrie. Powell's voice is inaudible on all transcripts of his calls with Hendrie, but during this 5:00 p.m. conversation, it appears that he suggested the NRC issue a press release on the Thompson/UPI story. "Okay, let's get started on it and see how fast we can get it out," Hendrie told him.⁵⁶⁹/

Commissioners Ahearne, Kennedy, and Hendrie drafted the release themselves. They did not ask their public information person in Bethesda, Frank Ingram, to do it. The concerns of the three commissioners writing the release varied. One of them, unidentified in the transcript, wanted a very positive tone, because of the reaction Congress might have to information released about the accident. At one point, Ahearne objected that the tone was unjustifiably optimistic. Kennedy replied, "I don't think it's optimistic. I just say we're working hard, which happens to be the case. The focus, I think, has to be reassuring, to reassure people that at least we are working on it."⁵⁷⁰/ Ahearne then contended that in mentioning the options of bringing the plant to cold shutdown, the NRC should say those maneuvers may lead to serious problems.

Kennedy objected. "Well, you've got to remember that's the only thing out of the press release they [the press] will then take out."

"Well, Dick, we've been sitting here for the longest time telling them everything is fine. It's a real struggle with what to do. There is none of that flavor here," Ahearne said to Kennedy.^{571/}

The final result, released at 6:30 p.m., read as follows:

The Chairman of the Nuclear Regulatory Commission, Joseph M. Hendrie, said this afternoon that there is no imminent danger of a core melt at the Three Mile Island Nuclear Plant.

Additional technical experts from the Commission staff, headed by the Director of the Office of Nuclear Regulation, Mr. Harold Denton, reached the site early this afternoon. At the direction of the President, they have been provided with augmented communication facilities. The NRC team at the site is working closely with the utility personnel and experts from other federal agencies and the State of Pennsylvania. Close contact is being maintained with Governor Thornburgh.

Efforts to reduce the temperatures of the reactor fuel are continuing. These temperatures have been coming down slowly, and the final depressurization of the reactor vessel has been delayed. There is evidence of severe damage to the nuclear fuel. Samples of primary coolant containing high levels of radioiodine and instruments in the core indicate high fuel temperatures in some of the fuel bundles, and the presence of a large bubble of noncondensable gases in the top of the reactor vessel.

Because of these noncondensable gases, the possibility exists of interrupting primary coolant flow within the reactor should the pressure be further decreased and the contained gases allowed to expand. In the unlikely event that this were to occur, some of the fuel would fail to cool and further damage to that fuel could occur. Several options to reach a final safe state for the fuel are under consideration. In the meantime, the reactor is being maintained in a stable condition.^{572/}

In the first paragraph, the possibility of a meltdown occurring soon is denied through the use of the word "imminent." This was not a denial of the Thompson viewpoint, but an ambiguous and imprecise qualification: meltdown is possible, but not right away. The question remains in the reader's mind, if not now, when? The imprecision of the release did not help to clarify the situation. As the NRC's Robert Bernero said, "There is a need to clarify, to communicate the scale of risks,"^{573/} which this release did not do.

In the fourth paragraph, further core damage was predicated on "an unlikely event." The natural question is, how unlikely? While the first paragraph seemingly denied the possibility of core melt in common English, the fourth paragraph confirmed the possibility -- in highly technical terms. As Joe Fouchard admitted, "The meaning is not clear.

. . I wouldn't be very proud of it."574/ This release, like others issued during the period of the accident, failed to convey clearly and accurately technical information to a mainly nontechnical audience.

Between the UPI story (on the wires at 4:02 p.m.) and Hendrie's release (issued at 6:30 p.m.), the NRC issued its second Preliminary Notification of the day at 4:15 p.m. It is likely that the writer of this PN was unaware of the Thompson/Grimes briefing and the UPI story. Only two sentences were devoted to the bubble. After its existence was reiterated, its problematic nature was briefly -- and technically -- described: "Because of these noncondensable gases, the possibility exists of interrupting coolant flow within the reactor when its pressure is further decreased and the contained gases expand." 575/ The significance of this "possibility," that further core damage could occur, is not provided. It is important to note that this sentence essentially matches the first sentence, fourth paragraph of Hendrie's 6:30 p.m. release. But Hendrie, in the following sentence, laid out the significance of this statement, once the UPI story forced him to speak to the core damage/meltdown issue. The author of the PN did not find this necessary. And like Hendrie's release, this PN failed to translate the engineer's "language of uncertainty" into a scale of probabilities and risks.

After writing the release and asking Ingram to circulate it, Henrie received another call from Jody Powell, during which Powell seems to have asked about the possibility of meltdown. Hendrie answered, "Pretty small, I think, but you can't rule it out."576/ This call from Powell, during which he learned meltdown was a real possibility, resulted in the cancellation of planned public appearances by NRC officials. Hendrie later said that during this second call, Powell said that Commissioner Kennedy "had better just hold off on 'Meet the Press'."577/ The White House also asked Commissioner Gilinsky not to appear on "The McNeil-Lehrer Report" that night.578/ Hendrie's comment to Commissioner Ahearne about these White House requests was, "You know, now they're hysterical."579/

These informal requests followed a more formal agreement that had been arrived at in a 1:30 p.m. meeting Friday in the Situation Room of the White House. The meeting included Chairman Hendrie, Zbigniew Brzezinski, Jack Watson, Jody Powell, and representatives from other federal agencies involved in the management of the accident. Press relations was part of the agenda.

During the meeting it was agreed that public information responsibilities would be divided among the White House, the NRC, and the governor. 580/ This arrangement cut Met Ed out as an official information source. At his 5:15 p.m. press conference, Powell announced the new channels of communication: 1) Information about the reactor was to come from the Nuclear Regulatory Commission in Washington as well as Harold Denton, who was to be sole spokesman on-site; 2) Information about the involvement of federal agencies was to come from the White House; and 3) Safety precaution and evacuation information was to come from the governor.581/

At the White House press conference Friday, Powell said why this was necessary: "The problem is with too much being said, rather than too little."^{582/} But at the same time, Powell said that the meltdown possibility was an accurate report.^{583/} The "too much being said" was not too much inaccurate information.

According to Jessica Tuchman Mathews, who attended the Friday afternoon meeting at the White House, when press relations was discussed there was an a priori assumption that one source from the NRC reporting to the press was a desirable situation:

There was agreement that having several different people briefing on the same information would likely result in different stories coming out. . . It was important to keep a single source reporting.^{584/}

In their depositions, White House aides Eugene Eidenberg and Jack Watson indicated that the structure outlined by Powell was established for three reasons: 1) To provide the public with a reliable, credible source of technical information; 2) To assure that accurate, unambiguous, complete information reached the public; and 3) To coordinate information between Met Ed and the NRC, and the NRC on-site and Bethesda. As Watson said, "The need for accurate, factual, reliable, and credible information was paramount."^{585/} Eidenberg, his deputy, said, "It struck us that the government had a responsibility to insure that the information was reliable and as solid and as unambiguous as circumstances permitted."^{586/}

As will be seen in the following discussion of events on Saturday and Sunday with respect to the bubble, the narrowing of sources available to the press accomplished only one of the above ends: Harold Denton was perceived by the media and public as reliable and credible. However, information provided by Denton about the bubble was not always accurate and unambiguous, nor was it always coordinated within the NRC or with Met Ed.

Late Friday evening, Denton, who had arrived on-site, held his first press conference. He discussed the bubble as an obstacle to cold shutdown, and to maintaining adequate cooling of the core.^{587/} As for the chances of meltdown, Denton said, "I think they are very remote." At that point Denton did not know Hendrie's concern had shifted from meltdown to the possibility of a hydrogen explosion. That evening Hendrie wondered if oxygen could be generated inside the reactor vessel, and, if so, how fast and how soon it would reach an explosive combination with the hydrogen already there. At 9:30 p.m. Friday night, Hendrie called Mattson and asked him to work on these problems. ^{588/} Hendrie's worry intensified on Saturday when Mattson reported that yes, oxygen was being generated, and it could be explosive in as little as 2 days.^{589/} These facts were reported to the public in an AP story Saturday night, which caused the White House to pressure the NRC to close the Bethesda press center, where the AP story originated. Shortly thereafter, Mattson and experts working with him around the country were sure the bubble had reached the flammability point and was moving to the explosive point.

Saturday

On Saturday, the first announcement about the bubble came in a 1:10 a.m. NRC Preliminary Notification:

The volume of non-condensable gases in the reactor vessel has been estimated to be approximately 1,000 to 1,500 cubic feet at 1,000 psi. This volume is estimated to result in a water level of several feet over the top of the fuel. The rate of growth of the bubble in the reactor vessel is estimated to be less than 50 cubic feet per day at 1000 psi.^{590/}

As is typical of PN's, this one lacked depth and context. The facts are unrelated, and it is unclear whether the situation is worse, better, or unchanged.

Another PN, issued at 9:04 a.m., was not much clearer. This PN made no mention of the bubble, but it did mention "hydrogen in containment." The concentration of this hydrogen was "less than 4 percent, the staff's limit on allowed concentration to ensure an explosive mixture is not obtained."^{591/} To a nontechnical reader, the following questions remain: Is this hydrogen the same as the hydrogen bubble? If not, are they related? What new danger is posed by the hydrogen in containment? The PN provided no answers.

Yet at 10:30 a.m. Edson Case succinctly explained present NRC concerns about the bubble to Fouchard:

Joe, I tell you where I think we're going. They're going to the hydrogen in the core next and whether that could explode, and the answer is yes . . . In the briefing [Friday evening] Harold [Denton] said it could not . . . and I told him he was going to have to back away from that.^{592/}

Although it was not reflected in a third PN issued at 7:25 p.m., concern throughout Saturday was high in Bethesda about the possibility of a hydrogen explosion in the reactor vessel. Saturday morning the NRC held a meeting at the Incident Response Center which included the following exchange:

BRADFORD: Is there a sequence of events that would start any time without warning which would leave you with substantially less than 200 minutes or 6 hours?

HENDRIE: A hydrogen explosion in the reactor vessel.^{593/}

The problems that would result from such an explosion were described as vessel rupture; containment rupture; missiles created by flying splinters of the containment wall; and the possibility of evacuation beyond 10 miles.^{594/} As Doc Collins told John Davis that morning, "If this thing goes whole hog, you know there's going to be massive melt problems. . . .And it's going to extend. . . .clear outside the State of Pennsylvania."^{595/}

As Bethesda's concern about a hydrogen explosion in the reactor vessel grew, Met Ed held its last press conference. The transcript shows that Herbein was not concerned about an explosion in the reactor vessel at all. Herbein's concern differed from Bethesda's in two ways. First, he thought if an explosion could occur, it would happen in the reactor building. (This is the same area the NRC PN had called "containment." The use of interchangeable terms was another source of confusion to reporters who were unfamiliar with the technical jargon.) Herbein said, "We. . . don't appear to have a problem with achieving explosive mixture in the reactor building." 596/ Bethesda's main concern was the hydrogen in the reactor vessel, not the reactor building.

As for the likelihood of an explosion in the reactor building, Herbein said, "I think that that potential exists, but I think it is exceptionally minimal." 597/ To him, "The crisis is over, if you want to refer to it as that." 598/ His optimism was based on the fact that he said Met Ed had been successful in reducing the bubble's size.

While Herbein was saying the crisis was over, Hendrie in Washington was preparing Saturday afternoon to meet the press. According to Ingram, Hendrie agreed to hold a press conference because the NRC was "getting a fair amount of static on the fact that the commissioners were not available." 599/ Case said Hendrie knew the hydrogen explosion possibility "would have to be communicated to the public. It was very difficult and he [Hendrie] probably ought to be the one to do it." 600/

At this 2:45 p.m. press conference, Hendrie outlined the problem of getting the gas bubble out of the reactor vessel. In his opening statement, he did not volunteer any information about his main concern: the possibility of a hydrogen explosion. 601/ When a reporter asked the question, Hendrie answered, "As long as the bubble has a hydrogen steam fission product composition, why, it's not flammable. But if enough oxygen over a long period of time were evolved, why, it could become a flammable mixture." 602/

Hendrie knew that Mattson's group believed oxygen was being generated and the bubble could be potentially explosive. 603/ Hendrie answered the question of explosiveness in terms of flammability, not explosability. Hendrie preferred to describe the problem in the lesser degree as he had the day before with the meltdown possibility -- saying in response to the UPI story that further fuel damage, not core damage or core melt, could occur. The closed commission meeting transcripts show that Hendrie was genuinely concerned that the public be reassured. But what he knew at that time was far from reassuring.

At the same press conference, a reporter tried to verify, with information given out by Met Ed's Herbein earlier, that the bubble had decreased in size.

REPORTER: I wondered if you could clear up some apparent confusion in Pennsylvania this morning. The Metropolitan Edison people indicated the size of the bubble had been reduced . . . I wonder, has the size of the bubble been reduced, and if so, by what process?

HENDRIE: I think there may be some confusion about which bubble and where. There are, in fact, two bubbles in the primary system; one of them is in the pressurizer, a smaller tank off to the side which is used to control the system pressure.

There is, in normal operation, a steam bubble in there, and there is one now, and it's believed that inevitably some of the hydrogen that is in the system would be in that bubble. How much, I can't -- I just don't know. Then the bubble that we are worried about -- and what we mean when we talk about "the" bubble -- is the one in the reactor vessel, which is -- occupies the reactor vessel head.

Now, the procedure that has been going on at the plant through part of the morning was to let down a small stream from the pressurizer with the intention -- to the containment volume and not releasing it, just letting it down to the containment volume.

And the intent there was to try to carry some of the dissolved gas out and just release it in the containment and get it out of the primary system.

REPORTER: I'm still not clear. Does that mean that the bubble was affected, and how?

HENDRIE: To the extent some gases came out without letdown, I guess you could say the bubble would be reduced.

REPORTER: Which bubble?

HENDRIE: The pressurizer bubble.

REPORTER: Not the reactor vessel; that's the same.

HENDRIE: I don't think so.604/

During this exchange, Hendrie further confused the bubble problem by bringing up the pressurizer bubble, which was not of concern to reporters. The pressurizer bubble was not causing a problem during the accident. Hendrie concentrated on explaining this bubble, much to the confusion of reporters. It is not known whether this was a deliberate attempt to avoid the question of the hydrogen bubble's reduced size or simply an inept answer. It was, however, typical of the public information process during the accident in that pieces of information were given out without relating them to the overall accident situation, thus making it difficult to understand their meaning. At the same time, in this instance, the important question about whether the hydrogen bubble had in fact been reduced in size was neither confirmed nor denied.

After Hendrie left the press conference, Case continued to answer questions. That evening, around 8:30 p.m., the Incident Response Center began to get calls about an AP advisory (a note to editors about an upcoming story), which was on the wires. The advisory read: ". . . The NRC now says the gas bubble atop the

nuclear reactor at Three Mile Island shows signs of becoming potentially explosive. The lead (of the upcoming story) will give details on the options being considered to deal with the bubble."605/

The AP story which followed this advisory had been transmitted by 9:02 p.m.:

HARRISBURG, PA. (AP) - Federal officials said Saturday night that the gas bubble inside the crippled nuclear reactor at Three Mile Island is showing signs of becoming potentially explosive, complicating decisions on whether to mount risky operations to remove the gas.

Officials said earlier that tens of thousands of people might have to be evacuated if engineers decided to try to remove the bubble, operations that could risk a melt-down of the reactor and the release of highly radioactive material into the atmosphere.

But the Nuclear Regulatory Commission said Saturday night that it might be equally risky not to try the operation, because the bubble showed signs of gradually turning into a potentially explosive mixture that could wreck the already damaged reactor.

One NRC source, who asked not to be identified, said that critical point could be reached within two days.

An explosion could release radioactive materials into the atmosphere or, at worst, cause the reactor core to melt, releasing even greater radioactivity.

NRC Chairman Joseph M. Hendrie said earlier at a news conference in Washington that the evacuation of citizens within 10 to 20 miles downwind of the power plant was "certainly a possibility" as a precaution if technicians tried to force the bubble out of the reactor. He would not say when a decision might be made.

NRC spokesman Frank Ingram told a reporter later that technicians believed the bubble consisted mainly of hydrogen, with a small amount of oxygen -- too little, so far, to form an explosive mixture.

But Ingram said the oxygen was thought to be slowly increasing, toward a mixture that could eventually explode the head off the reactor and further damage its radioactive fuel.

Ingram said the technicians were concerned with this slowly growing problem, but that it might not reach a critical stage for several days.

He said he expected no decision on the dilemma Saturday night or Sunday.

Edson Case, Deputy Director of the NRC's Office of Nuclear Reactor Regulation, said three methods were under consideration for removing the bubble, all of them risky.

One way might be to reduce the 980-pounds-per-square-inch pressure in the reactor, deliberately allowing the bubble to expand to the point where the gas could be drawn out through the reactor's cooling-water pipes.

The risk, however, was that a miscalculation could expand the bubble too much, exposing the tops of the nuclear fuel rods and causing overheating.

Another possibility, Case said, might be to blow the reactor's cooling-water and the bubble out by a sudden release of pressure, followed instantly by injections of new cooling water, a procedure that would risk damaging the fuel by its violent pressure changes.

A third possibility, he said, might be to continue circulating the cooling water normally, and letting it slowly sweep away the gas bubble, bit by bit, as it apparently has already done to a small extent.

But that process, Ingram said, could take too long and would risk allowing the bubble to become explosive before it could be removed.

"If there was a clear choice," said Case, "it wouldn't have taken us this long to figure out which one."

Aiding in that decision, Ingram said, was the Energy Department's Loss-of-Fluid Test Facility in Idaho, which was testing the feasibility of the first option, the deliberate pressure reduction and bubble-expansion.

An NRC official, who asked not to be quoted by name, said the oxygen in the gas bubble was estimated at 2 percent to 3 percent, and that at 5 percent the mixture would become potentially explosive.

He estimated the critical point could arrive in about two days.

Complicating the situation was the apparent presence of some steam in the bubble. Technicians could not agree whether that would increase or reduce the danger.

Hendrie said earlier that the reactor was stable and that the nuclear fuel was continuing to cool.

Metropolitan Edison officials, who operate the facility, claimed a one-third reduction in the size of the bubble and said the risk of a melt-down had been cut, but Harold Denton of the Nuclear Regulatory Commission told reporters in Harrisburg: "My own staff tells me the size of the bubble hasn't changed much."

On Friday, NRC officials disclosed the "remote possibility" of a melt-down. Fears of radioactive release, whether melt-down or simply gaseous emissions, sent hundreds of nearby residents fleeing to distant towns.

With low-level radioactive gases still beaming from the plant on the Susquehanna River, Gov. Dick Thornburgh extended his advisory that pre-school children and pregnant women stay at least five miles from the plant. Experts have cited the vulnerability of fetuses and young children to radiation.

But the governor added in a statement: "Evacuation of a broader nature continues to be unnecessary at this time."

About 131,000 people live within 5 miles of the plant and 250,000 live within 10 miles, nearly 1 million people live in the four counties around the site.606/

When Ingram received calls about the AP advisory which preceded this story, he called Stan Benjamin, an AP reporter whom he knew and who had written the advisory. When Ingram called Benjamin after 9:00 p.m., the AP story was already moving on the wires. Benjamin checked the story with Ingram and Case, word for word:

BENJAMIN: "Federal officials said Saturday night -- "

CASE OR INGRAM: Uh-huh.

BENJAMIN: " -- that the gas bubble inside the crippled nuclear reactor at Three Mile Island is showing signs of becoming potentially explosive -- "

CASE OR INGRAM: Right.

BENJAMIN: " -- complicating decisions on whether to mount risky operations to remove the gas."

CASE OR INGRAM: Complicating decisions through--

BENJAMIN: "Decisions on whether to mount risky operations to remove the gas."

CASE OR INGRAM: Complicating decision on whether to mount risky operations to remove the gas.

BENJAMIN: Yeah.

CASE OR INGRAM: Is that -- (inaudible words).

INGRAM: That sounds reasonable to me, Ed. Complicating decisions to mount risky --

BENJAMIN: "On whether to."

CASE OR INGRAM: -- on whether to mount risky operations to remove the gas. Yeah, it sounds reasonable.

BENJAMIN: All right. " Officials said earlier that tens of thousands of people might have to be evacuated if engineers decided to try to remove the bubble."

CASE OR INGRAM: Yeah.

BENJAMIN: "Operations that could risk a meltdown at the reactor"
-- (inaudible due to background noise)

CASE OR INGRAM: Yeah.

BENJAMIN: "But the Nuclear Regulatory Commission said Saturday night that it might be equally risky not to try the operation because the bubble showed signs of gradually turning into a potentially explosive mixture that could wreck the already damaged reactor."

CASE OR INGRAM: Yeah.

BENJAMIN: "One NRC source, who asked not be identified, said that the critical point could be reached within two days." Now that is not from you, obviously.

CASE OR INGRAM: Yeah.

BENJAMIN: And the rest goes down into Hendrie's press conference, evacuation within 10 to 20 miles downwind was certainly a possibility, all the old stuff.

CASE OR INGRAM: Yeah. Okay. Sounds like --

BENJAMIN: And then -- (inaudible) -- you, Frank, and go on saying that: "Believe the bubble consists mainly of hydrogen; small amounts of oxygen, too little, so far, to form an explosive mixture."

CASE OR INGRAM: Right.

BENJAMIN: "Ingram said: The oxygen was thought to be slowly increasing toward a mixture that could explode the head off the reactor and further damage its radioactive fuel. We're concerned with the problem. It might not reach a critical stage for several days." Expected no decision on the dilemma Saturday night or Sunday.

CASE OR INGRAM: Uh-huh.

BENJAMIN: And we quote Edson Case on the three methods under consideration, et cetera.

INGRAM: Sounds reasonable to me, Stan.

BENJAMIN: Okay.

INGRAM: Sorry again to bother you.

BENJAMIN: No, it's all right. No problem.

VOICE: Okay.

BENJAMIN: I bother you plenty.607/

This conversation confirmed the AP story and shows that it accurately reflected the Bethesda perspective. One important fact which Case and Ingram could not confirm, "that the critical point could be reached within two days" has not been traced to its unidentified source. However, this figure was not unrealistic because Mattson had told Hendrie at 3:00 p.m. Saturday that the bubble could be explosive in the next "two to five days."608/

Although Bethesda confirmed the AP story, NRC staff on-site were shocked by it. They considered the bubble an obstacle to cold shutdown, but did not think a hydrogen explosion in the reactor vessel was possible. Vollmer said, "On-site, I think we had a fairly unified viewpoint that there was no oxygen in the bubble. We didn't realize the concern that existed (in Bethesda)."609/

Consequently, when the AP story appeared, those on-site had no idea how it originated. Fouchard, on-site, was amazed to find out that Ingram, in Bethesda, had not killed the story because he considered it "factual":

FOUCHARD: . . . We've got a serious situation up here. People are leaving hotels and stuff like that.

INGRAM: Yes, I hear.

FOUCHARD: Is Ed [Case] there?

INGRAM: He's on the phone with the chairman.

FOUCHARD: Okay. No more statements, you know, from down there.

INGRAM: Uh-huh.

FOUCHARD: What the hell happened down there?

INGRAM: It would appear that the radio rewrite -- the AP Radio rewrite -- what the Harrisburg paper told me earlier was what the foulup was.

FOUCHARD: Uh-huh.

INGRAM: And, of course, we never talk to AP radio rewrites.

FOUCHARD: Yeah.

INGRAM: Well, apparently they moved an urgent flash that NRC was now saying that it was dangerous. We heard that Ed [Stan] had moved it as an advisory and we called him on it.

FOUCHARD: Uh-huh.

INGRAM: And he said that was normal practice. I mean Stan. Yeah. It was early in the evening.

VOICE: Uh-huh.

FOUCHARD: Did you kill it then or what?

INGRAM: Pardon me?

FOURCHARD: What did you do about it then?

INGRAM: It was factual.

FOUCHARD: What do you mean it was factual?

INGRAM: What Ed and the chairman had said.

FOUCHARD: What did you say? You didn't say there was any imminent danger, did you?

INGRAM: We said that there was a potential explosion in that bubble.

FOUCHARD: Who said that?

INGRAM: Ed said it, I said it, and the chairman said it.

FOUCHARD: What?

INGRAM: That the amount of oxygen was increasing very slowly and it was a matter of X days away before it would reach that point.

FOUCHARD: There's lots of things you can do on it.

INGRAM: I don't think there's anything that we've said that's inaccurate -- I'm sorry about that.

FOUCHARD: Don't get upset.

INGRAM: Well, I am upset. I feel like I've botched the whole thing. I don't know what else I could have done.610/

Stello was as incredulous as Fouchard when Case told him that the AP story was accurate:

STELLO: Have you got a copy of the AP story?

CASE: We -- the AP guy read his lead to us. It sounded all right. I -- I don't know what I can do about it, Vic.

STELLO: Ed?

CASE: The Chairman did say, and I did say, that there's a possibility of explosion in the reactor pressure vessel; it would be

caused by hydrogen and oxygen combining; the oxygen is continuing to be evolved through radiolysis; we're calculating the rate; and this is the risk of continued operation in this mode. All facts.

The Chairman was asked: "When we get to this switchover, are you going to evacuate?" And he said, "Well, that's certainly one of the things that we will consider at that time."

He asked him how far, if you decide to evacuate? He said 10 to 20 miles. A lot of other factors have to be taken into account.

STELLO: Well, then you're telling me that the AP story is quoting what you said?

CASE: Yeah.

STELLO: Huh?

CASE: Yeah.

STELLO: Didn't you think it's unfactual?611/

When the White House learned of the AP story, a series of calls ensued. Jessica Tuchman Mathews and Jody Powell called Fouchard on-site to find out the source of the story. According to Mathews, Powell told Fouchard, "Leave it to him [Denton] to comment on the reactor. He is the one delegated to do that."612/ Eidenberg, Watson's deputy, called Case and told him it was a "serious mistake" to have multiple sources in the NRC giving out information to the press.613/ Case recalls his reply as, "We are following a policy of answering press inquiries and I think we ought to continue."614/ Case recalled that Eidenberg then said, "Well, I am going to talk to Watson about that and call you back."615/

It wasn't necessary for Eidenberg to call Case again because the issue went to higher levels, both in the White House and the NRC. Watson, who had been designated by President Carter as the chief White House staffer for handling the TMI incident, called Thornburgh. Thornburgh was extremely concerned about the effect the AP story had on the people in the TMI area.616/ At Thornburgh's urging, Watson called Hendrie and Gilinsky and told them he was concerned about the problem of multiple sources within the NRC and asked them to "tighten and improve control of the NRC public information process out of Washington."617/

In the Watson and Eidenberg depositions, two main reasons emerge for closing the Bethesda press center. Watson, pressured by Thornburgh to live up to Friday's agreement to split public information in thirds, was simply expressing to Hendrie "the critical need for us to assist the governor." Watson said Thornburgh would frequently call him:

to verify the situation, to see if I had facts he didn't have, or to complain; to say, "Jack, this is not squaring with the facts. This does not reflect what the situation really is here. And yet this federal official or that person has said something that is really causing me problems. I am just constantly trying to put out fires here."618/

In addition to pressure from the governor, Eidenberg said the White House was concerned about a loss of credibility resulting from the "echo effect."619/ The echo effect occurs when technical experts talk about the same phenomena in slightly different terms; as a result, different stories come out in the media. The public then thinks the experts disagree, when in fact they agree, but each one uses different words to express his ideas. It should be noted that real disagreement between Bethesda and the NRC on-site did exist. The echo effect was in fact not the problem. Mattson and Stello were not echoing each other in different words. They fundamentally disagreed with each other. They were not even working from the same facts. Since it was important for the credibility of Denton to be "sustained and nurtured," 620/ as Eidenberg said, the price of Denton's credibility was to be the Bethesda press center.

Word of the new control on information reached Ingram through Fouchard:

FOUCHARD: The White House says say nothing.

INGRAM: All right.

FOUCHARD What I think we'll do, if we get calls, is to tell them to call that recorded number and that'll put them off for awhile.

INGRAM: It's not working. I've got somebody there now says Pennsylvania is going to be in a panic. He refuses to hang up, he refuses to let me call him back. We can stop taking calls at all, if you like.

FOUCHARD: That would be the best thing to do.

INGRAM: All right. That's what we'll do.

FOUCHARD: Okay.

INGRAM: Bye-bye.621/

As Bethesda was silenced, Paul Critchlow in the governor's office prepared a press release which read:

HARRISBURG (March 31) -- The news report that the gas bubble in the nuclear reactor is becoming potentially explosive is not true, according to Harold Denton, director of the Office of Nuclear Reactor Regulation.

"I just spoke by telephone with Mr. Denton," said Critchlow. "He said the report resulted erroneously from what he called a 'postulation' by engineers about the potential for the bubble and that by 3 p.m. today, they had ascertained that there was no danger of explosion. He said there is no cause for alarm.

'We will immediately inform you if there are any legitimate developments in any aspect of this or other matters.'" 622/

This release denied the AP story, as did Denton in his press briefing that evening at 11 p.m. He attempted to calm press and public by saying the danger was no greater than the day before, and there was "no physical possibility of a hydrogen explosion."⁶²³/ He also denied disagreement existed between NRC on-site and Bethesda:

There is no disagreement . . . All the people making the statements are basically in full agreement . . . I don't quite know how to overcome this except to make one central point for all statements.⁶²⁴/

From the Bethesda perspective, what Denton said was not true; to them, the possibility of a hydrogen explosion grew throughout the day. Nor was it true that all the experts agreed. In fact, the greatest disagreement occurred Sunday morning, shortly after the East-West Towers press center had been closed.

Sunday and the Aftermath

By Sunday morning, the East-West Towers press center had been closed. But developments made the situation appear worse than the day before. From Bethesda's perspective, Roger Mattson said, "Sunday morning the information was as negative as it got."⁶²⁵/ Armed with information he had received from experts across the country, Mattson met early Sunday with Commissioners Gilinsky, Kennedy, and Hendrie. They agreed with Mattson and his team of experts: 5 percent oxygen was a realistic flammability level, and the oxygen level present in the bubble was now 5 percent.⁶²⁶/ After the meeting, Hendrie and Mattson drove up to Harrisburg to meet with Denton before the President's arrival. Stello, on-site, had already assured Denton that morning that there was no danger of a hydrogen explosion.⁶²⁷/

Hendrie and Mattson met Denton and Stello in a hangar at the Harrisburg Airport minutes before Carter's arrival. Mattson outlined his views. Stello disagreed, although Mattson had experts across the country on his side. Mattson described the situation as follows:

Stello tells me I'm crazy, that he doesn't believe it, that he thinks we've made an error in the rate of calculation, the two errors I've described. One, he doesn't think oxygen could be generated in a hydrogen rich environment at this rate, and two, he doesn't believe radiolysis, even without a hydrogen back pressure, yields this much gas per day as we're calculating . . . Stello says we're nuts and poor Harold is there, he's got to meet with the President in five minutes and tell it like it is . . . And here he is. His two experts are not together. One comes armed to the teeth with all these national laboratories and naval reactors people and high faluting Ph.D.'s around the country, saying this is what it is and this is his best summary. And his other, [the] operating reactors division director, is saying, "I don't believe it. I can't prove it yet, but I don't believe it. I think it's wrong."⁶²⁸/

As Denton considered what both men thought, Carter walked up. Denton briefed the President, giving him both Mattson's and Stello's views. After the briefing, Mattson and Stello went back to the site and consulted; Mattson called his experts again to go over his calculations. By 3:00 p.m., Mattson was convinced that he was wrong for the two reasons Stello had given him (see above).^{629/} Mattson explained his error as follows:

I think that they [Denton and Stello] were closer to reality there [on-site], and they weren't as concerned with the problem as we were, and I guess I have to attribute that to better technical judgment on the part of Victor Stello than on the part of Roger Mattson. I think it's probably that simple. I had ostensibly better experts that I was relying upon, but my practical knowledge, my personal practical knowledge of this kind of situation was not as good as Victor's."^{630/}

The only official announcement about the bubble on Sunday came in an 8:28 a.m. Preliminary Notification:

Calculated values by the licensee of the volume of noncondensable gases above the core continue to vary. The NRC staff has been unable to draw meaningful conclusions from this state.^{631/}

Met Ed made no public announcements about the bubble on Sunday, having accepted Denton as the sole spokesman on conditions within the reactor. However, their public information staff received two internal updates, both of which said the bubble was getting smaller in size.

By Monday morning Met Ed could no longer sit on the good news. At 8:30 a.m., Met Ed issued an internal update which read: "Not to be reported to the press . . . we think the bubble has gotten so small that it may have disintegrated." ^{632/} When George Troffer, a technical briefer at the Hershey press center, got this news, he was so pleased that he told a radio reporter, who then broadcast it. Fabian then called Troffer, "with the NRC at his [Fabian's] elbow and both of them angry and upset." ^{633/} Troffer was told to get the station to retract the statement that the bubble was gone. "I scooped Harold Denton . . . I wasn't the one to do that, there was only supposed to be one voice to the press," Troffer said.^{634/}

At this point, that one voice was cautious. On Monday, Denton would not confirm the good news that Met Ed was unofficially releasing. In his 11:15 a.m. press conference, Denton said about the bubble, "It's shown dramatic decrease in . . . size."^{635/} He also said he would not "be stampeded into concurring that the bubble is actually [as small as Met Ed said]." ^{636/} Mattson said he and Denton decided on the cautious tone of this press conference Monday morning. "We wanted to go slow on saying it was good news . . . We had to save some wiggle room in order to preserve credibility."^{637/}

Because Mattson and his experts had been wrong about the possibility of a hydrogen explosion, the NRC wanted to be sure they were

right on the question of the bubble's decreasing size. But at the same time, they did not tell the public the reason for their new-found caution.

As for Mattson's mistaken calculations, Denton admitted the NRC's error in highly technical terms:

There's an emerging consensus of technical opinion that . . . situations such as this where there's high oxygen overpressure in a vessel, that the oxygen evolution rate is very low, and our numbers for the rate of oxygen yesterday -- I think I quoted a number on the order of one percent a day -- is very, very conservative, and the actual rate is much lower than that.^{638/}

A technical audience might have recognized this statement as an admission of error. It failed to convey that message to the press; as a result, there were no followup questions from the press about this statement.

On Tuesday, April 3, at the afternoon press conference, Denton said:

I want to report that we no longer consider hydrogen explosion ... a significant problem at this plant ... the question of oxygen evolution in this containment in this type of atmosphere has been resolved and the numbers we were using before were too conservative; the bubble has been eliminated, for all practical purposes.^{639/}

With these words, Denton dismissed the concern over a bubble explosion, with no further explanation given to press or public as to why Bethesda's alarm over the weekend was no longer valid.

Summary

In sum, information about the bubble released by Metropolitan Edison and the NRC was inadequate and contradictory. It was inadequate because the NRC and Met Ed displayed an inability to provide complete information phrased for a nontechnical audience of reporters. No attempt was made to provide context and meaning, so that reporters had difficulty understanding the scanty scientific facts released.

The reason information was contradictory was because of a split in expert opinion within the NRC about the technical problems presented by the bubble. On Saturday, Bethesda was convinced the bubble could explode. NRC on-site and Met Ed saw no way the necessary oxygen could be generated to produce an explosion. When Bethesda's alarm was reported in an AP story Saturday night, panic ensued in the TMI area. The media at the time were accused of being sensationalist. Now it is known that the AP story was an accurate reflection of expert opinion in Bethesda Saturday and was confirmed by two of its sources. As Commissioner Gilinsky said in his interview with Commission staff: "The reporting -- where it was off base -- was off base because we were off base."^{640/}

With hindsight, it is also known that the bubble could not have exploded. Mattson, the chief NRC expert working on the problem in

Bethesda, simply made a mistake. At the time, he had the weight of expert opinion behind him, more so than Stello, the chief NRC expert on-site. The important fact is that Mattson could have been right -- and yet, those expressing his views were silenced.

The decision to silence Bethesda was made by Hendrie, at the "suggestion" of Jack Watson, President Carter's chief staff member responsible for the management of the incident. According to Watson, the White House could only make "suggestions" to the NRC because it is an independent federal agency, not under the jurisdiction of the executive branch of government.^{641/}

Reasons offered by White House staff for narrowing NRC sources available to the press to the one official voice of Harold Denton never included that Mattson was wrong. In fact, Hendrie closed the East-West Towers press center just before he dashed off to Harrisburg to convince Denton that the bubble was moving toward the explosive point.

In a potentially disastrous situation such as TMI, the public has a right and a need to know that the experts disagree. To cut off the flow of alarming information is a questionable response to the real problem of providing accurate, complete information in a crisis situation.

A secondary problem, which prevented a reconciliation between Bethesda and on-site, was the poor communications between these two points. The experts were not talking to one another, and therefore they did not know where their differences lay. Case speculated that if Mattson had talked to Stello during Saturday, Stello would have quickly shown Mattson his error. This colloquy did not occur until Sunday.^{642/}

Examples of poor information flow are numerous. Met Ed's top technician in the control room, Gary Miller, said "To my memory, I never was in communication with the NRC in Bethesda." ^{643/} In addition: 1) From the time Stello left Bethesda at noon on Friday, he and Mattson did not speak again until Sunday morning; ^{644/} 2) Mattson told Hendrie on Friday that it was taking up to 15 hours to get information he had requested back from the plant; ^{645/} 3) Gossick complained Friday evening that Stello, who left for the site midday, still had not reported back; ^{646/} 4) Kunder, in the control room, heard of Bethesda's concern about a potential hydrogen explosion from his wife, who heard it through the media; ^{647/} and 5) When Denton arrived on-site, he sympathized with NRC staff who had gone before him, who seemed "to fall into a morass and were never heard from again."^{648/}

The poor communications were due to the way information was relayed from the site to Bethesda. Although the Incident Response Center in Bethesda now has direct lines to all nuclear power plant control rooms in the country, no such system existed at the time. The telephone lines in the Three Mile Island area were jammed; it was always difficult, and often impossible, to dial in or out of the area.

In Bethesda, different people answered the phone in the IRC and then relayed information, sometimes through several people, to the appropriate person.

The end result was similar to a game of telephone, in which the last person in the chain receives a completely different message than the first person intended to convey. As Mattson said in his deposition:

You have to recognize that I was receiving . . . information through three, four, five, maybe even a half dozen people. . . the information I relied upon, and the rest of the people in the Incident Response Center relied upon, was not good information.⁶⁴⁹/

The lack of orderly exchange of information between the site and Bethesda only served to widen the split in opinion about the bubble and the problems it presented.

ASSESSMENT OF MEDIA PERFORMANCE

VII. THREE MILE ISLAND:
THE JOURNALIST'S PERSPECTIVE

The Task Force on Public's Right to Information interviewed 41 journalists who covered the accident either on-site or from Bethesda/Washington. A sample was chosen to include journalists from the major news disseminators (such as the networks and the wires), print and broadcast media, large and small markets. They talked about why they covered the accident and why it was such an important story; why some might view their coverage as "sensational"; how prepared they were for the assignment; what they believe the public has a right to know; how they could better cover such a story the next time; and similar subjects. Most were reluctant to discuss specific sources of information, either those they relied on to supplement official sources, or those official sources they dealt with on a regular basis during the accident. They were also reluctant to comment on the quality of media coverage other than their own.

Highlights of *these* interviews follow. Transcripts, tapes, or notes of the interviews are available in the Commission's archives.

REPORTER INTERVIEWS

Ben Livingood is a newspaper reporter in his mid-thirties who lives six miles from the nuclear power plant at TMI. He covers government and politics for the Allentown Call and functions as a one-man bureau in Harrisburg, the state capital. He has a reputation as a tenacious reporter, one who pursues questions until they have been adequately answered.

On the morning of Wednesday, March 28, Livingood and other members of the capital press corps were preparing to attend a press conference with Lt. Governor William Scranton III on energy problems. When Livingood arrived at work, he learned that the conference had been postponed and the topic changed to the accident at Three Mile Island. "What accident at Three Mile Island?" Livingood asked. "Here it was 10:30 a.m. and this was the first I had heard of it." (A general emergency at the site had been declared about 3 hours earlier.) Livingood waited for the press conference to begin.

Livingood recalls:

We were told what had happened in very general terms, that there had been a small release of radiation, but that the situation was under control. Until that point, none of us in the capital press corps was acquainted with the terms "general emergency" or "site emergency." I don't know about other reporters, but to those of us who cover government, we didn't know any more about TMI than seeing the steam coming out of the cooling towers.

After Scranton's first press conference, Livingood received a call from Gary Sanborn, another Call reporter. Sanborn had been a reactor operator in the Navy aboard the USS Enterprise and, as a result, had some familiarity with the workings of the power plant. "He started giving me some of the terminology," Livingood says, "suggesting questions I might ask like, 'Did they activate their ECCS (emergency core cooling system)?' and he explained what that meant. We talked for nearly five hours between the two Scranton press conferences."

At the second conference, at Sanborn's prompting, Livingood asked if there was any evidence of fuel damage. "I didn't know what that meant," Livingood says. "I had just been told by Gary to ask the question. The answer was 'yes,' so we knew then that we were on to something far more serious than had initially been indicated."

On Thursday the Call sent Sanborn to the site and the two reporters split the coverage -- Sanborn taking the technical side and Livingood trying to develop contacts within Met Ed. The two also consulted a professor at Pennsylvania State University who operates a reactor on campus.

REPORTER PREPARATION FOR TMI

Livingood is one of many reporters who found himself covering TMI with little more than his journalistic instincts. Both Jim Panyard (Philadelphia Bulletin) and Edward Jensen (Pittsburgh Post Gazette), also members of the capital press corps, were drafted by their papers for TMI duty. ABC sent Bettina Gregory from Washington, one of the first outsiders to arrive on Wednesday, because she has a reputation as a good "firewoman" who can cover a story as it is breaking under deadline pressure. She spent part of Wednesday afternoon looking at drawings of the reactor in the utility's Observation Center, trying to figure out how the plant worked. Paul Magnussen, a general assignment reporter with the Detroit Free Press, says he was assigned to Three Mile Island "because I was back from lunch before anyone else." Magnussen had done graduate work in English but had no background in science or nuclear energy reporting. He had, however, read We Almost Lost Detroit (an account of a nuclear accident at the Fermi plant) and The Curve of Binding Energy (a book about nuclear weapons). The Boston Globe sent, among others, its highly respected political reporter Curtis Wilkie, who admits that "when people started talking about the possibility of a meltdown, I didn't know what the hell it was."

Because of the nature of the news business in the United States, most of the local reporters from the Harrisburg area in smaller markets are often young and have not had time to become specialists in nuclear or energy reporting; besides, smaller news media rarely employ enough newspeople to permit much specialization in any case. Reporters are expected to be generalists, and the ability to cover any story on short notice is a prized and rewarded skill. The only aspect of Metropolitan Edison's operation that many of these local reporters had covered in the past were hearings on rate increase requests. Some had, however, toured the plant.

It would be a mistake to assume, however, that all the journalists in the press corps that formed in Middletown and Bethesda were ignorant of the nuclear power industry. Some reporters with regular science or energy beats were assigned to the story, such as John Fialka of the Washington Star, Richard Lyons of The New York Times, and Paul Hayes of the Milwaukee Journal. Some had covered the NASA space program together, an experience which led them to expect a certain level of professional performance from the Nuclear Regulatory Commission's public information operation. (This expectation was heightened because the NRC's Region I public affairs officer, in whose territory the accident occurred, was Karl Abraham, who had covered NASA as a science writer for the Philadelphia Bulletin).

The Chicago Tribune sent Casey Bukro, who had reported on the environment since 1967 and had visited all seven of the nuclear plants operating in Illinois. Stuart Diamond of Newsday (on Long Island) had made nuclear power one of his specialties and has produced, by his own estimate, perhaps a thousand stories on nuclear power for the paper. Peter Stoler of Time magazine had spent 9 years specializing in science, the environment, and medicine; in September 1978, he traveled to the Soviet Union on an Atomic Industrial Forum-sponsored tour to study nuclear energy in that country. Jonathan Ward, the CBS producer in charge of the network's coverage at the site, and CBS reporter Robert Schakne had been working for a year to compile a dossier on every operating nuclear power plant in the country (although they had not yet hit TMI). Ward had also produced stories on decontamination and radioactive waste disposal.

STAFFING AT TMI

Between 300 and 500 reporters were covering the story at various times during the first week of the accident. But despite this large press turnout, most of the nation's 1,760 daily newspapers and 8,000 radio and television stations relied on coverage supplied by a very few outlets: the two wire services, AP and UPI; special services such as The New York Times, Chicago Tribune or Washington Post-Los Angeles Times; and the three broadcast networks.

Those media which did send reporters to the site or to Bethesda ranged from the Atlanta Constitution, which had only one reporter covering the accident until the fifth day, to the Philadelphia Inquirer, which assigned more than two dozen reporters to the site. (The Inquirer has a reportorial philosophy that certain stories merit the commitment of large numbers of reporters for a maximum investigative effort. To the paper's editors, TMI was such a story.)

The New York Times assigned eight reporters to TMI most of them from their Washington bureau plus two editors and a copy boy. Along with the St. Louis Post Dispatch, the Times took over an entire floor of a motel in Harrisburg.

CBS initially sent reporter Gary Shepard with a camera crew by chartered plane. On Friday, when it appeared that the accident was more serious than CBS's Jonathan Ward had previously thought, Ward was told by a network vice president that he had a "blank check" to cover the story. "Anything you want, do it," the vice president said. "This could be the story of the century." Ward responded by ordering two more film crews, a reporter from Washington, a second film editor, a radiation physicist as an on-site consultant to the network, and a maintenance man for the editing equipment. "After we brought in the Washington crews," Ward says, "I wanted a Winnebago for a camera platform to be set up at the Observation Center. The Winnebago dealer in Middletown asked me, 'Will you buy it if it becomes radioactive?' [Executives in] New York said 'No sweat.'" Ward also had a bus outfitted with protective suits for his staff in case of evacuation.

SHARED ASSUMPTIONS

While the backgrounds of reporters at TMI were quite varied, and while their organizations responded in very different ways, the reporters themselves shared certain assumptions about the news business and the reporting process which help explain some aspects of the coverage that resulted.

First, the reporters generally agree on why the accident deserved such intense press scrutiny. They offer at least seven reasons:

1. Uniqueness. Reporters saw the accident as a first. "You don't run into many stories that have never happened before," says Jim Panyard of the Philadelphia Bulletin. Adds Curtis Wilkie of the Boston Globe, "Something that had never happened in this country was happening
2. Fear of radiation. Says David Salisbury of the Christian Science Monitor: "Radiation is associated with nuclear weapons, the spectre of our age. It is invisible and therefore mysterious and even more frightening. It is a mysterious form of castration. All these aspects add up to make it the news story of the year, if not the decade."
3. Geography. The plant is located in a populated area very near a state capital, two airports, and the major east coast news centers of New York and Washington.
4. Conflicting information. Comparing information is a standard reportorial practice, particularly in stories as complex and fast-moving as the TMI accident. To any reporter, conflicting information from sources can indicate confusion or cover-up, both of which add significance to a story. Here, conflicting information appeared at the outset and proved to be a steady theme for the first 4 days. "By refusing to tell the truth, they made it worse than it was," says Edward Jensen of the Pittsburgh Post-Gazette. "If they had been willing or able to tell the story, it might have been different." Adds Rod Nordland,

head of the Philadelphia Inquirer's investigative team at TMI, "Only a couple of reporters from Philadelphia would have gone if Met Ed had told the truth from the beginning. It might not even have been a story if they had flacked [represented] it right -- if there hadn't been so many contradictions. The Governor's office broke it on Wednesday when they said they were getting conflicting stories and didn't know whom to believe. Editors heard that and sent out the reporters."

5. Coincidence. The accident began at almost the same time as the release of the popular film The China Syndrome, which dramatizes an accident at a nuclear power plant.
6. Potential for catastrophe. Reporters were able to get to the scene as the accident was in progress -- an unusual occurrence in an industry where accidents usually are over before they are announced -- and assess the potential danger from hour to hour. As the Monitor's Salisbury acknowledges, "There was the perceived possibility of an extremely large catastrophe, which plays to people's morbid curiosity. The larger and rarer a catastrophe, the more interest it seems to evoke."
7. Energy consciousness. Some reporters had been awaiting this type of accident because of the way in which the industry had aggressively sold its safety record. "For twenty years," says Stuart Diamond of Newsday, "the nuclear industry has pointed to its chin and said, 'Hit me right here, brother.' I think they set themselves up for a fall. They kept saying, 'Nothing will happen, we're not going to have a major accident.' I think the nuclear industry really got the chip knocked off its shoulder. I think people really went in there with relish."

Reporters also share a blunt and uncompromising view of what the public has a right to know during such an accident: everything, as soon as it is available. Their job, they believe, is not to protect the utility or the government, or to calm the public in the face of distressing news. It is not the press's job to censor information for the so-called good of the public, nor is it the job of the press to worry about the consequences of accurate reporting. According to this philosophy, the news media should not try to second-guess the needs of the public. They should seek only to provide as much accurate information from reliable sources as they can in as short a time as possible. "My job is to inform, not shape opinion," says the Bulletin's Jim Panyard. "Just write the facts. Don't worry about the consequences."

Howard Lewis, director of the Office of Information of the National Academy of Sciences, describes a third rule of reporting that was important at TMI: "Crises produce reporters and reporters are required to produce information. They will obtain it as they need it from whatever sources

they can find." In the information vacuum created by primary sources at TMI -- Met Ed, NRC, and state officials journalists responded to Lewis's rule with imagination:

- The Philadelphia Inquirer sent mailgrams to workers at the plant encouraging them to talk to reporters from the paper about working conditions. Inquirer reporters had obtained names of the workers by matching up license plate numbers on cars in the Met Ed lots with the names of the vehicles' owners.
- Peter Stoler of Time went to a Harrisburg library for a metallurgy text to check the temperature at which zirconium melts. He suspected that the utility was having bigger problems than it was admitting.
- Robert Ruby of the Baltimore Sun went to an NRC public documents room at the state capitol in Harrisburg to research past problems at the plant.
- Paul Hayes of the Milwaukee Journal called an executive of Wisconsin Electric Power in Milwaukee, who explained to him the plumbing in TMI-2.
- Dozens of reporters contacted sources at such organizations as the Atomic Industrial Forum, the Union of Concerned Scientists, and Critical Mass. They also called around the country to managers of nuclear plants similar in design to TMI-2; academicians with credentials in radiation physics or nuclear physics at universities from Arizona to Massachusetts; members of the staffs of various Congressional committees with oversight responsibility for NRC; anti-nuclear activists; and officials of local hospitals, fire departments, and police departments.

This scramble for sources is inevitable in any competitive and developing story. It is fueled, says ABC's Bettina Gregory, by the feeling reporters always have that "sources are never completely on the level and no amount of information is ever enough information." This harried search for sources unearths some who are accurate and objective, and others who are not -- and both types end up being quoted.

A fourth perspective shared by reporters is how to handle conflicting or confusing information, of which there was plenty at TMI. When reporters could not possibly sort out the various pieces of information they were receiving, they presented all of it to the public. Mike Pintek, news director of WKBO radio in the Harrisburg area, describes the dilemma he faces as a news gatekeeper:

The problem for us locally was that none of us had knowledge of nuclear power and couldn't say who was right. You can't see [the accident] for yourself. You can go down and look at the island,

but it just sits there. So you report what they tell you. And since you don't know what is possible and what is not possible, and what is probably right and what is not right, you have no choice but to report each statement and try to give it the weight that it may deserve and let the public judge. And we had a public in a state of panic and they didn't know whom to believe either.

WHP radio in Harrisburg adopted the same approach. Says morning news anchor Jim Moyer, "We just carried both sides and let the public make up its mind."

The advantages of this approach are that it widens the marketplace of information available to the public; it helps to insure that no significant piece of information remains hidden; and it reduces the possibility that an uninformed journalist will censor what might later prove to be valuable information. The disadvantage is that if the information is confusing to the journalist, who has been trying to assess it for some hours or days, it is likely to be even more confusing to the public.

THE CASE FOR MULTIPLE SOURCES

Despite Met Ed's problems with the press, only a handful of reporters, at least in retrospect, are pleased that the company retired from the public information scene on Saturday afternoon, March 31, leaving the role of official spokesman to Harold Denton (on reactor matters) and Governor Thornburgh (on evacuation matters). Peter Stoler of Time was not sorry because the company's "credibility was so bad by Friday that no one believed them anyway." But reporters are basically suspicious of single-source stories and are wary of the possibilities for manipulating information. They prefer to trust the process of sorting out competing and often contrary statements. Some of their views on the value of centralizing accident information appear below.

- "There is a better chance of getting the truth from many tongues." (Rod Nordland, Philadelphia Inquirer)
- "I don't like one-source information. It smacks of censorship and managing the news." (Jim Panyard, Philadelphia Bulletin)
- "I'd like to know by what authority the NRC can tell Met Ed to shut up?" (Casey Burko, Chicago Tribune)
- "I would be concerned if the bottom line of all of this was that the next time, right from the beginning, only the NRC speaks and no one else breathes a word to the press. I think to some degree, alarming as the accident was, the public probably got a more honest concept of what was going on behind the scenes because the thing was laid bare in its confusion. The reflection in the press of the confusion and the panic and

the contradictory statements was not simply from the vagaries of reporting. It mirrored the situation that was seen up there." (Cristine Russell, Washington Star)

- o "I think [Met Ed's retiring from the scene] was the greatest mistake made through the whole accident -- just a very bad error to funnel all the information through two sources, especially when those sources weren't equipped to answer the questions." (Richard Roberts, Harrisburg Patriot)
- o "We are too used to hand-out journalism. I prefer different sources, even when they are conflicting. It wouldn't have bothered me to write a lead that said 'The Governor and Met Ed disagreed today. . .' If a good reporter has three sources he can listen carefully to discrepancies and piece something together. Multiple sources are our stock in trade. Single sources are death." (Steve Lawrence, New York Daily News)

SENSATIONALISM

As might be expected, few reporters admitted to sensationlizing the story of Three Mile Island, and most were reluctant to find evidence of sensationalism in others' stories or broadcasts. Nevertheless, they provided some insight into how sensationalism, or the appearance of sensationalism, might have crept into the coverage.

First, as ABC's Bettina Gregory points out, it is an unnerving experience whenever the national news media descend on a small town for a major story. The presence of so many reporters and cameras can, in and of itself, convince local people that the story is being overplayed.

Second, as Richard Lyons of The New York Times points out, this was a story filled with "what if?" questions. Some reporters, often the less experienced, were intrigued by these sorts of questions, and they forced sources to grapple with the likelihood of a meltdown of the core or of a hydrogen explosion in the containment. Such speculation, if not put into proper perspective, can lead to a distorted presentation of the seriousness of an accident. For example, during NRC Chairman Joseph Hendrie's press conference on Saturday afternoon, March 31, reporters pressed him on the likelihood of evacuation all the way to Baltimore or Washington. Frank Ingram, the public affairs officer in charge of the press center, felt compelled to step in and halt the questioning because the extreme "what if" nature of the inquiries was making an already serious situation unnecessarily dramatic. However, given that the NRC itself plays out these sorts of worst case scenarios as part of its safety procedures, it seems likely that "what if" questions will be an inevitable part of accident coverage. Both sources and reporters need more experience in explaining probabilities and possibilities.

Third, the concerns of local reporters and national reporters are somewhat different. All reporters thrive on big stories; big stories mean front-page placement in the newspaper or the chance to lead a

*Compiled
between
reporters*

network news broadcast. Big stories can make, or unravel, careers. The need to "sell" a story to an editor back in New York or Washington or Chicago is part of the struggle for air time or space. Local reporters at a story like TMI would not have to worry about "selling" this story to editors. They would not have to worry about capturing an audience. The audience is there.

Local reporters also have a concern that national reporters do not: because they live in the community, they and their families are subject to the effects of the accident in a way national reporters are not. As a result, local reporters often said one of their goals was to keep the public calm in Middletown, while national reporters rarely recognized this as one of their goals.

Jeff Bitzer is a reporter and weekend anchorman at WHP-TV in Harrisburg, an affiliate of CBS. The CBS reporters who came into the area to cover the story set up shop at WHP, so Bitzer had a chance to observe their behavior and compare it to his own. "A lot of people here thought the national and international media blew it all out of proportion," he says:

I was working next to all of them and I saw the work that went into their pieces, and I thought were reasonable reports. I did get the distinct impression, though, that the desk in New York wanted a harder story than they were putting out. So often they would say on the phone to New York, "But it's just not that bad here." I didn't find any factual errors -- just a little bit different direction. The angle was different. I think we [at WHP] needed a restraint in our approach that they didn't need. The guy listening to CBS in Chicago wasn't going to leave forever and ever based on what he heard on television. Here, the suitcases were packed and by the door. If we said "boo," they were gone. [Bitzer's analysis, however, ignores the impact of national stories on the local audience.]

Fourth, the press was criticized for not emphasizing the fact that no one died at TMI and that the safety systems in the plant did, in the end, cool the reactor core. While at least one reporter, Salisbury of the Monitor, concedes that perhaps the press could have said more about the lessons learned in reactor safety, all rejected the notion that the story was overplayed. Says Peter Stoler of Time: "To stress that no one died begs the question. The fact that it almost happened shows that something is wrong. The story was that this plant came more than half way to meltdown, and that's too close. The unthinkable has occurred."

HOW TO DO IT BETTER NEXT TIME

Reporters expressed general agreement that if more technical briefers had been made available to the press, and if there had been closer coordination between the technical staff and the public information staff, many of the information problems would not have been as severe. "What appeared to be lacking," says the Monitor's David Salisbury:

was the communications link between the public information officers and the technical people who were working the problem. This could have been provided by a dozen people with technical backgrounds who had a primary public information function: people who could stand at the shoulder of the technical team, observe without interfering, and supply PLO's and the press with more in-depth information about events.

Along the same lines, Newsday's Stuart Diamond asked for creation of an Emergency Information Strike Force to operate during an accident. "Where," Diamond wonders,

were all those terrific schematics that I often see in my mail in times of non-crisis? I mean simple things, like how a reactor works. The Atomic Industrial Forum had loads of them. The NRC has lots of them. Where were they? Sitting in some dusty office in Washington, no doubt.

In the future, some consideration might also be given to providing journalists with a closer look at the control room, although this presents obvious logistical problems. Peter Stolar of Time, among other reporters, requested that one journalist be permitted to watch activity in the control room and report back to all other journalists on a "pool" basis; that is, the pool reporter would report everything that he or she witnessed and all reporters could use the information as they saw fit. Met Ed President Walter Creitz opposed the plan and threatened to get a restraining order if the NRC went along with the idea. (The only time reporters were permitted in the control room during the crisis was during President Carter's visit to the plant on Sunday, April 1.)

The question of how close to the scene of an accident reporters can be permitted is an important one, whether or not they are actually allowed inside the control room. For psychological and tactical reasons, journalists need to be near the action. Any public information plan that exiles journalists to a press center miles from the site -- as Met Ed tried to do -- is not likely to be well received.

A final recommendation comes from local journalists, who feel the information process discriminated against them in favor of the national media. Mary Bradley and Richard Roberts are bitter at the treatment of the Harrisburg papers during President Carter's visit on Sunday, April 1. "When Carter came," Bradley says:

the White House press corps got all the front seats and we were crowded in the back. Nobody from my paper (Harrisburg Evening News) was even allowed to go into the plant with Carter's tour. It was two weeks after the accident started before a local reporter even got to set foot on the island.

Given the potentially devastating local impact of a story such as TMI, future public information plans should make special provision for

the local (and often small and less experienced) news media.

In addition to the improvements reporters would like to see in the public information area, they said the press itself will be better equipped in at least two ways. First, the press corps at TMI received a crash course in nuclear terminology. Reporters should be better able to ask the right questions and understand the answers if there is a similar accident in the future. Second, the press had no real benchmark for TMI. Past accidents at nuclear power plants were reported in an after-the-fact fashion with little of the close scrutiny from the press that accompanied TMI. For the American press, TMI was a unique experience to be reported in an unprecedented way. Future accidents of the same, or lesser, magnitude, are not likely to be given quite so much attention.

The following is a list of the reporters interviewed by the Task Force on Public Information. Each reporter's beat or previous experience in the science/nuclear area is noted.

Baer, John. WTIF-TV, Hershey. Producer and host for two specials on the accident.

Baxter, Tom. Atlanta Journal. Five years experience as energy writer.

Benjamin, Stan. Associated Press. Federal agency beat, including NRC.

Bitzer, Jeff. WHP-TV, Harrisburg. General assignment.

Bradley, Mary. Harrisburg Evening News. General assignment.

Browne, Malcolm. The New York Times. Science writer.

Bukro, Casey. Chicago Tribune. Environmental writer and editor since 1967.

Burnham, David. The New York Times. Federal regulatory agencies, including NRC.

Diamond, Stuart. Newsday (Long Island). Nuclear energy beat for 5 years.

Emshwiller, John. The Wall Street Journal. Energy and utilities beat.

Fialka, John. Washington Star. Nuclear energy and NRC as part of beat.

Flatow, Ira. National Public Radio. Medicine and health sciences beat.

Gregory, Bettina. ABC. General assignment.

Hackes, Peter. NBC. Congressional beat.

Hayes, Paul. Milwaukee Journal. Science and energy beat for 17 years.

Jensen, Edward. Pittsburgh Post Gazette. Capital correspondent.

Kerr, Bob. NBC. General assignment.

Lawrence, Steve. New York Daily News. Consumer affairs beat with some energy and environment background.

Liddick, Steve. WCMB radio, Harrisburg. News director; general assignment.

Livingood, Ben. Allentown Call. Government and politics beat.

Lyons, Richard. The New York Times. Science beat for 13 of his 17 years as a reporter.

Magnussen, Paul. Detroit Free Press. General assignment.

Moyer, Jim. WHP radio. Morning news anchor; general assignment.

Nordland, Rod. Philadelphia Inquirer. Investigative reporter.

Panyard, Jim. Philadelphia Bulletin. Capital correspondent.

Pintek, Mike. WKBO radio. News director; general assignment.

Roberts, Richard. Harrisburg Patriot. Assistant city editor; reported licensing of TMI-2 in previous years.

Rossiter, Al. UPI. Science editor.

Ruby, Robert. Baltimore Sun. General assignment with some responsibility in nuclear area.

Russell, Cristine. Washington Star. Science and medical beat.

Salisbury, David. Christian Science Monitor. Science and general assignment beats.

Shepard, Gary. CBS. General assignment.

Shurkin, Joel. Philadelphia Inquirer. Science beat.

Stolar, Peter. Time magazine. Science, environment, and medicine specialization.

Wagner, Richard. CBS. General assignment.

Ward, Jonathan. CBS. Producer with particular interest in medicine and science.

Wilkie, Curtis. Boston Globe. Political reporter.

Witherspoon, Roger. Atlanta Constitution. Health and science beat.

In addition, three journalists were interviewed for this phase of the study who prefer to remain unidentified.

Total number of journalists interviewed for this phase of the study: 41.

VIII. CONTENT ANALYSIS OF MASS MEDIA COVERAGE OF THE ACCIDENT AT THREE MILE ISLAND

A. INTRODUCTION AND METHODOLOGY

As the name implies, content analysis is a research method in which a body of content -- in this case, print and broadcast news coverage of the accident at Three Mile Island -- is subjected to a precise analysis in order to better understand the quality of that coverage. It is a research method characterized by quantification. The researcher must devise a method by which a trained individual can reduce the words printed in a newspaper or spoken over the air to sets of statistics that can be compared. For example, a content analysis might determine how much space a variety of newspapers devoted to the accident; or how many times a news source was quoted throughout the week; or whether specific information on a given topic appeared, and if so, how often.

Press criticism can be, and usually is, a very subjective undertaking. In assessing coverage of Three Mile Island, it would have been possible to ask an individual or a group of individuals to review that coverage and react to it. The reviewer might have been instructed to answer specific questions about completeness and accuracy. But the value of the conclusions would depend entirely on the critical faculties of the person asked to review the coverage. The result would inevitably be subjective, and individuals with a different perspective or background might come to different conclusions about the same body of material.

Content analysis attempts to be more objective. By reducing the analysis to a series of systematic judgments, the researcher hopes that any trained person would reach the same conclusions. Put another way, a content analysis should be replicable.

This effort to be objective comes at a price. Content analysis is labor intensive. It requires a large number of trained coders. It requires careful development of the research scheme (the "instrument") through which the content will be filtered. It takes time. And, most important, it limits what can be examined. Certain questions are not susceptible to quantification -- at least not easily. For example, such things as the stridency of headlines, the misleading juxtaposition of pictures and a story, or the tone of a broadcaster's voice, are difficult variables to quantify. They are also matters of importance, over which reasonable people would differ. As a result, not every question about press coverage of TMI can be answered in a content analysis, and this includes some of the most controversial questions, such as the degree of "sensationalism" in the media -- a concept not easily fitted into a content analysis scheme. Nevertheless, we have examined "sensationalism" in one part of this analysis on the prevalence of alarming and reasssuring statements in the media.

The content analysis undertaken by this task force is ambitious in the amount of content surveyed (see the discussion of the sample, below). The task force tried to answer the following limited questions: (1) How much coverage of the accident was there? (2) Of a series of important

events during the accident, how many were reported? How timely was the reporting? How much explanatory material about these events was made available in the media? (3) Did the media, in the opinions they quoted or paraphrased on the seriousness of the accident, present a picture that was more alarming or reassuring? (4) What sources of information were reporters consulting? (5) How complete was the reporting on radiation releases?

Obviously many questions were not addressed in this analysis. Some of these are touched on in a more subjective manner in other parts of this report. Other questions must await further research for which the content analysis data in the Commission's archives will be a valuable resource.

Much of what was found, in light of what is now known about the flow of information during the accident, is not surprising. It confirms the task force's view that the media were dependent on confused and inaccurate sources. But while not surprising, this confirmation is valuable, given the widespread belief that the media were the root cause of the confusion surrounding the accident. In the area of radiation reporting, the findings are somewhat more surprising.

The Sample

The task force decided to look at the major suppliers of news -- the wire services, the networks, and the newspapers that syndicate their material -- under the assumption that a majority of news media relied on these suppliers for most of their news about the accident. This assumption proved to be correct (see the qualitative analysis in this volume). The sample selected for analysis included the national wires of the Associated Press and United Press International; the morning and evening news programs presented by ABC, CBS, and NBC, plus special news programs on the accident; The New York Times, Washington Post and Los Angeles Times; the Philadelphia Inquirer, because that newspaper devoted an extraordinary amount of manpower to cover the accident; and the Harrisburg Evening News, because of its proximity to the accident. The task force looked at all coverage in these media on the accident between March 28 and April 3, 1979.

Clearly the sample includes many of the most influential and high-quality media; it is thus biased to show what some of the best coverage of the accident was. The sample does not include radio coverage in the Harrisburg area because most of the material was not available: except for network news, broadcast material is often hard to analyze because it is rarely saved in a systematic manner. The sample also does not include a variety of daily newspapers from around the country -- papers that might have treated the accident differently than did the New York Times. The task force tried to compensate for this by examining, in a subjective way, 43 additional newspapers in light of what was learned from the content analysis, and with a special eye to headlines and use of pictures. The results of this effort appear later in the report in the qualitative survey of media coverage of the accident.

The Coders

Nine undergraduate and graduate students from the New York University Department of Journalism and Mass Communications coded the material, under the direction of Professors Nadyne Edison and Mitchell Stephens. The coders went through a 2-week training period during which they were briefed on the accident, read some of the media coverage, and learned the content analysis scheme thoroughly. A number of trial runs were held to insure that all the coders were looking for the same things in the content and that they were coding the material in the same way. The coders were drilled until they were agreeing approximately 90 percent of the time. When this was achieved, they were divided into three teams of two and one team of three, and assigned to analyze the coverage of a specific medium.

The task force spent about one month designing the content analysis instrument; 3 weeks training the coders; 4 weeks actually doing the coding; and 5 weeks processing the data. Of necessity the turnaround time for an analysis of this sort was very short.

The Analysis

The content analysis is divided into five parts. Each is described briefly below. Those interested in a fuller discussion of the methodology may consult the instructional book for coders available in the Commission's archives.

1. Basic Measurements. Coders were instructed to note the number of stories devoted to the accident; the length of those stories -- in paragraphs for newspapers and wires, and in lines for broadcasting; the byline; and the dateline. Coders were also asked to categorize the stories into hard (or breaking) news, news analysis or background, and features. This information permits some conclusions about the amount and type of media attention devoted to the accident.

2. Coverage of Specific Events. Coders were instructed to look for coverage of 20 specific events during the accident, beginning with the declaration of the general emergency on Wednesday morning and ending with the disappearance of the hydrogen bubble in the reactor at the end of the first week of the accident. The five most significant and most revealing of these events are the ones discussed in detail in the analysis of the flow of public information appearing earlier in this report. This permitted comparisons of what was actually reported in the news media with what officials knew, and what they were saying, at the time of the accident.

Each of the events was described precisely so that coders would be certain the information had, in fact, appeared. There was a fear that as coders became more familiar with the accident, and read more of the coverage, they would read into stories material that was not really present. To check this natural tendency, they were instructed to look for specific language or synonyms. As a result, given this conservative standard for including material, when coders said an event was covered,

the likelihood of error is very small. When they said an event was not covered, there was a greater chance of error. Where the omission was an important one, the coders went back and checked the stories or broadcast transcripts a second time.

In addition to checking whether the 20 specific events were covered, coders were instructed to look, in the case of each event, for mention of certain background material that would enable the public to understand the significance of that event. For example, the task force believed that in order to understand the significance of the declaration of a general emergency on Wednesday, March 28, the public also needed to know that this was the highest or most serious level of emergency at the plant; that it was defined as an incident with potentially serious radiological consequences for the health and safety of the public; that state officials had to evaluate whether evacuation was necessary; and that the spread of radiation into the atmosphere or to the plant boundaries and beyond was a distinct possibility.

Similarly, for the dumping of waste water into the Susquehanna River, the task force believed the public ought to know that the material being dumped did not come directly from the accident; that such dumping was a regular event within the utility's technical specifications; that the dumping was necessary so that the utility could store more seriously contaminated waste water in its tanks; that the dumping had been stopped Thursday afternoon by the NRC; and that permission to resume the dumping came hours later.

This part of the analysis not only permits some conclusions about which events were covered and not covered but also about which events were presented in a comprehensive manner.

3. Alarming and Reassuring Statements. One widely held assumption about media coverage of the accident was that the press "played" the story in an alarming manner -- perhaps more alarming than the facts warranted. Many variables would have to be examined to determine definitively if coverage was unnecessarily alarming or sensational. The language in headlines, the size of headlines, the selection of pictures (still and moving), the use of graphics, the inclusion or exclusion of certain information -- all have some bearing on the tone of coverage. By themselves they are imperfect measures, and some do not lend themselves to a reliable content analysis scheme.

The task force settled on one measure -- an analysis of the evaluative statements appearing in the media on various aspects of the accident. It would be possible, for example, by printing or broadcasting only pessimistic or alarming statements, to present a much different picture of the accident than would be the case if only optimistic or reassuring statements were presented.

The coders were instructed to note every time an evaluative statement appeared in the media coverage of the accident about any of the following issues:

- a. Accident status (improving, no change, or deteriorating);

- b. Threat of danger (none, not immediate, possible danger, or danger);
- c. Meltdown (possibility or no serious possibility);
- d. Radiation exposure (health threat or no health threat);
- e. Hydrogen explosion (possibility, no serious immediate possibility, or not serious possibility);
- f. Hydrogen bubble (growing, same size, or shrinking);
- g. Management of accident (competent and knowledgeable, or incompetent and not knowledgeable);
- h. Quality of information available on accident (reliable and clear, or unreliable, conflicting and confusing);
- i. Evacuation (necessary or not necessary);
- 3. Local reactors, other than TMI (as dangerous or not as dangerous);
- k. Nuclear power (necessary or not necessary);
- 1. Future of nuclear power (optimistic or pessimistic);
- m. Evacuation preparedness (adequate or inadequate);
- n. General citizen reaction (positive or negative).

For these 14 items, coders were to note each time a statement was presented that clearly pushed the reader or viewer in one of the directions indicated. For example, on the issue of meltdown, the coder was asked to determine if the quote pushed the reader or viewer into thinking that meltdown was a possibility, or not a possibility. Statements that were neutral or confusing were not coded.

Coders noted the sources of the quotes and their geographical origin. They also noted when the quotes appeared in the newspaper, or on the wires, or over the air.

Totaling the alarming and reassuring statements produces an overall picture of the accident in each medium; shows which sources were being more alarming or reassuring; demonstrates the importance of geography, if any; and addresses part of the controversy over tone of coverage.

It is important to remember that this analysis looks only at evaluative statements appearing in the news media on these 14 issues. It is no more than one good indicator of the tone of coverage.

4. Sources. In addition to noting sources in the analysis above, coders were instructed to record ever source mentioned by name in every article or broadcast transcript coded. (This includes citizens without

any official role in the accident.) Both individuals and unnamed spokespeople for organizations were coded. This data permits the task force to determine on whom the media were relying for information (at least among identified sources); how this changed from day to day; and which sources that might have been consulted were not being consulted.

5. Radiation Reporting. The task force believes that high on the list of information the public has a need to know is news of radiation releases from the plant. This relates directly to evacuation and public health and safety concerns. This part of the content analysis was an attempt to determine how complete the radiation reporting was, and how understandable it was to the general public.

Each time a news story mentioned a specific release of radiation, coders were instructed to note whether any of the following information was present: the amount of the release; the rate of the release; the duration of the release; the nature of radioactive materials in the release; where the release was measured; when the release was measured; if the size of the release was compared to background radiation or an X-ray, and, if so, whether the comparison was apt.

In order to evaluate whether the release was a threat to public health, a reader or viewer would ideally have access to all of the above information. Obviously no news medium could be expected to present such detail for each release, and, as the material on the flow of public information makes clear, the press had a hard time getting much of this material. But this analysis does establish a standard that reporters and public information officials should keep in mind in the event of another serious accident. The analysis permits a discussion of how far short of this standard the news media and their sources fell during the accident at Three Mile Island.

The results of the content analysis follow in the order outlined above.

B. OVERVIEW OF NEWS MEDIA COVERAGE

All the news media in the sample devoted an extraordinary amount of broadcast time or newspaper space to the accident. Each of the three networks presented at least 200 minutes of news about the accident during the week of March 28 to April 3, spread among morning and evening news shows and specials. Of the three network evening news programs, CBS carried 79 minutes during the week (an average of better than 11 minutes a night); NBC 78 minutes (about the same nightly average); and ABC 50 minutes (an average of 7 minutes a night). Since a single evening news program offers only 22 or 23 minutes of news -- apart from ads and transitional material -- an average of 7 to 11 minutes a night devoted to a single story is an impressive figure.*/

^/ In order to arrive at this figure, the task force counted lines of copy and then converted these lines to a time measurement, figuring to 40 seconds of air time.

The three networks usually think very much alike in the matter of how much time an individual story is worth, and the TMI story was no exception. ABC allotted a total of 213 minutes (in morning and evening news shows as well as specials); CBS gave it 205 minutes, and NBC 201 minutes. Hence, the difference between the largest and smallest amount of time the networks devoted to the TMI accident was only 6 percent.

Newspapers varied much more than the networks in the amount of space they allotted to TMI. Of the newspapers in the task force's sample, the Harrisburg Evening News printed the most stories during the week -- 148, an average of 21 a day. These stories totaled 2,663 paragraphs, an average of 380 a day. Assuming that the average newspaper paragraph is about an inch long, this means that the Harrisburg paper was printing an average of 380 column inches of TMI news each day during the week following March 28. This figure gains some perspective if compared to the front page of The New York Times, which, if entirely filled with copy, would represent 114 column inches -- that is, six columns of 19 inches each. Hence, the material the Harrisburg paper was printing would have filled more than three full pages of the Times every day -- *exclusive* of photographs, which occupied even more space.

After the Harrisburg paper, the Philadelphia Inquirer devoted the most space to TMI (61 stories, 193 column inches a day), followed by The New York Times (85 stories, 173 inches a day); the Los Angeles Times (49 stories, 130 inches a day); and the Washington Post (45 stories, 115 inches a day).

As for the wire services during the week in question, the Associated Press moved on its main national wire 295 TMI stories -- some of which were rewrites and updates of earlier stories. UPI moved 216 stories.

About 60 percent of all the stories in the task force sample were "hard news," meaning that they reported breaking events with a traditional lead that summarized answers to journalists' traditional questions: who, what, where, when, why. About 25 percent of all stories were feature stories; about 13 percent were background and analysis pieces, and the rest did not fall into any of these three categories. However, the wires and the Philadelphia Inquirer represented major deviations from this pattern. Wire stories were about evenly divided between hard news and features, while the Inquirer reported 51 percent hard news and 38 percent features. Both the wires and the Inquirer differed significantly from the overall newspaper average of 63 percent hard news and 24 percent features.

Some differences also exist in the focus of coverage. The majority of media in the sample covered the story mostly from the site, so that a large percentage of the datelines are from the Middletown-Harrisburg area, rather than from Washington or other locations around the country. In the newspapers and wire service stories in the sample, the ratio of Middletown-Harrisburg material to Washington was 2.7 to 1. In network material, Middletown-Harrisburg figured over Washington 3.7 to 1.

A few media, however, placed more emphasis than others on news from Washington. The Washington Post made an editorial decision to concentrate on news from Washington, to which it duly devoted 61 percent of its material. While the task force has made no attempt to separate from this percentage stories that might qualify as local news because Washington news in this particular paper could be called local, this figure is still very high when contrasted to the average for all newspaper TMI coverage from Washington -- only 8.2 percent.

The Harrisburg paper drew only 5.8 percent of its material from Washington; the Philadelphia Inquirer 8.4 percent; The New York Times 12.0 percent; and the Los Angeles Times 16.9 percent. Among the networks, the overall average was similar to the newspapers' -- 8.5 percent. CBS was right at the average. But ABC took only 4.0 percent of its material from Washington, in contrast to NBC, which took 13.0 percent. NBC also took a much lower percentage of its material from Middletown-Harrisburg -- 24.9 percent -- than did ABC or CBS, which took 35.9 percent and 33.6 percent respectively.

In summary, the task force found that all media in its sample paid an unusual amount of attention to the TMI story. While the networks showed very similar judgment in the amount of time they devoted to the story, newspapers varied in total allotment of space. A majority of network and newspaper stories concentrated on breaking news, and more stories in most media originated at the site, rather than in Washington.

C. NEWS MEDIA COVERAGE OF SPECIFIC EVENTS DURING THE ACCIDENT

The following is a narrative discussion of media coverage of the five events during the accident discussed earlier in this report:

1) declaration of a general emergency; 2) operator error and equipment malfunction as causes of the accident; 3) dumping of industrial waste water into the Susquehanna; 4) venting of radioactive gas Friday morning; and 5) discovery of a hydrogen bubble in the reactor and the concern it produced over meltdown and explosion.

In reading this narrative, one should keep in mind that the media being surveyed were the two wire services, the three broadcast networks, and a group of five newspapers. It is unlikely that other media deviated too much from the patterns of coverage established here, because other media rely heavily for their news on the wires, the networks, and the major dailies in the sample. But it is certainly possible that news media not in the sample reported these events differently. Also, it should be kept in mind that the sample period was March 28 through April 3. The news media may well have returned to these events after April 3 and provided information lacking in their coverage during the first crucial week of the accident. The content analysis focused only on coverage during the first week, when the need to serve the public's right to know was most acute.

This material should be read in light of the discussion of each event appearing in the first part of the report. This will help explain why the media missed the stories they missed, and why they were slow to report other stories. The section begins with an overview of the findings.

1. Source - Confusion. In general, confusion among official sources was mirrored by confusion in the media. The media faithfully reported denials that the core had been uncovered, denials that operator error had contributed significantly to the accident, statements that the burst of radiation Friday morning had been unplanned, unexpected and uncontrolled, and misleading measures of that burst of radiation.

2. Background or Contextual Information. In their coverage of the declaration of a general emergency, Wednesday's radiation figures, the Susquehanna dumping, the hydrogen bubble and Friday's burst of radiation, the media surveyed failed to include some of the information needed to understand fully the events.

3. Disputes Among Officials. The news media surveyed failed to cover at the time disputes among Met Ed, the NRC and the state on the dumping of industrial waste water, disputes between Met Ed and the NRC on Friday's burst of radiation, disputes within the NRC and with the state on whether to order a mass evacuation, and confusion within the NRC on the meaning of a general emergency.

4. Stories Unreported or Delayed. There were significant delays in reporting that the core had been uncovered and that industrial waste water had been dumped into the Susquehanna. During the period we surveyed, the evacuation of Met Ed employees from the control room, the fact that the reactor coolant pumps had not been operating properly for periods of time throughout Wednesday, the fact that they were started Wednesday evening, and the fact that NRC engineers had concluded by Sunday evening that there had never been any danger of a bubble explosion within the reactor were not reported. Many of these facts were withheld, delayed or intentionally obscured by officials.

5. Reliance on Secondary Sources. Failure of official sources to provide information promptly left the media in the position of getting information on such important subjects as the declaration of a general emergency, operator error and fuel damage from second-hand sources.

6. Misinformation from NRC On-Site. The Region I NRC people on-site were generally a source of misinformation on the questions of core damage and operator error well after other sources were providing more accurate information to the media.

Met Ed Declares a General Emergency, March 28, 7:24 a.m.

Although Met Ed did not specifically tell the press on March 28 that it had declared a general emergency at the plant, the national media found out second-hand from the state police. The first mention appeared on the Associated Press wire at 9:06 that morning: "Officials at the Three Mile Island nuclear plant have declared a general emergency, a state police spokesman said today." UPI had the information 49 minutes later.

Television coverage of the fact that a general emergency had been declared was spotty. While NBC mentioned it that evening, ABC called it a "general alarm," and CBS did not mention it at all until later in the week. The Harrisburg Evening News noted that a general emergency had been declared **in its** Wednesday afternoon paper and all the other papers surveyed -- except the Los Angeles Times -- carried the story Thursday morning.

But the news media in the sample failed to provide the background information necessary to understand the significance of such a declaration. Not one noted, on Wednesday or Thursday, that a general emergency is the highest level of radiation emergency; that it is defined as an incident that has the potential for serious radiological consequences to the health and safety of the general public; or that the main decision that has to be made after declaration of a general emergency is whether to evacuate the local population.

This failure to explain the general emergency may be traced to confusion among some NRC, Met Ed, and state officials to publicize and explain their problems. But the media surveyed also failed to report this early confusion and reluctance -- a potentially newsworthy story itself.

The only aspect of the general emergency that was widely covered was the fact that radiation had spread to the plant boundaries or into the atmosphere. This was mentioned in different articles or by different sources in the same article 43 times on Wednesday or in Thursday morning's papers, and 74 times over the course of the week. Both wires and all three networks carried the information Wednesday. The Harrisburg Evening News had it Wednesday afternoon; but of the other papers, only the Philadelphia Inquirer and the Washington Post included this information Thursday morning.

There was one additional incident that might have provided insight into the state of the plant on Wednesday -- the evacuation of unnecessary personnel from the control room of TMI-2 because of high radioactivity. None of the news media surveyed reported this fact.

Errors By Control Room Operators May Have Contributed Significantly to the Accident. Equipment Malfunction May Have Contributed Significantly to the Accident.

The role of equipment malfunction in the accident was reported frequently in the news media surveyed on March 28 and in the morning papers on March 29. It was mentioned in different stories or by different sources in a story a total of 30 times. Operator error, however, was only mentioned as a possible factor in the accident 7 times during that same period. The reluctance on the part of Met Ed and the NRC to discuss operator error and their willingness to place the blame on equipment malfunction -- as described in the section on flow of public information -- was reflected in media coverage.

Equipment malfunction was first connected with the accident in an AP story transmitted at 9:35 Wednesday morning: "Officials at the Three Mile Island nuclear plant say a cooling mechanism broke down." UPI had the information within a half hour. All the news media surveyed, except the Philadelphia Inquirer, had mentioned equipment malfunction by the next morning, most attributing the information to Met Ed officials. These media reported no statements denying that equipment malfunction had contributed to the accident.

Although operator error was being discussed within the NRC as early as Wednesday afternoon, the news media were not informed of this until reporters talked that evening with Senator Gary Hart, who had been briefed by NRC officials. UPI reported at 8:37 p.m.: "In Washington, Sen. Gary Hart, D-Colo., said part of the plant's radiation problems had been caused by the mistake of an atomic reactor operator who apparently turned off a cooling system too soon at the plant. . ." AP had the story 11 minutes later and The New York Times also quoted Hart on the subject the next morning. Also Thursday morning, the Washington Post discussed operator error without attribution for the information.

That Senator Hart was the primary source of news about operator error on Wednesday indicates that the press was forced to rely on second-hand information. Neither the NRC nor Met Ed had made any public mention of the role of operator error in the accident.

On Wednesday evening, UPI balanced Hart's statement on operator error with a denial attributed to an NRC spokesman at the site: "But Charles Gallina of the NRC said there was no evidence of human error." As late as Friday morning, The New York Times carried denials that operator error had contributed to the accident; these were attributed to Gallina's colleague James Higgins. Despite these denials by NRC staff on-site, all the news media surveyed had mentioned operator error as a possible cause of the accident by Friday morning. The sources for this information -- in addition to Senator Hart -- were Met Ed spokesmen, Robert Pollard of the Union of Concerned Scientists and officials in Bethesda, who discussed operator error on Thursday's CBS morning news program.

Still, the fact that errors by control room operators may have contributed significantly to the accident never became a major theme of media coverage during the week surveyed: it was only mentioned 14 more times after Friday. Given the important role of operator action in the history of the accident, as documented by this Commission, the emphasis on equipment malfunction is significant.

Despite the attention given to the role of equipment malfunction in the accident, Met Ed's problems and eventual success in starting a reactor coolant pump received almost no coverage. The media reported that problems with the core cooling system had contributed to the accident, but they did not report on Wednesday's ongoing struggle to start a reactor coolant pump -- an event followed closely at the NRC.

The NRC and Met Ed never specifically announced on Wednesday that the reactor coolant pumps were not operating for periods of time. But reporters with the proper technical background might have been able to deduce this from other available information. In the news media surveyed, the fact that the regular core coolant pumps were not operating for periods of time on Wednesday was never mentioned; the information did not appear until the following week.

This lack of background on the part of the press contributed to the delay in reporting that the reactor core had been damaged and partially uncovered on Wednesday. NRC and Met Ed technicians were reluctant to share with the press their strong assumptions that the reactor core had been damaged. But some reporters managed to piece this together by Thursday morning.

Mention of fuel damage first appeared in a UPI story at 5:31 Wednesday evening and was attributed to Robert Pollard of the Union of Concerned Scientists: "Pollard . . . said reports from the crippled reactor showed problems with the emergency system being used Wednesday afternoon to keep the reactor from melting and evidence that some fuel elements already had been damaged. . . ." Pollard got the information from the NRC in Bethesda. Other reporters that evening were able to contact NRC people at the Incident Response Center in Bethesda to get the story about possible fuel damage. However, while the NRC in Bethesda was confirming possible fuel damage, the NRC Region I staff at the site was still downplaying the fact that some fuel had failed. Press accounts reflected this split: on the AP cycle from noon to midnight Wednesday, there were two statements from NRC officials in Bethesda saying the core was apparently damaged, and two contradictory statements from NRC officials on-site saying the accident "caused no damage to the reactor core." On Thursday morning, the Los Angeles Times, ran this contradictory report: "NRC officials reported initially that the core had apparently been damaged. Later they said it had not suffered damage."

No news medium surveyed mentioned that the core had been partially uncovered until Friday morning, even though NRC and Met Ed technical people began to discuss this possibility on Wednesday. On Friday morn-

ing the Washington Post reported: ". . . the drop in coolant pressure with the pump off was enough to expose part of the reactor's core. . ." The Los Angeles Times also mentioned on Friday that the core may have been uncovered. While the news media were able to put together the story of core damage fairly quickly, it took longer for them to determine that the damage had been caused by partial uncovering of the core. NRC and Met Ed spokesmen were still being quoted as denying that the core had been uncovered in the Harrisburg Evening News Thursday afternoon.

Given that the partial uncovering of the core was not reported until Friday morning, and the fact that difficulties with the coolant pumps was not reported at all, it is not surprising that by Thursday evening, there was only one mention (on ABC) that a coolant pump had finally been started Wednesday evening. Because of their failure to provide the media with information on Wednesday about the reactor status, Met Ed and NRC sources were in no position to place the news about the pumps in any meaningful context. Thus, one of the few pieces of "good" news on Wednesday went largely unnoticed.

Met Ed Releases Slightly Radioactive Industrial Wastewater into the Susquehanna, March 29, 2:30 p.m.

Although Met Ed began releasing slightly contaminated wastewater at 2:30 Thursday afternoon, news of the event was not announced and not reported until the Pennsylvania Department of Environmental Resources released a statement just after midnight. The AP had the story at 12:22 a.m. Friday. UPI ran the story at 1:54 a.m. The New York Times, Washington Post, and Philadelphia Inquirer had it Friday morning and CBS used the story on its morning news program. However, the dumping was overshadowed by Friday morning's evacuation events and was not covered at all in the Harrisburg Evening News Friday afternoon or mentioned on the network shows Friday evening.

All the news media that did cover the story included statements that the water posed little or no health hazard, but some failed to provide the specific background facts that would help reassure a distrustful public. Only the AP and the Washington Post (which carried the AP story) noted that dumping industrial waste water from the plant was a routine event; The New York Times, The Philadelphia Inquirer, and UPI did not mention this fact in their stories -- although it was in the DER press release. CBS was the only news organization to report that the material dumped by Met Ed into the river did not come from the accident.

Given that the NRC had ordered the dumping halted in part because it feared the news media would sensationalize the event, it is ironic that the press gave so little attention to the story. The dumping was only mentioned 11 times over the course of the week. Yet, even though the dumping itself was relatively unimportant, the political maneuvering among Met Ed, the NRC, and the state was a significant and unreported story. Only the AP and the Washington Post ever mentioned that the dumping of waste water had been halted for some hours. No one noted that the NRC had specifically ordered Met Ed to stop the dumping or that

state officials had argued over who should take responsibility for resuming the dumping.

Met Ed Vents a 1,200 mrem/hr Burst of Radioactive Gas into the Atmosphere, Morning, March 30

The first mention of this burst of radiation, attributed to a PEMA official, was on the AP wire at 9:24 a.m. Friday: "An uncontrolled release of radiation spewed from the Three Mile Island plant today. . . authorities said." At 10:16 a.m., AP added that radiation was measured at 1,200 mrem/hr at the plant vent; this information was attributed to the governor's office.

The venting was mentioned 56 times in the news media surveyed. None of the news media surveyed specifically noted that before reaching populated areas, radiation had dissipated to levels that did not pose an immediate health hazard. CBS, NBC, and the Los Angeles Times did not accompany their initial reports on the burst with any numerical measure of the radiation it contained. Some of the blame for these oversights can be placed on confusion in the statements being made by official sources.

Of all the TMI incidents, the venting is probably the one on which official sources were most contradictory. This confusion was reflected in news accounts. Often it was the subject of those accounts. Part of the confusion resulted from the use of seemingly similar terms with significantly different meanings, such as "unplanned," "unexpected" and "uncontrolled." At 10:42 a.m., AP quoted Frank Ingram of the NRC saying that the burst "was not unexpected." However, the news media were attributing statements to the NRC throughout the day emphasizing that the burst was "uncontrolled." CBS that evening quoted Ingram himself as saying, "There are conflicting reports. My initial information might have been wrong."

The AP realized promptly that there was a dispute over whether the burst was controlled. By 1:33 p.m. Friday, it contrasted conflicting statements on the subject. Tom Gerusky of the BRP was quoted as saying, "It was unexpected, and unplanned, and they couldn't stop it." In the next paragraph there is a quote from a Met Ed spokesman saying, "It was controlled."

Some of the confusion about the level of the burst may have stemmed directly from a statement made by a spokesman for the Atomic Industrial Forum. A UPI report at 1:31 that afternoon stated:

Nuclear industry officials said the latest plume of radioactive gas vented from Pennsylvania's Three Mile Island atomic power plant had a maximum radiation level of 350 millirems per hour, about one-fourth as high as state officials reported.

The AIF is never quoted as denying that 1,200 mrem/hr were measured, but its statement seemed to imply that PEMA's figure was not correct.

Of the networks, only ABC mentioned a number that evening (although it was incomplete; it reported 1,200 mrem, when it should have reported 1,200 mrem/hr). But the Harrisburg Evening News that afternoon and the Philadelphia Inquirer and the Washington Post on Saturday morning printed both the 1,200 mrem/hr and the 350 mrem/hr reading, as did The New York Times. (The Los Angeles Times did not print either figure in connection with the burst.) On the CBS Evening News Friday night, Walter Cronkite remarked, "Every emergency created its conflicting accounts, but in the matter of the Three Mile Island accident, the waves of confusion reached tidal proportions."

Still, despite all the attention given to the confusing information officials were releasing, the news media surveyed missed a much more important story among the decision-makers themselves. None of the media reported that the NRC had recommended evacuating everyone 10 miles downwind of the plume at 9:15 Friday morning. None of them noted that high-level NRC officials disagreed on the advisability of this mass evacuation. None of them said that state DER officials had opposed mass evacuation.

Two clues were available Friday morning that might have led reporters to the behind-the-scenes story on the evacuation. An evacuation alert had been broadcast over local radio, and residents had been instructed to stay indoors. No one picked up on those clues and produced a story.

The recommendation to pregnant women and preschool children at a press conference is a story that the news media can cover easily and well. All the news media we surveyed had the story, and by Saturday morning all except the Los Angeles Times provided the information needed to understand Thornburgh's action -- the fact that fetuses and children are more vulnerable to radiation than adults. Yet none of the media we surveyed provided the one piece of information needed to question Thornburgh's action -- the fact that the NRC had recommended a mass evacuation earlier that morning.

A Gas Bubble Containing Hydrogen is Known to Exist at the Top of the the Reactor Vessel, Evening, March 29

This item was mentioned more times (151) than any other event examined. It dominated coverage of the accident on Friday evening (15 mentions), Saturday (38), Sunday (33), Monday (35) and Tuesday, the last day surveyed (30).

The first connection of the bubble in the reactor with the "ultimate risk of a melt-down" it posed came in a UPI story at 4:02 p.m. Friday. The story was attributed to NRC officials. The AP mentioned the bubble at 5:51 p.m. saying that it created only "a small risk of core melt-down." Both stories were based on an NRC press conference in Bethesda that afternoon at which Brian Grimes was quoted to have said, "The risk involved is that the gas would expand, prevent cooling of the core, that we would suffer additional core damage . . . with the ultimate risk of a melt-down." The NRC never retracted the statement,

although the commission did attempt to undercut it with a Friday evening press release.

News of the bubble and the dangers it posed led to the most alarming coverage of the period we surveyed. That night, CBS carried a tape showing Grimes speaking about "the ultimate risk of a melt-down." NBC reported that "the real possibility of a melt-down was very small," and ABC said, "There is the possibility though not yet the probability of what is called a melt-down."

The New York Times headline the next morning read, "U.S. AIDES SEE RISK OF MELT-DOWN . . ." The Philadelphia Inquirer headed its story, "Possible 'Melt-down' Feared. . ." Neither the Los Angeles Times nor the Washington Post used the word "melt-down" in its front-page headlines.

The news media surveyed did not play up one potentially alarming fact -- that such a bubble was not covered in NRC emergency plans. ABC, CBS, the Washington Post and UPI did not report this fact during the period surveyed.

NBC, the Philadelphia Inquirer, Washington Post, Associated Press, and United Press International did protect against any misunderstanding by noting that a hydrogen explosion would be chemical, not nuclear.

Perhaps the most alarming report during the period surveyed was contained in AP's Saturday night story, written after a conversation with an unnamed NRC official who said that the bubble might explode in as little as two days. Significantly, this story was picked up by only one of the other news media surveyed. The Philadelphia Inquirer ran it Sunday morning as part of a report saying Denton had discounted the possibility of an imminent explosion. The AP itself added Denton's less alarming view to its original story shortly after it broke.

The media surveyed seemed attuned to the changes in the NRC's perception of the dangers posed by the hydrogen bubble on Friday, Saturday, and Sunday. With the exception of NBC, all of them clearly reported on Friday evening or Saturday morning that the NRC (Grimes) feared the bubble could expand and expose the fuel rods. NBC's report mistakenly placed the emphasis on the temperature of the bubble saying there was a "risk of causing the hot gas bubble to expand, covering the nuclear fuel and heating it rather than cooling it."

The only portion of the NRC press release issued by the commissioners themselves on Friday evening that was picked up with any regularity in the media surveyed was the lead statement that there was "no imminent danger" of a melt-down. Thus the release had its intended effect of under-cutting the UPI story based on the Friday afternoon Thompson-Grimes press conference in Bethesda.

The NRC's first public admission that efforts to remove the bubble could lead to an explosion came in Hendrie's Saturday afternoon press conference. However, the Washington Post had mentioned the threat of an

explosion Saturday morning, and the New York Times had reported on Saturday that efforts to remove the bubble could lead to a melt-down. NRC technicians first began to fear that the bubble could explode Saturday morning. CBS reported this fear -- before the much discussed AP story -- on its Saturday evening newscast: "The longer it (the bubble) remains in the reactor, the greater the risk of an explosion." CBS also ran an interview on camera with Edson Case of the NRC in which he said: "The present option has involved in it the explosive risk." All the other media we surveyed, except the Los Angeles Times, reported by Sunday evening the fear that the bubble could explode even if let alone.

The fact that a hydrogen explosion occurred in the containment on Wednesday was reported by every news organization surveyed, but with significant imprecision. For instance, ABC reported Saturday night that hydrogen had exploded in the reactor and had damaged the fuel rods; CBS that evening said the explosion had been in the main reactor; and UPI consistently failed to note that the hydrogen had exploded without serious consequences.

The question of whether there had been damage to the reactor core was the second most mentioned item, after the presence of the bubble, of the events surveyed. The first report that the core had been partially uncovered did not appear until Friday morning. Yet, despite their obvious appreciation of the significance of this event, none of the news media surveyed used Friday's news about the bubble in the core as further evidence that the core had been seriously damaged.

When Met Ed's George Troffer told a radio reporter Monday morning that the bubble was nearly gone, AP carried the story at 9:49: "Company officials at the Three Mile Island nuclear power plant said today that a dangerous gas bubble has all but disappeared from the nuclear reactor and the reactor is being prepared for a final cool-down." ABC was the only network to carry the Met Ed view of the situation. And, of the newspapers surveyed, the Washington Post and Harrisburg Evening News mentioned it. However, all the news media on Monday and Tuesday reported Denton's encouraging statements about the bubble.

Met Ed's lack of credibility at this point clearly reduced the news media's interest in reporting Troffer's view as did the fact that his statement was released unofficially and was followed by a hasty attempt to retract it. Denton, on the other hand, had no trouble getting attention.

The fact that NRC engineers had concluded by late Sunday afternoon that there had never been any danger of an explosion was mentioned by Denton offhandedly on April 2 but was not reported at all during the period surveyed.

D. ANALYSIS OF ALARMING AND REASSURING STATEMENTS

One widely held impression of the news coverage of the accident is that it was alarming -- perhaps more alarming than the events warranted. It is impossible, of course, to determine just how alarmed people should

have been: a resident of Milwaukee might have been less concerned about the accident than a resident of Harrisburg; a pregnant woman and an engineer familiar with nuclear technology might have reacted differently to the same information. Without trying to determine if the press and broadcast coverage was "appropriately" alarming, the content analysis was able to answer the following question: In printing and broadcasting evaluative statements on a number of dimensions of the accident (such as the threat of explosion or meltdown), did the news media present a predominantly alarming view or a predominantly reassuring view?

Depending on whom reporters talk to and how they use the information they gather, press accounts of the same event can vary widely. For example, to use a sports analogy, a news medium can give the impression of dissension on a baseball team by quoting only those players who are unhappy. Or, the opposite effect can be achieved by quoting only those players happy with the status quo. A reader would hope that a journalist quotes enough players on both sides to give an accurate picture of team feeling.

In this part of the content analysis coders categorized statements on specific issues -- plus quotes from citizens on all topics -- as either alarming or reassuring to determine what sort of "package" was presented to the audience. The hypothesis was that more alarming statements would appear than reassuring. Also noted were the sources of the statements, differences among the various media in their presentations, and differences in the amount of attention paid to each issue.

Overview of Findings

Table 1 shows that 1,168 statements were coded in the 14 categories during the first week of the accident. Overall, 657 (56 percent) are reassuring, 450 are alarming (39 percent), and 61 are in the "no change" category (on the status of the accident and the size of the hydrogen bubble). The general hypothesis of more alarming statements is not supported by the data. (A key at the bottom of Table 1 shows what was considered an alarming and reassuring statement.)

For 9 of the 14 issues, more reassuring than alarming statements appeared. These issues are the ones most directly related to the health and safety of the public: the status of the accident; the threat of danger; the threat of radiation exposure; the threat of hydrogen explosion; the threat of the bubble growing larger; and the need to evacuate. On only one issue related to public health and safety were there more alarming than reassuring statements printed or aired: the risk of meltdown. Here the split was approximately 60-40 in the direction of alarming. A further analysis of the sources of the alarming quotes shows that 25 of the 84 (30 percent) came from the NRC in Bethesda, by far the largest number of alarming statements to come from Washington on any issue.

The other issues for which a more alarming picture was painted are: evacuation preparedness; the future of nuclear power in light of the accident; and the quality of the information being made public about the

accident. On this last dimension a total of 114 statements were coded, and all but one were critical of information flow and accuracy. (As the task force analysis has demonstrated, there was ample reason for this discontent.)

Also, when citizens were quoted in the media, the quotes tended to be alarming, which goes against the overall trend. Of the 139 times citizens were quoted in a reassuring or alarming manner, 105 (76 percent) were alarming. This may reflect the fact that citizens in the area were more alarmed than reassured; or it may indicate only that reporters chose to quote alarmed citizens more often.

Table 1 also shows that four of the issues were not the subject of many alarming or reassuring quotes; given the importance of two of them, one might have expected that the media would have sought out more comment. These two are management of the accident and the state of evacuation preparedness. It is curious that the quality of information about the accident was the subject of comment 114 times, while the management of the accident was the subject of comment only 32 times, and evacuation preparedness only 22. This could be a reflection of the media's own self-interest; the poor flow of information directly affected their work.

Another way to examine the data in Table 1 is to see what percentage of alarming and reassuring statements appeared in each of the 14 categories. This information is displayed in Table 2.

Reassuring statements were much more evenly spread out among the 14 accident-related issues than were alarming statements. Seven of the issues had 7 percent or more of the reassuring statements. Only three of the issues had that many alarming statements. The issues that received the most attention on the reassuring side were the critical issues of the accident: the size of the hydrogen bubble (20.7 percent); the threat of danger (15.1 percent); the health threat posed by radiation exposure (12.0 percent); and evacuation preparedness (10.7 percent). By contrast, the alarming statements appeared, overwhelmingly, in three areas: the quality of the information available about the accident (25.1 percent); citizen reaction to the accident (23.3 percent); and the possibility of melt-down (18.7 percent). Nearly 50 percent of all the alarming statements coded were on the quality of information and citizen reaction. Of the safety issues directly related to conditions in the plant, only the chance of meltdown was important on the alarming side. The others accounted for less than 6 percent each of the alarming statements.

Table 2 supports Table 1 in the conclusion that a primarily reassuring view was presented to the public (in the news media sampled) on most of the accident-related issues touching on public health and safety.

Comparison Among Media

Table 3 shows the number and percentage of alarming and reassuring statements in each of the media in the sample. With one exception, all

TABLE 1: Frequency of Alarming vs. Reassuring
Statements on Accident-Related Issues

Issues		Reassuring		Neutral		Alarming		Total	
		F	%	F	%	F	%	F	%
1.	Accident Status	55	47.4	56	48.2	5	4.3	116	10
2.	Threat of Danger	99	88.4			13	11.6	112	10
3.	Radiation Exposure	79	82.3			17	17.7	96	8
4.	Hydrogen Explosion	29	55.8			23	44.2	52	4
5.	Hydrogen Bubble	136	91.3	5	3.3	8	5.4	149	13
6.	Melt-down	55	39.6			84	60.4	139	12
7.	Management of Accident	18	56.2			14	43.8	32	3
8.	Information	1	1.0			113	99.0	114	10
9.	Evacuation	70	85.4			12	14.6	82	7
10.	Local Reactors	15	88.2	-		2	11.8	17	1
11.	Nuclear Power	47	75.8			15	24.2	62	5
12.	Future of Nuclear Energy	12	33.3			24	66.7	36	3
13.	Evacuation Preparedness	7	31.8			15	68.2	22	2
14.	Citizen Reaction	34	24.5			105	75.5	139	12
TOTAL		657	56.3	61	5.2	450	38.5	1,168	100

TABLE 1 (Continued)
Meaning of Terms

Reassuring	Neutral	Alarming
1. Improvement/Crisis Over	No Change	Deterioration
2. No Danger		Danger
3. No Health Threat		Health Threat
4. Not Serious Possibility		Possibility
5. Shrinking	Same	Growing
6. No Serious Possibility		Possibility
7. Prepared, Competent, Knowledgeable		Not Prepared, Not Knowledgeable Incompetent
8. Reliable, Clear		Unreliable, Conflicting
9. Not Necessary		Necessary
10. Not as Dangerous		As Dangerous
11. Necessary, Desirable		Unnecessary, Undesirable
12. Optimistic		Pessimistic
13. Adequate		Inadequate
14. Positive		Negative

TABLE 2: Alarming and Reassuring Statements
Expressed as Percentage of Total

Issue	% of Total Reassuring Statements	% of Total Alarming Statements
1. Accident Status	8.4%	1.1%
2. Threat of Danger	15.1	2.9
3. Radiation Exposure	12.0	3.8
4. Hydrogen Explosion	4.4	5.1
5. Hydrogen Bubble	20.7	1.8
6. Meltdown	8.4	18.7
7. Management of Accident	2.7	3.1
8. Information	0.2	25.1
9. Evacuation	10.7	2.7
10. Local Reactors	2.3	0.4
11. Nuclear Power	7.2	3.3
12. Future of Nuclear Energy	1.8	5.3
13. Evacuation Preparedness	1.1	3.3
14. Citizen Reaction	5.2	23.3
TOTAL	99.2%	99.9%

of them presented more reassuring than alarming statements. The small differences among them are not significant. The only medium to have presented more alarming than reassuring statements was the Philadelphia Inquirer, where the split is 53 percent alarming and 47 percent reassuring. By itself, this ratio suggests a rather even-handed approach, but in comparison with the other media, the Inquirer was presenting a somewhat more alarming view of the issues coded in this study.

TABLE 3: Reassuring vs. Alarming Statements During
First Week of Accident by all Media Surveyed

	REASSURING		ALARMING		TOTAL
	F	%	F	%	F
ABC	60	55	49	45	109
CBS	59	62	37	38	96
NBC	60	62	37	38	97
AP	119	63	71	37	190
UPI	113	57	86	43	199
LAT	40	62	24	37.5	64
PI	42	47	48	53	90
WP	39	59	27	41	66
NYT	45	62.5	27	37.5	72
HEN	78	<u>63</u>	46	<u>37</u>	124
TOTALS	657	60	450	40	1,107

Table 4 collapses the data from Table 3 according to type of media -- television, newspaper, and wire service -- to show that overall, each of the three media presented a similar perspective. There is no evidence to support the view that television was more alarming than newspapers. Similarly, returning to Table 1, the hypothesis that the local newspaper was more reassuring than newspapers outside the area is not supported. The Harrisburg Evening News is at the top of the list with 63 percent reassuring statements, but CBS, NBC, the AP, the Los Angeles Times and The New York Times were so close behind as to be almost identical. Because little local broadcast news copy was saved from the period of the accident, a similar comparison of national and local broadcasting was not made.

Alarming and Reassuring Sources

Table 5 is a list of those sources (by name and institution) quoted most often in the media on one of the issues. They are rank-ordered by the number of alarming statements that came from each. Note the wide variation within the NRC: Dudley Thompson and the NRC officials category appearing near the top (with more alarming statements); Harold Denton, Charles Gallina and Chairman Hendrie near the bottom. Met Ed officials were rarely being quoted in an alarming way. As stated before, citizens were very often being quoted in an alarming manner, as was Senator Gary Hart and unnamed "experts/scientists." President Carter had nothing alarming to say on any of these issues.

The listing "Non-Attributed" in Table 5 (entry #5) bears some attention. Coders noted 160 evaluative statements where no clear source could be pinpointed. For lack of a better term (and cognizant of how reporters work) we labeled these "reporter comment." Of the 160 statements, 83 (51.9 percent) were alarming. This figure of 51.9 percent is well above the overall figure of 38.5 percent alarming statements in the analysis, indicating that reporters as a group were putting a somewhat more alarming face on the accident than were their sources.

TABLE 4: Reassuring vs. Alarming Statements
During First Week Of Accident, By Medium

	REASSURING		ALARMING		TOTAL
TV	179	(59%)	123	(41%)	302
Wires	234	(60%)	155	(40%)	389
Newspapers	<u>244</u>	(59%)	<u>172</u>	(41%)	<u>416</u>
	657		450		1,107

TABLE 5: Frequency of Alarming Statements by Most Frequently Quoted Sources During the First Week of the Accident

Source	Total Statements	Alarming	Alarming
1. Citizens	139	105	75.6
2. Senator Gary Hart	6	4	66.7
3. Dudley Thompson, NRC	12	7	58.3
4. Federal Agencies/ Spokespersons	70	40	57.1
5. Non-Attributed (Reporter Comment)	160	83	51.9
6. Experts/Scientists	7	3	42.7
7. NRC Officials	32	12	37.5
8. Robert Pollard	6	2	33.3
9. Jody Powell	7	2	28.6
10. Chairman Hendrie, NRC	16	3	18.7
11. Governor Thornburgh	39	5	12.8
12. Harold Denton	67	7	10.4
13. Lt. Governor Scranton	14	1	7.1
14. John Herbein	26	1	3.8
15. Met Ed Officials	29	1	3.4
16. James Schlesinger	19	0	0
17. Charles Gallina	8	0	0
18. President Carter	17	0	0

Importance of Geography

The 1,168 statements coded in this part of the analysis were separated by dateline (place of origin). Of the total, 499 came from Harrisburg and surrounding areas; 431 from New York, Chicago, and various points around the country; and 131 from Washington. (107 were not identified as to location.) Given the overall split of 56 percent to 38 percent reassuring/alarming, one might expect a similar split in each of these areas. This was not the case.

For Washington, the split is 50 percent reassuring, 44 percent alarming, and 6 percent neutral or unchanged. For the Harrisburg area the split is 58 percent reassuring, 36 percent alarming, and 6 percent neutral. For the rest of the country the split is 58 percent reassuring, 38 percent alarming, and 4 percent neutral. The difference between Washington and the rest of the country is not great, but there is a difference. An alarming statement was somewhat more likely to come from Washington than from other parts of the country.

Conclusions

(1) The media in the sample presented more reassuring than alarming statements on 14 selected issues concerning the accident. This is particularly true on public health and safety issues, where the only one to be presented in a more alarming than reassuring fashion was the risk of meltdown. (2) This pattern held up for all the media surveyed with the exception of the Philadelphia Inquirer, which was somewhat more alarming than the others. (3) The sources of many of the alarming statements were citizens, scientists and experts, NRC officials, and reporters themselves. Met Ed officials, Harold Denton, Governor Thornburgh, and the President were not often the source of alarming statements. (4) Alarming statements were more likely to come from Washington than from the site or other areas around the country. This is particularly true if the statements of local citizens are dropped from the analysis.

E. MEDIA USE OF SOURCES

Sources are a journalist's lifeblood. To a great extent, the quality of a journalist's work is dependent on the quality of sources that journalist has been able to cultivate. Covering the accident at Three Mile Island was no exception. Until Harold Denton arrived at the site on Friday to provide, at least, a starting point for coverage of the accident, reporters were scrambling madly for sources they could rely on. Some had already cultivated such sources within the NRC or other groups concerned about nuclear power. But many had to start from scratch, talking to Met Ed workers, citizens, academicians, pro- and anti-nuclear lobbyists -- anyone who could make some sense of the confusion.

While reporters were searching for sources, others were silencing them. The White House, in particular, tried to narrow the number of spokesmen available to the news media.

In order to gain a clearer understanding of how sources were used by the media during the first week of the accident, the task force asked coders to note every time a source was referred to by name (not pronoun reference) in a story. Unnamed individuals with specific affiliations were noted, as well as local citizens and citations to documents. The raw data permitted an analysis of who was talking to the media at various points during the accident: which sources were conspicuous by their absence; which "outsiders" were being consulted; and how effective the effort to centralize information actually was.

This study has its limits because reporters do not always name their sources. Often, as will be seen, sources are identified only by affiliation. Occasionally, they appear only as "reliable sources," or "sources close to the situation." Some sources, who provided background information for the media, are not mentioned at all. Clearly, the analysis could not include anonymous sources. But enough sources were identified to permit an evaluation.

Overview

In the sample of media, during the week of March 28 to April 3, stories referred to sources 7,092 times. This number may be broken down as follows: 3,855 from NRC, Met Ed, local, state, and federal government officials directly concerned with the accident, General Public **Utilities, and Babcock & Wilcox**; 548 from local **citizens**; 388 attributed only to "sources say"; 205 referenced to documents; 377 attributed to unnamed individuals with specific affiliations (such as a company or a state government other than Pennsylvania); and 1,719 from such outside sources as the Union of Concerned Scientists, Critical Mass, the Atomic Industrial Forum, power company officials, Ralph Nader, Ralph Lapp, Mrs. Harold Denton, and a host of other individuals and organizations.

Table 6 focuses on the 3,855 statements that came from the sources immediately involved with the accident.

TABLE 6: Frequency of Quotes by Official Sources
During the First Week of the Accident

	# of times quoted	% of total
Local Government	268	6.9
Federal Government	770	19.9
State Government	738	19.1
NRC	1,285	33.3
Met Ed	731	18.9
GPU	34	0.9
B&W	29	0.8
TOTAL	3,855	100.0

The most important information source, by far, was the NRC, the source of more than one-third of the statements. Combining the NRC with the federal government reveals the extent to which Washington became the mouthpiece for a local accident. Met Ed, conversely, accounted for less than 20 percent of the statements; GPU and Babcock & Wilcox were nearly invisible. Early in the accident, Babcock & Wilcox decided not to talk to the press, even though the company was aware that incorrect information was being disseminated.

Within Met Ed, the NRC, state, federal, and local government bodies, 77 different sources were quoted by name in the first week. But this figure is much smaller than the actual number of sources talking to the media from these institutions, because on 1,253 occasions, the actual name of the source was not given -- only the organizational affiliation. Thus a conservative estimate of the number of different sources being quoted in the media from these organizations is well over 100. This may help explain why so much conflicting information was coming to reporters.

Table 6 shows that Met Ed sources were quoted 731 times during the week. Of these, 324 were anonymous Met Ed workers or other unidentified Met Ed employees -- fully 44 percent. This is the highest percentage of unnamed sources for any institution -- understandable given the rigid information structure in existence at the company.

The information in Table 6 is broken down on a daily basis in Table 7.

TABLE 7: Frequency of Quotes by Official Sources
During the First Week of the Accident, by Day

	3/28	3/29	3/30	3/31	4/1	4/2	4/3
Met Ed	81	227	118	116	116	50	23
GPU	9	1	1	1	3	3	16
B&W	0	3	3	0	13	6	4
NRC	70	177	272	265	178	149	174
State Government	59	67	201	123	88	116	84
Federal Government	19	92	132	138	155	104	130
Local Government	18	9	24	50	66	53	48
TOTALS	256	576	751	693	619	481	479

The figures clearly reflect Met Ed's decline as a source even before the company's official withdrawal on March 31. While Met Ed never completely retired from the public information scene, the figures for April 2 and April 3 are very low, compared with NRC and state officials. This accords with the White House's centralization plan.

The figures also show that by March 30 (or at least in the media appearing on March 30, which would include information gathered on March 29 for morning newspapers) the NRC was already the chief source and remained so for the duration of the week. The utility was the chief source only on the first two days of the accident. Local officials were never important sources, although they became more prominent later in the week. This may reflect the fact that local officials were not receiving information.

Most Important Sources

Table 8 is a listing of the sources most frequently quoted during the first week of the accident.

TABLE 8: Sources Most Frequently Quoted During the
First Week of the Accident (N=3875)

Denton, NRC	392
President Carter/Powell	258
Governor Thornburgh	239
Herbein, Met Ed	174
Senator Hart	133
Chairman Hendrie, NRC	104
Creitz, Met Ed	92
Lt. Governor Scranton	77
Thompson, NRC	67

As one would expect, the list closely follows the information plan developed by the White House and the Governor's office. If proof were needed that reporters can be forced to rely on specific sources because of a status conferred on them by outsiders (in this case the White House) the appearance of Denton at the top of the list is it. In addition, the only source on the list who was not an official spokesman for one of the groups involved in the accident is Senator Gary Hart -- further proof of the ability of official sources to dominate the news.

The absence of public information professionals from the list is striking. The only such person is White House Press Secretary Jody Powell, whose total is a part of President Carter's. None of the other public information professionals from the NRC, Met Ed, or Pennsylvania state government appear on the list.

Denton is an example of how one can become a major source overnight; so also is the last man on the list -- Dudley Thompson. Designated by the NRC to brief the media on Friday, Thompson was in part responsible for stories that afternoon and evening on the possibility of meltdown at the plant. Thompson also did some briefing by phone beginning Wednesday.

But he had had no public information capacity before the accident and was not a frequent confidant of reporters. Any institution could have manipulated the media by designating its own Dudley Thompson, creating its own important sources for the media. (This rule also works in reverse. For example, three NRC's officials who had important responsibilities during the accident were hidden from the press during the first week. Darrell Eisenhut was a source on only four occasions; Victor Stello, who really managed the accident on-site beginning Friday, was a source but once, and Roger Mattson, who had much to do with the bubble scare over the possibility of the bubble's exploding, was a source 10 times. Six of these occasions occurred after the bubble scare had been proven false.)

While Joseph Hendrie is on the list of frequently cited sources, he does not appear as high as one might expect for the Chairman of the NRC. He is second (of NRC officials) to Denton, but he is closer in frequency of citations to Thompson. Similarly, the President of General Public Utilities, Herman Dieckamp, is not on the list, and Walter Creitz, President of Met Ed, ranks lower than Hendrie. At issue here is the proper role in public information for the managing utility.

The appearance of Senator Gary Hart on the list also illustrates the important role of secondary sources -- or at least this secondary source. Hart was an important source on the extent of core damage and on operator error as a cause of the accident.

Table 9 shows the appearance of the four top sources throughout the week.

TABLE 9: Frequency of Quotes by 4 Sources During the
First Week of the Accident, by Day

	3/28	3/29	3/30	3/31	4/1	4/2	4/3
Denton, NRC	0	3	36	70	77	105	101
Governor Thornburgh	0	2	86	55	25	27	44
Herbein, Met Ed	7	54	40	46	24	2	1
President Carter/Powell	0	2	31	81	66	55	23

Not surprisingly it demonstrates the disappearance of John Herbein as a source; the growing importance of Harold Denton; and the particular importance of Governor Thornburgh on March 30 and March 31 when the utility was fading as source, the NRC had not yet established Harold Denton as spokesman, and Thornburgh was advising pregnant women and children to leave the area.

The PR Professionals

Table 10 demonstrates the small role played by public information professionals.

TABLE 10: Frequency of Quotes by Public Information Officers
During the First Week of the Accident (N-3875)

Powell, White House	121
Comey, PEMA	61
Ingram, NRC	54
Critchlow, State	32
Curry, Met Ed	24
Strasma, NRC	20
Fouchard, NRC	19
Page, State	18
Fabian, Met Ed	18
Hanchett, NRC	13
Milne, State	13
Abraham, NRC	12
Klucsik, Met Ed	6
Cross, Met Ed	2
Botvin, Met Ed	2
Wisner, NRC	1

Only Jody Powell was appearing as a major source. The accident was the important topic at two White House press conferences on Friday, March 30. Surprisingly, John Comey, the information officer for the Pennsylvania Emergency Management Agency, is the second most important source. He was supposedly silenced by Paul Critchlow, the governor's press secretary, on March 30; but Comey appears as a source through April 3. Other state public information officials such as Milne, Page, and Critchlow played a relatively small role. (Critchlow was successful, however, in silencing others in state government. William Dornsife in the Department of Environmental Resources does not appear as a source after the second day; and Colonel Oran Henderson, the head of the Pennsylvania Emergency Management Agency, who should have been an important source, was quoted only seven times during the first week.) Met Ed public information people were all minor characters.

An alternate explanation for the low number of appearances by public information officials is that they preferred anonymity, and thus they might be hidden among the 388 attributions in the "sources say" category. Met Ed's George Troffer, for example, who acted in a public information capacity, was very reluctant to be quoted by name. Nevertheless, even assuming that some of these unnamed sources were public information officials, they still played a minor role compared to the Dentons and the Herbeins.

Table 11 follows across the week the appearance of three top public information people for the State, Met Ed, and the NRC.

TABLE 11: Frequency of Quotes by Three Public Information Officers
During the First Week of the Accident, by Day

	3/28	3/29	3/30	3/31	4/1	4/2	4/3
Fouchard, NRC	14	2	0	0	1	2	0
Fabian, Met Ed	14	4	0	0	0	0	0
Critchlow, State	0	0	17	8	1	4	2

Both Fouchard and Fabian were active on the first day of the accident and then disappeared. Fabian was not quoted at all after March 29. These figures reflect the fact that both switched to logistical roles during the accident.

Outside Sources

An analysis of the outside sources consulted by journalists demonstrates how far afield they will go to add a dimension to a story. Given the information vacuum that existed in the first few days of the accident, journalists found it necessary to rely on outside sources to supplement what they were being told by official sources, or to clear up confusing points.

The news media in our sample quoted more than 300 different individuals. Some of these outside sources appeared many times in a single story and were really the focus of that story; others contributed only a quote or two. Scientists, academicians, and medical doctors from schools and hospitals across the country were quoted on 47 occasions. Foreign officials from such countries as Japan, Korea, France, and Sweden were sources 30 times. Officials of state governments other than Pennsylvania were popular with reporters, particularly those in states with a dependence on reactors, such as New York, Connecticut and Illinois. These state officials were quoted on 56 occasions. Reporters even queried Mrs. Harold Denton (for a profile of her husband), Rosalyn Carter, rock singer Stephen Stills (who cancelled a concert in the area because of the accident), and an astrologer.

Many of these outside sources are neither pro- nor anti-nuclear. But others clearly fall into one or the other camp. A breakdown of the material coming from sources on one side or the other of the debate shows 264 quotes from anti-nuclear sources and 138 from pro-nuclear sources.

Heading the list on the anti-nuclear side (or at least opposed to current nuclear policy) was the Union of Concerned Scientists, quoted 91 times as a source during the accident. Fifty-five of these quotes appeared in the first two days of the accident, and 70 of the 91 came in the first 3 days. Two academicians closely identified with the anti-nuclear

side also received some press attention. Ernest Sternglass of the University of Pittsburgh was quoted 28 times in the first 3 days, and George Wald of Harvard was quoted 21 times in the first 3 days. Both made themselves available to the media early in the accident when official sources were scarce and disorganized.

Other anti-nuclear sources who appeared with some frequency were Ralph Nader and local activists William Vastine of TMI Alert, Chauncey Kepford and Judith Johnsrud. A number of anti-nuclear groups across the country were also contacted by journalists, including Mobilization for Survival, Missourians for Safe Energy, the Trojan Decommissioning Alliance, the Western Reserve Alliance, the Palmetto Alliance, the Piedmont Alliance for Safe Energy, and the Anti-Nuclear Defense Council.

Pro-nuclear sources are neither so numerous nor so diverse. Spokesmen for the Atomic Industrial Forum and American Nuclear Insurers were quoted 26 times and 13 times, respectively. Most of these statements appeared near the end of the first week. Reporters also contacted executives of many utilities operating nuclear power plants, including spokesmen for Arkansas Power and Light, Consumers Power, Commonwealth Edison, the Sacramento Municipal Utility District, Toledo Edison, Rochester Gas and Electric, and Florida Power. Representatives of the Edison Electric Institute were not much in evidence as sources. Very few pro-nuclear individuals not directly employed by AIF, the insurance industry, or a utility were quoted -- exceptions being Ralph Lapp and Alvin Weinberg.

A number of conclusions can be drawn from this analysis. First, a wide variety of outside sources were contacted by reporters. Second, more anti-nuclear than pro-nuclear sources were cited in articles about the accident in the first week. Either journalists sought out more anti-nuclear sources, or these sources made themselves more available to the media than did pro-nuclear sources. Third, anti-nuclear sources were more visible early in the accident. If one believes the importance of first impressions, this is significant. Fourth, the overall total of 1,719 statements from outside sources is relatively high, exceeding the total for the NRC alone. It demonstrates the ultimate impossibility of centralizing information about such an accident.

Conclusions

- (1) The federal presence in public information was much larger than the state or utility presence during the first week of the accident.
- (2) The centralization of information plan worked in that the top three sources of information were Denton, Carter/Powell, and Thornburgh.
- (3) Public information professionals, with the exception of Jody Powell, were rarely quoted as sources.
- (4) Of the identifiable sources, anti-nuclear sources played a more important role than pro-nuclear sources, particularly in the early stages of the accident.
- (5) Despite the centralization plan, reporters contacted a wide variety, and large number, of sources throughout the United States. Executives of other electric utilities and spokesmen for anti-nuclear groups were particularly popular.

F. RADIATION REPORTING

Introduction

Perhaps the most important information the public needs to know during a nuclear accident is how much radiation, if any, is escaping from the plant and whether that radiation poses a hazard to health. By coding 243 radiation reports in the 10 media surveyed for the week of March 28 to April 3, the task force attempted to evaluate how complete the radiation information being made available to the public actually was. Analysis found that in only 16 cases could these reports be considered complete.

The standard of completeness used for the purpose of this content analysis was a strict one, considering that much of the information that would have made a report complete was simply not being made available to the press. For example, Joe Deal, a Department of Energy official, was sent to the site on Thursday to coordinate radiation readings being taken by the NRC, Met Ed, and state and federal health personnel. But, although he clearly had access to the best radiation information available, Deal was under instructions not to talk to the press. Similarly, the state's Bureau of Radiological Protection, whose teams were monitoring radiation on a regular basis, was ordered by Paul Critchlow, the governor's press secretary, to stop talking to the press on Friday. As Cristine Russell, a reporter for the Washington Star with an extensive background in medicine and health, put it, "It was very hard to get information about what the real health impact was." Even after the NRC set up its press center in Middletown on April 2, Russell said, officials seemed "puzzled" that she was interested in such information.

But if some radiation data were being withheld from the press, other pieces of information were being misinterpreted by the press. Many reporters were illiterate when it came to radiation matters: they did not know what questions to ask; they did not understand the difference between rems and roentgens and man-rem; and they had no way of judging whether specific emissions posed a public health hazard. Some reporters learned the technical language of radiation and others consulted experts for advice, but, by and large, they remained confused.

Whether public information officials were more at fault than the press, or vice versa -- the content analysis made no attempt to assign blame -- the fact remains that radiation coverage at TMI was abysmally inadequate. To a reader or a viewer trying to decide whether to pack his bags and run, radiation reports in the media were often as useless as a baseball score of 6-4 that neglected to mention which teams had played.

A Standard of Completeness

In order to be considered complete, a radiation report had to include the following items:

1. Amount and Unit. This is the one piece of information the press almost always included -- a number alongside a unit of measurement, such as 1.2 rems or 30 picocuries. A report such as this one from the Harrisburg Evening News of March 31 was considered woefully incomplete: "The Wednesday morning accident at the nuclear plant spawned a radioactive cloud that was detected up to 16 miles away from the plant."
2. Rate. An amount and a unit of radiation measurement must frequently be accompanied by a time interval or rate. Any report of a burst of radiation, or a measurement in a particular place, is inadequate without a rate; that is, a radiation dose delivered over a period of time, and measured in a unit of time. Thus, a report of a 1200 millirem reading above the plant would be considered an incomplete measurement unless accompanied by a rate term such as "mrem per hour." This was one of the most frequent omissions made by the press during the accident. On March 30, for example, The Washington Post left out a rate when it reported readings in the reactor dome of "10 rems on the floor and a startling 20,000 rems on the ceiling."
3. Time and Duration. In order to evaluate the health consequences of a radiation emission, it is of value to know not only how much radiation was released, but when the release took place and how long it lasted. Of all the errors made by the press in radiation coverage during the accident, this was the most frequent omission. For example, a CBS News report Friday morning that "radioactive xenon gas had been released" neglected to mention either when the emission began or how long it lasted.
4. Where. This was the second most frequently omitted piece of information and certainly a crucial one for determining radiation health hazards. While the press usually made an attempt to indicate where a particular measurement had been taken, it was often too vague to be of value. A CBS report that radiation had been released "into the atmosphere" was considered inadequate.
5. Nature and Type of Radioactive Materials. There were at least three different radioactive materials released during the accident at TMI -- iodine-131, xenon-133, and krypton-85 -- and the press frequently failed to mention which one or whether all were being measured. This omission is significant because some radioactive gases like xenon and krypton are chemically inert (that **is**, they are not absorbed by the body's tissues, and they dissipate in the atmosphere relatively quickly), while other radioactive elements like iodine-133 are readily absorbed in the body (that is, iodine accumulates in the thyroid gland). When the press did distinguish between the different radioactive materials, it often neglected to explain the difference in meaningful terms. When

CBS, for example, reported the release of xenon gas into the atmosphere on Friday morning, it said nothing about the properties of xenon (although it did say that the release was "ten times the maximum dose considered safe for the general public for an entire year").

6. Type of Exposure. The press often failed to distinguish between a single release of radiation (a burst lasting for a finite time) and a continuous exposure. For example, when President Carter visited the control room at TMI on April 1, UPI reported: "Carter spent ten minutes in the control room, standing about 100 feet from the problem reactor. Two technicians with Geiger counters accompanied him and said radiation in the room measured 0.1 millirems while he was there." UPI neglected to specify whether the measurement represented a continuous exposure or a single release, in which case an exposure rate should have been given.

7. X-Ray Analogy. Various public officials tried to compare the danger of radiation releases at TMI with the amount of radiation received from an X-ray examination, such as a chest X-ray. On the surface, the analogy sounded like a convenient way to put the releases into perspective, but, it is misleading. An X-ray exposes only a part of the body to radiation, while exposure to radiation that escaped from the nuclear power plant was exposure to the whole body. Properly stated, the analogy should have been more appropriately compared with natural background radiation.

Thus, when an NBC reporter tried, on March 29, to explain a 12 millirem reading taken 2 miles from the plant by saying "we take in only 120 by diagnostic X-ray," his attempt to minimize the danger was misleading.

In sum, the public's right to know in this area was not well served during the accident. In most cases of radiation reporting, in every medium surveyed by the task force, important information was missing that was necessary to a reasonable understanding of the public health dangers. The fault lies with sources who failed to provide this information; and with reporters who confused matters with improper comparisons, insufficient background information, and factually impossible statements.

IX. LOCAL RADIO NEWS COVERAGE OF THE ACCIDENT

This report was compiled from interviews with more than 30 radio station managers, news directors, and reporters from Dauphin, Lancaster, and York counties. All available examples of local radio news programming from the time of the accident were examined. Additional material was supplied by the Roper Organization, Michigan State University, Franklin and Marshall College, the Dauphin County Office of Emergency Preparedness, and the National Association of Broadcasters.

Most local radio news reports during the accident at Three Mile Island were discarded soon after they were broadcast. This lack of original news copy created many problems in the compilation of this report and necessitated a heavy reliance on interviews with broadcasters. Tapes were acquired from WCMB of the two telephone call-in programs mentioned in the text, and some scripts and actualities of radio newscasts were provided by WHP-AM in Harrisburg and WSBA-AM in York.

A. THE IMPORTANCE OF LOCAL RADIO DURING THE ACCIDENT AT TMI

Local radio was the single most important source of information about the accident at Three Mile Island for the people of Dauphin, Lancaster, and York counties. A survey of local residents made at the time of the accident by Stanley Brunn of Michigan State University showed that 56 percent of those responding first heard of the accident through local radio.650/ Another poll made at about the same time by Martin H. Smith of Franklin and Marshall College showed that the same percentage of local residents cited radio as a major source of information about the accident.651/

Radio was far more important as a source of news to local residents during the accident than it was at other times. Sixty-two percent of local residents cited radio as their "most frequent source of news" during the accident. A 1976 Roper survey found that, nationally, only 19 percent of those responding cited radio as their "most frequent source."652/ Clearly, under accident conditions, the people living near Three Mile Island turned to local radio for information.

"Radio became more important than it had been since the 1940s," said Steve Liddick, News Director of Harrisburg station WCMB:

You can't wait until the newspaper comes out, you're panicked now. Television doesn't interrupt its programming that way, nor could it keep constant coverage going. Radio was the medium at that time.653/

B. THE RESOURCES OF LOCAL RADIO

If local radio was the news medium that most people turned to for information during the accident at Three Mile Island, it was also the news medium least able to cover the story.

There are no all-news radio stations in the Harrisburg broadcast market. Most stations in the area devote only a small part of their broadcast day to news, and they have news staffs of appropriate size for hourly 5-minute news reports. The number of news personnel at local stations varied from one to nine reporters, with most stations having four or fewer. Many of these reporters were young and inexperienced. Mike Pintek of WKBO put it, "There is no way you can run a 24-hour news operation with only five people." (A list of commercial radio stations licensed to serve the cities of Harrisburg, Lancaster, and York, including their programming format and size of news staff, appears as Appendix B.)

Because of such limitations, many local radio stations in the Harrisburg area had essentially "rip and read" news operations, taking most of their news from the wire service teletype. During the accident at Three Mile Island they were, by and large, forced to rely on Associated Press or United Press International to cover the story for them.

C. PROGRAMMING CHANGES IN RESPONSE TO TMI

As might be expected, the accident at Three Mile Island dominated radio news in the Harrisburg area throughout the week. Most radio programming schedules were changed to allow more news coverage than usual. "We clearly became an all-news station for more than a week," said WCMB News Director Steve Liddick, whose station normally plays soft rock music. "We continued to play some records, of course, but generally just to fill the time between newscasts or news conferences." Mike Pintek, news director of Top 40 station WKBO, agreed: "News totally dominated that period. We continued normal programming, but stopped everything whenever there was an update on the TMI story."654/

An informal survey of news directors and station managers indicated that most local radio stations increased their news coverage an average of 400 percent during the week of March 28-April 3. Five local stations carried NRC press conferences from Middletown and Governor Thornburgh's press briefings from Harrisburg as they happened. WHP provided the feed at no cost. One station, WCMB, ran telephone call-in programs to answer citizens' questions.655/

D. PRACTICAL PROBLEMS OF RADIO NEWS DURING TMI

Few stations were able to do much on-the-scene reporting about TMI. While newspapers and television stations have only one or two deadlines a day, radio stations often have a dozen or more. At least some personnel have to remain at the station to do the hourly newscasts.

Most stations responded to the crisis by asking employees to work longer shifts and by relying even more heavily on wire service accounts to report on an accident happening only a few miles away. There were some exceptions. WCMB used announcers and salesmen as reporters. "We had to cover the story and they were the only extra people available," said News Director Liddick. At WKBO, according to Pintek, "We put every spare hand on the phones to answer calls coming in. We even had the general manager answer questions on the phone." At WHP, a CBS affiliate,

there was increased cooperation between the radio news staff and the larger sister television news department in the same building.

Radio newspeople were also lacking in technical expertise about nuclear power. Of 11 radio reporters interviewed for this report, only two had ever so much as taken a tour of TMI.656/ Not one claimed any technical background that made him or her especially qualified to cover the story. And local experts were apparently difficult to find for consultation. "We would put on the air whatever we had that we could substantiate as soon as it came in," Liddick said:

but we probably went on the air at times when we shouldn't have and surmised things. We began to doubt the credibility of Met Ed from the second day of the accident and said as much on the air, pretty much without knowing for sure that we were right. We said that things were in good hands with the NRC, but really didn't have any proof of that either. We should have gone with experts, but they weren't available from any source, so we went on the air and some assumptions were made that tended to make people more distrustful of the information they were getting even from us.

Local radio newspeople had an especially difficult time dealing with apparently conflicting information. Lacking experts to explain or resolve apparent contradictions, most radio stations as well as newspapers simply adopted the policy of repeating whatever information was available while attributing that information to its source. This policy sometimes caused problems: because listeners could not go back and reread a radio broadcast, the public was not always sure which sources were saying what.

According to those interviewed for this study, wire service coverage of TMI, on which most stations depended, varied from "very good" to "criminal." Generally, the wire coverage was perceived as well-balanced, but a number of reporters reacted negatively to the Saturday evening AP story about the danger of a hydrogen bubble explosion. They considered this story in particular to have panicked many of their listeners unnecessarily. All of the reporters interviewed said they believed the wire service and network news reports to be more alarmist than local reporting.

In some cases, radio was helped by the presence of national media. WHP reporters, in particular, gained access to experts and to the audio material of the CBS news team that worked out of their studio. But often, local broadcasters felt themselves pushed aside as NRC and state officials gave preference to the networks and major newspapers. Local stations were also hindered in their newsgathering operations by a torrent of phone calls from broadcasters all over the world asking for something to give their listeners. By Friday, local stations began to hang up on such media requests.

But most radio stations continued to accept calls from anxious citizens. Jeff Bitzer of WHP recalled:

People would call in and ask, "Is it true that once I leave my house I won't be able to come back for a hundred years?" The community was upset. We wanted them to be upset if there was a reason, but we didn't want to scare them because we might be careless about what we were doing. Mostly, we told people what was being said. They wanted us to make decisions for them and we couldn't. We said, "That's a decision that you'll have to make. Here's the information that we have been given."657/

When local stations could not answer questions from the public they generally referred the calls to specific public agencies.

Not all calls from the public were handled privately. WCMB ran 8 hours of call-in programs on Sunday and Monday evenings, April 1 and 2. Hosted by Station Manager Harvey Tate, a former newsman, the programs attempted to answer the public's questions and concerns over the air. The results were mixed. (Recordings of these two programs were among the few examples of local broadcasting available for study in this report.)658/

Tate clearly saw his purpose as calming the public. He sought to inspire confidence in the public officials in charge. He repeatedly said that if there was any danger, he and his caller would not be talking on the phone; they would have been evacuated.

Tate's attitude during the broadcast was that local people were upset because of alarming information coming into the area from the outside world -- primarily from the national media. "The rest of the country, the rest of the world, was in a state of panic," he said. But they didn't have the full story, he added, calling the media reaction "hogwash."

But, beyond being reassuring, Tate was not very helpful answering specific questions. Many of the callers wanted to know about evacuation: Would there be an advance warning? Could pets be taken along? Did you have to evacuate if there was an order? There were also questions about insurance, school closings, and radiation. Tate did not have people with him to help answer such questions and, as a result, most questions were simply not answered at all. This had the effect of undercutting Tate's own objective of calming the public.

E. OTHER PROBLEMS OF RADIO NEWS DURING TMI

The Harvey Tate call-in program on WCMB was typical of local broadcasters' concern to maintain calm above all. The last thing Tate wanted to do was upset his audience. "As each new theory comes in," he said, "we've had to weigh it and say, 'What will the people think of that? How will they react if we put this on the air?'" And we've had to be so darned careful in making sure not to upset this population."

Most broadcasters shared Tate's fear of causing panic in the local radio audience. But, in retrospect, a number of radio reporters wondered whether they had not played it too safe. Would they have served the

public better, they asked, if they had been more open about airing differing viewpoints?

Mike Pintek at WKBO broadcast Dr. Ernest Sternglass's recommendation on Thursday, March 29, that pregnant women and preschool children evacuate. This was one day before the governor's similar recommendation, and it touched off a wave of panic in the Harrisburg area. When he realized what effect the Sternglass recommendation was having, Pintek stopped using the story in his hourly newscasts. Then, after consulting with a number of people, including Sandy Starobin of Group W's Harrisburg bureau, who convinced Pintek that the public was owed this information, even though it was only one man's opinion, Pintek put the story back on the air. "I realized that taking Sternglass off the air was a mistake soon after I did it," Pintek said:

The phones started ringing and I began to think, "Who am I, 27 years old and telling thousands of people that maybe they should get out of here?" I panicked, simple as that. But later I realized that the public has a right to know all sides and a right to protect their own health, so when the possible evacuation story came through on Friday, I not only ran it, I bulletined it because I'd heard a reliable source say that an evacuation might take place and I wanted my listeners to be ready. That's what I owed my audience -- information.

At WHP, Jeff Bitzer recalled:

We tried to give the people everything we had on the premise that a well-informed public would make the right decision, and we tried to make that information the most accurate we could produce. At the same time, though, we wanted to present things in a reasoned and cool manner that was not one of panic. We may have over-reacted on that side -- we may have been too cool. Later, on Sunday or Monday, we had a discussion about this. At one point, we thought we had some inside information that the governor was going to order an evacuation that day and thought, "Who the hell are we to withhold this information?" There was a lot of soul-searching.

F. PARTICULAR EXAMPLES OF COMMUNITY SERVICE DURING TMI

WKBO broke the story of the accident at Three Mile Island on its 8:25 a.m. newscast on March 28. Through good reporting, Mike Pintek and his staff were able to give a few details of what had happened at the power plant before any national media carried the story. Dave Edwards, the WKBO traffic reporter, told Pintek at 8:05 a.m. that a friend had told him that local civil defense units were being activated for an unknown reason. Pintek called Dauphin County officials, the county police, and the fire dispatch center, all of which denied the story. Then Edwards noticed that no steam was coming out of the TMI cooling towers. Calls to Met Ed headquarters in Reading and to the TMI 2 control room (which got through because of an error by a nervous switchboard operator) yielded a confirmation that there had indeed been an accident.

WCMB attempted to provide a number of unusual services during the accident. The station commissioned a public opinion poll in cooperation with the Philadelphia Inquirer to determine public attitudes toward nuclear power. A rumor-control line was established to check on rumors called in by the public. And WCMB ran two live call-in programs without commercial interruption.

G. PARTICULAR EXAMPLES OF COMMUNITY DISSERVICE DURING TMI

On a number of occasions, local radio did not serve the public's right to know during the accident at Three Mile Island. For example, WSBA News Director Ed Wickenheiser was informed of a problem at the plant shortly before 7:30 a.m. on Wednesday, March 28. The news came from Leslie Jackson, York County chief of emergency operations. Wickenheiser did not broadcast the story, even though he had it an hour before any other news organization. "Jackson informed me of the situation as a part of his emergency plan, since we are the primary Emergency Broadcast System station for this county," Wickenheiser said later. "Of course I did not put the story on the air." Wickenheiser missed an opportunity to inform the public of a potential danger to its health.

At WKBO, the only local radio station to carry Dr. Ernest J. Sternglass's recommendation that pregnant women evacuate the area, a disc jockey made some on-air comments indicating that the recommendation was an official order. As Pintek recalled:

At that point, after hearing so many contradictory statements, I felt Dr. Sternglass was as much a legitimate authority as anybody else. Unfortunately, our disc jockey commented on Sternglass's statement and made it sound like there was an official order for women and children to leave the area. I ordered it stopped and said that all statements would come from the newsroom. People were calling in panic. I didn't know what to do, how to stop it, if indeed I should. Eventually we got someone from the Health Department and a DER official to talk about Sternglass and balance the story. I don't know if we were to blame for the panic on Thursday. I do know that our disc jockey was saying some things that were not in perspective.

A news bulletin Sunday evening, April 1, on WCMB announced that banks had been authorized to close the following day. The newsman did not specify in his report that this authorization only applied to bank branches within 5 miles of TMI and that all other branches would be open as usual. Though the story was corrected by the station manager almost instantly, WCMB newsmen reported receiving calls from worried listeners far into the following day.

In interviews with station managers, news directors, and reporters, the most frequently cited disservice was the broadcasting of certain

network or wire service news reports. Most local newsmen took exception to the Saturday night AP story about an imminent hydrogen bubble explosion, feeling that it did not correctly reflect the situation as they saw it in Harrisburg. On the other extreme, ABC affiliate WCMB disavowed a Paul Harvey commentary that said, "Everything is now fine at Three Mile Island." News Director Steve Liddick went on the air following the Paul Harvey broadcast and said, "Things are far from fine here in Harrisburg."

X. QUALITATIVE SURVEY OF NEWSPAPER COVERAGE OF THE ACCIDENT

To examine the tone of press coverage of the accident at Three Mile Island, the Public's Right to Information Task Force examined 43 newspapers nationwide that were not included in the content analysis study. The Task Force examined headlines and graphics as well as news copy in these papers, which range in size from big-city dailies like the Baltimore Sun and the New York News to medium-size dailies like the Charlotte (N.C.) Observer to small dailies like the Great Falls (Montana) Tribune and the Fargo (N.D.) Forum. Most of the papers in the sample are among the leading media in their respective states. A complete list of the papers surveyed appears at the end of this report.

The vast majority of papers in the survey presented TMI stories in an unalarming, sober manner. However, two large and highly visible papers in New York, through the use of dramatic headlines and stories, did report on the accident in a more sensational manner.

Of the papers surveyed during the week of March 28 to April 3, the Pittsburgh Press carried the most stories about TMI (66), followed by the Boston Globe (62) and the Miami Herald (61). Close behind were the Baltimore Sun (59), the Portland Oregonian (58), and the Arizona Republic (52). The papers that carried the fewest stories about TMI were the Great Falls Tribune (7), the Manchester Union Leader (9), and the Southeast Alaska (Juneau) Empire (10). The average number of stories was 30.

Of the 43 papers surveyed, about two-thirds relied heavily on wire service and special news service material for their coverage of TMI. These papers favored AP material over UPI by a margin of almost 4-to-1. Only six of the papers in the sample drew 75 percent or more of their material from their own staff reporters. This heavy reliance on wire material produced strong similarities in the coverage.

One important difference in coverage, however, between papers in the non-quantitative survey and those in the content analysis concerned the hydrogen bubble. Some of the larger papers which had their own reporters at the site were able to print on Sunday morning Denton's optimistic belief that the bubble was not explosive alongside AP's gloomy story that the bubble might explode. For example, the Milwaukee Journal ran its correspondent's optimistic report on the front page alongside the AP story. Some papers relied only on the AP for this story and presented only alarming headlines on Sunday morning:

- "U.S. Fears Non-Nuclear Blast" (Detroit News).
- "Gas Explosion Feared At Crippled A-Plant: Evacuation Weighed" (Baltimore Sun).
- "Gas Bubble Perils Nuclear Plant" (Cleveland Plain Dealer).

Not until Monday did these papers break the "First Good News: Gas Bubble Shrinks" (Cleveland Plain Dealer, April 3).

One very unusual story by a staff reporter appeared in the Washington Star on April 2. President Carter visited the site on Sunday, and most papers, whether they relied on staff or wires, covered his visit from an angle which can be summarized as: "If the President can come, the plant must be safe." But the Star's front page bore the grim headline, "Carter's visit to troubled plant fails to allay fears"--very much the opposite of other coverage. The article quoted many residents' negative reactions to Carter's arrival.

A. PHOTOGRAPHS

Because the story -- the state of the reactor and the radiation releases -- was invisible, all papers used similar photographs that were occasionally trivial, but rarely alarming. Some typical examples include: a photograph -- distributed by a wire photo service -- of local resident Catherine Mayberry protecting her baby daughter from radiation with a blanket; the individual citizen, or herd of cows, set against the reactor, usually represented by the easily recognizable cooling towers; departing citizens, empty neighborhoods, and evacuees in their temporary shelter in Hershey's hockey arena.

The content of the photographs was generally so uniform and unexceptional that only one objection can be raised. The photographs of individuals set against the ubiquitous cooling towers are misleading, giving the impression that the towers had something to do with the accident, or that people were standing directly in front of the plant. In fact, the island site was off limits to the public and the media.

On April 1 the Detroit News, which consistently downplayed the accident, ran one rather alarming photograph of a Met Ed worker driving away from the plant wearing a gas mask. The photo ran on an inside page. Another photograph in the Washington Star (March 30) showed a worried family looking out their living room window at the dreaded cooling towers. This photo also appeared inside the paper. Occasionally, a paper coupled a potentially optimistic photo with an ominous caption, such as the Christian Science Monitor photo on April 2 of a single jogger: "In reactor's shadow -- a lonelier than usual runner." On April 1, the Jackson (Mississippi) Clarion-Ledger ran a photograph of TMI silhouetted at dawn with the alarming caption: "Three Mile Island . . . Beauty or Holocaust?" This photo also appeared inside the paper.

B. HEADLINES

Papers in the sample other than the New York Post and the New York News ran headlines that were neither particularly reassuring nor alarming. A sample follows.

Detroit News

"Safety Device Works in Nuclear Accident" (3/28)

"Residents safe in A-plant leak officials insist" (3/29)
"Pennsylvania Calm in Wake of Nuclear Crisis" (3/30)
"Meltdown Risk Remote Carter A-Expert Insists" (3/31)
"Officials Report Major Progress at Nuclear Plant" (4/2)
"Check of Reactor Will Have to Wait" (4/3)

Baltimore Sun

"Radioactive Gases Escape in Pa." (3/29)
"Leak Stirs Call for Nuclear Plant Shutdown" (3/30)
"Possibility of Reactor Meltdown Debated; Pregnant, Young Leave" (3/31)

Houston Post

"Radiation Emitted From Nuclear Plant" (3/29)
"Radiation Leaks Still Not Halted From Plant" (3/30)
"Dilemma At Three Mile Island, Officials trying to decide what todo with the gas bubble" (4/1)
"Nuclear Plant Gas Bubble Being Reduced" (4/2)
"Three Mile Island Crisis Eases" (4/3)

Cleveland Plain Dealer

"Nuclear Accident Emits Radiation, cause, danger are disputed" (3/29)
"Radiation Levels Dip; N-Dispute Rages On" (3/30)

Potentially alarming headlines seem to have been very carefully written, indicating an effort to downplay danger. The Houston Post described radioactivity as "emitted," not "spewed" from the plant; a comforting sub-head ran, "Officials in Pennsylvania see no immediate danger." A Detroit News subhead said that thousands of families were "leaving" the area -- not "fleeing" or "evacuating."

Some headlines that mentioned "meltdown" softened it with soothing phrases: the Detroit News said it was a "remote" risk; the Baltimore Sun said the "possibility" was being debated. The consistently low-key Cleveland Plain Dealer never mentioned meltdown or any risk of the bubble's exploding in a headline. Mon March 29, the Fargo Forum reduced the accident to a minor annoyance: "Meltdown threat nags residents" [Emphasis added]. The Houston Post chose to contradict one alarming headline, "Evacuees are Frightened, Mad," with a photography of grinning local teenagers in a convertible with a homemade bumper sticker that read, "Just out absorbing some radiation."

On Thursday the Detroit News ran the most reassuring headline possible: "Residents Safe in A-plant Leak, Officials Insist."

Two Exceptions: The New York News and the New York Post

While other papers seem to have worked hard to be as reassuring as possible, the New York News offered some sensational headlines and

stories. A tabloid newspaper, it has long been distinguished for its ingenious and amusing headlines. Its writers unleashed their talents for the TMI crisis. Their best effort appeared on March 31: "To flee or not to flee, that is the question in Pa. hamlet." The reporter adopted a science-fiction tone favored by some News reporters during the accident:

Goldsboro, Pa. -- For residents of this community, it's like having a monster sleeping, -- but always malignant -- in your backyard . . . The stirring monster has aroused fears that were never here before, and about half of the 600 residents have packed up and fled . . . You could call it a ghost town, except that sleepy Goldsboro was never exactly a bustling metropolis.

The day before, the same reporter had visited another "Pa. hamlet" and found a landscape reminiscent of the post-nuclear desolation of the film "On the Beach." The headline over this article was: "Doomsday -- Is this the way it will dawn?" and his story began:

Royalton, Pa. -- It was a foretaste of doomsday, here in this little town one mile from the stricken nuclear plant. This was how the last moments could come to a hamlet placed too close to nuclear power now out of control. The devilish thing was you couldn't see anything that would tell you how close catastrophe was.

On April 3, this reporter produced another story that promised holocaust: "An Especially Silent Spring on Farm." Dated Middle-town, the piece began, "The beast lay there half hidden by drifting mists yesterday . . . here there were no animals, nothing that moved." The story turned out to be about farmers who were not evacuating their animals.

This reporter's stories were mild, however, compared to the efforts of News columnist Jimmy Breslin, who in his writing often focuses on the lives of average citizens, many of them from Breslin's neighborhood in Queens. Breslin tends to combine reporting with fiction, using a combination of real and fictional characters in his columns. The best that can be said of his version of TMI is that it made lively reading and a vivid contrast to most other stories:

I kept listening to the car radio tell about the malfunction in a nuclear plant near Harrisburg, Pa., yesterday. There was a broke: valve somewhere in the nuclear reactor, and this caused, the power company man announced, "a puff of radioactivity" to be released into the atmosphere. I loved that. "A puff." That's what they hit the east ward of Nagasaki with. "A puff." "Step on it, Dennis," I yelled, "It could be the end of Pennsylvania."

So Dennis the driver took a chance and started to gun the car toward the holocaust. My heart jumped when I heard the lieutenant

governor of Pennsylvania say over the radio, "The incident is minor. There is and was no danger to public health and safety."

"That means they must have thousands dead," I yelled. "Hit it, Dennis." (March 29)

Once he arrived at TMI, Breslin, who has no technical background, reported no radiation figures, but he described some strange symptoms:

I don't know why I wasn't feeling good. I had plenty of sleep and not much to eat, and certainly nothing to drink. But I sure knew I wasn't feeling good. My stomach was rolling, and my teeth were throbbing and I was pretty sure that any moment now my teeth would start dropping out of my mouth. . . Only the uninformed, the hysterical would use this little accident to criticize nuclear power. Of course I knew this. It was just that right now there was this pain rippling across the top of my head and when I grabbed my hair to stop the pain, I could feel all my hair coming out by the roots.

On Saturday, Breslin, still finding that when he went outdoors, "my breath stopped and my legs would not move," described a research trip to the site where "steam drifted out of the tops of the four cooling towers and ran down the sides like candle wax. The steam was evil, laced with radiation." This error was followed by an even more egregious description of the bubble that began, "Radioactive gas has formed on top of the reactor. This is the steam we see rising from the cooling towers." Breslin wound up his reporting from TMI on April 2 by criticizing Carter's visit as not reassuring enough because he did not bring Amy with him.

In spite of Breslin's excesses, many of which must be tongue-in-cheek, the News itself printed only one sensational front page headline, on March 31, which read, "NUCLEAR CRISIS; Pregnant women, kids flee N-zone." An April 3 headline on the front page, "H-BLAST DANGER FADES AT PLANT" can be faulted for using a shorthand that may spell H-bomb in the public's mind.

The New York Post managed to run alarming headlines even when the news was good. On April 2, when the bubble was shrinking, the Post said "Evacuation Plans Stepped Up;" "Nuketowns Go to Breaking Point;" "They may clear out just to ease stress." The next day, the Post ran several stories about psychological fallout from the accident under the following heads: "The 'Psycho' Risk Facing Nuketown Folk;" "Fear Rash of Depressions;" "Checking Out in Haste" (about local residents closing bank accounts); "Dark Cloud of Mistrust that Hangs Over a Village."

The first day's front page headline went well beyond the fact that radiation had been emitted from the plant. Post readers were told "NUKE CLOUD SPREADING." This headline was accompanied by a misleading picture of the ever-present cooling towers and a mother and child running in a

field. It is not clear what, if anything, the pair are running toward, or from. The Post also ran a picture and story entirely devoted to a Mrs. L. Hardison who lives near the plant, and who was claiming that her goat had been made ill by radiation. Stories about ailing animals appeared elsewhere, notably in the Philadelphia Inquirer, but no other paper played Hardison's goat as prominently as the Post did.

On March 29, while other papers were emphasizing that leaks had, for the moment, stopped, the afternoon Post's front page read: "NUKE VAPOR STILL LEAKS. SPREAD NOW EXTENDS 20 MILES." On March 30, the main headline was "NUKE LEAK GOES OUT OF CONTROL" (actually closer to the truth than some less alarming heads in other papers). Inside, the paper used the Catherine Mayberry photo with the headline, "Nuclear Moms Lock up their Children" -- an obvious mismatch in view of the fact that Mayberry was taking her daughter outdoors. On March 31, the Post screamed: "RACE WITH NUCLEAR DISASTER: Baffled Scientists struggle to ward off A-plant meltdown; Harrisburg on edge of nightmare; Residents flee towns near site; Radioactivity watch set in upstate New York; Protest rallies here, Columbia axes reactor."

Especially when contrasted with the sober coverage of other papers in the sample, the Post, and to a lesser degree the News, behaved in an unusually alarming manner. Their coverage stands out amongst the generally low-key approach taken by other papers in the sample. Neither paper seems to have made the effort other papers did to present TMI information in as straightforward a manner as possible.

SAMPLE, ALPHABETICALLY BY CITY

Albany (N.Y.) Times-Union
Albuquerque Journal
Arizona Republic
Arkansas Gazette
Atlanta Constitution
Baltimore Sun
Boston Globe
Charleston (S.C.) News and Courier
Charleston (W.Va.) Gazette
Charlotte (N.C.) Observer
Chicago Tribune
Christian Science Monitor (Mass.)
Cincinnati Enquirer
Cleveland Plain Dealer
Daily Oklahoman
Des Moines Register
The Deseret (Utah) News
Detroit News
Fargo (N.D.) Forum
Great Falls (Mont.) Tribune
Honolulu Star-Bulletin
Houston Post
Indianapolis Star
Jackson (Miss.) Clarion-Ledger

Louisville Courier-Journal
Manchester (N.H.) Union-Leader
Miami Herald
Minneapolis Tribune
New Orleans Times-Picayune
New York News
New York Post
Omaha World Herald
Pittsburgh Press
Portland Oregonian
Portland (Maine) Press-Herald
Providence Journal
Rochester Democrat and Chronicle
San Francisco Chronicle
Seattle Times
Sioux Falls (S.D.) Argus-Leader
Southeast Alaska Empire (Juneau)
Washington Star (D.C.)
Wichita Eagle

NOTES

1/ Lawrence W. Nolte, Fundamentals of Public Relations, New York: Pergamon Press, 1974, pp. 1-55.

2/ Task force interview with Blaine Fabian by Sandman and Popkin, pp. 109, 58.

3/ Preparation, Approval, and Release of Public Announcements Concerning Generating Stations, Metropolitan Edison, GP 0021, Revision 2, 1978.

4/ Task force interview with Fabian by Sandman and Popkin, p. 32.

5/ Station Health Physics Procedure 1670.13, Vol. 1, Emergency Plans and Procedures, Release of Information to the Public, Three Mile Island Nuclear Station, Revision 1, June 23, 1977, p. 1.

6/ Three Mile Island Site Emergency Plan 1004, Section 2, Revision 2, Section 2, Feb. 15, 1978, p. 13.1.

7/ Memorandum from William B. Murray, Vice President for Communications, General Public Utilities Service Corporation, to C. Aslaksen, R. G. Baker, S. Bartnoff, W. M. Creitz, E. W. Schleicher, J. F. Smith, on Public Information Policy, June 24, 1976.

8/ Michael L. Bancroft, Robert B. Stulberg, Robert McIntyre, "Death and Taxes: An Investigation of the Initial Operation of Three Mile Island No. 2," Public Citizen, Washington, D.C.; accounts of 1978 TMI events also were published in the Philadelphia Inquirer, the York Daily Record, and the Lancaster New Era.

9/ G. Hoyt Whipple, excerpts from a text of a speech to the Met Ed Nuclear Science Conference, April 13, 1971.

10/ "Impact/Effectiveness of Metropolitan Edison Company's Communications Program -- Statistical Findings," BSI Inc., Malvern, Pa., May 1974.

11/ Robert G. Reid, "The View from Middletown," SIPIScope, Vol. 7, No. 23, March-June 1979, p. 11.

12/ Task force interview with Karl Abraham, pp. 54-55.

13/ Task force interview with Joseph Fouchard, p. 25.

14/ Task force interview with Karl Abraham, p. 69.

15/ Task force interview with Frank Ingram, p. 12.

16/ Task force interview with Joseph Fouchard, p. 31.

- 17/ Memo of August 23, 1978, from Karl Abraham to Joseph Fouchard on "Request of 8/14/78 for Comments on the Recommendation by J. Bennett Easterling," p. 1.
- 18/ Ibid. p. 3.
- 19/ Task force interview with Robert Bernero, p. 19.
- 20/ Task force interview with Karl Abraham, p. 99.
- 21/ Task force interview with Karl Abraham, p. 99.
- 22/ Task force interview with Frank Ingram, p. 15.
- 23/ Task force interview with Frank Ingram, p. 14.
- 24/ Transcript of NRC/IRC telephone logs, 01-01271-CH 7/25-EH-5.
- 25/ Transcript of NRC/IRC telephone logs, 04-237-CH6/24-LFR-1 to 5.
- 26/ Task force interview with Blaine Fabian, p. 32.
- 27/ Task force interview with Blaine Fabian, p. 34.
- 28/ Task force interview with Blaine Fabian, p. 58.
- 29/ Task force interview with Walter Creitz, p. 16.
- 30/ Task force interview with Joseph Fouchard, pp. 1-5.
- 31/ Chapter NRC-0502 NRC Incident Response Program, NRC Appendix 0502, Part 1, 8b, p. 4.
- 32/ NRC Headquarters Incident Response Plan, revised Jan. 1, 1979, p. 4.4.
- 33/ Task force interview with Karl Abraham, p. 17.
- 34/ Task force interview with Joseph Fouchard, p. 7.
- 35/ Task force interview with Walter Creitz, p. 22.
- 36/ Task force interview with John Herbein, p. 67.
- 37/ Task force interview with John Herbein, p. 66.
- 38/ Letter to Frank Ingram from Karl Abraham, through James P. O'Reilly, on NRC Public Affairs Program, Sept. 2, 1976, Enclosure C. p. 2.
- 39/ Task force interview with Blaine Fabian, p. 26.
- 40/ Task force interview with Joseph Fouchard, pp. 106-107.

- 41/ Task force interview with David Klucsik, p. 59.
- 42/ Task force interview with Blaine Fabian, pp. 175-176.
- 43/ Task force interview with Karl Abraham, p. 41.
- 44/ Task force interview with Karl Abraham, p. 45.
- 45/ Task force interview with Paul Critchlow, pp. 46-48.
- 46/ Task force interview with Karl Abraham, pp. 42-43.
- 47/ Task force interview with Joseph Fouchard, p. 5.
- 48/ Task force interview with Blaine Fabian, pp. 29 and 56.
- 49/ Task force interview with Robert Arnold, p. 27.
- 50/ Task force interview with Karl Abraham, p. 112.
- 51/ Task force interview with Thomas Gerusky, p. 48.
- 52/ Task force interview with Joseph Fouchard, p. 97.
- 53/ Task force interview with Frank Ingram, pp. 29, 32-34.
- 54/ Task force interview with Frank Ingram, pp. 32-34.
- 55/ Task force interview with Dudley Thompson, pp. 2-5.
- 56/ Task force interview with Edson Case, p. 15; also see transcript of NRC/IRC telephone logs, 01-226-CH 6/24-LFR-15.
- 57/ Task force interview with Darrel Eisenhut, notes.
- 58/ Task force interview with Karl Abraham, p. 123.
- 59/ Task force interview with Karl Abraham, p. 128.
- 60/ Task force interview with Karl Abraham, pp. 79-80.
- 61/ Task force interview with Karl Abraham, p. 88.
- 62/ NRC/IRC telephone logs, 01-135-CH4/22-WH-1 and 3.
- 63/ NRC/IRC telephone logs, 01-135-CH4/22-WH-2.
- 64/ Task force interview with Karl Abraham, p. 130.
- 65/ Task force interview with Joseph Fouchard, p. 13.
- 66/ Task force interview with Karl Abraham, p. 142.

67/ Task force interview with Karl Abraham, p. 151.

68/ Task force interview with Karl Abraham, p. 148.

69/ Task force interview with Richard Vollmer, p. 6.

70/ Task force interview with Richard Vollmer, p. 8.

71/ Task force interview with Karl Abraham, p. 215.

72/ Task force interview with Paul Critchlow, p. 36.

73/ Task force interview with Edson Case, p. 3.

74/ Task force interview with Paul Critchlow, p. 35.

75/ Memo of March 30, 1979, from William E. Odom to Zbigniew Brzezinski on "Report to the President on Ad Hoc Meeting on Nuclear Reactor Accident."

76/ Task force interview with Harold Denton, p. 5.

77/ Task force interview with Harold Denton, p. 8.

78/ Task force interview with Harold Denton, p. 67.

79/ Task force interview with Harold Denton, p. 7.

80/ Task force interview with Harold Denton, p. 8.

81/ Task force interview with Harold Denton, p. 11.

82/ Task force interview with Joseph Fouchard, p. 161.

83/ Task force interview with Curtis Wilkie.

84/ Task force interview with David Salisbury.

85/ Task force interview with Richard Roberts.

86/ Task force interview with Casey Bukro.

87/ Task force interview with Tom Baxter.

88/ Task force interview with Frank Ingram, p. 41.

89/ Commission deposition of Commissioner Gilinsky, pp. 118-120.

90/ Task force interview with Frank Ingram, pp. 44-45.

91/ Task force interview with Ken Clark, notes.

92/ Task force interview with Frank Ingram, p. 10.

93/ Memo of March 31, 1979, from Jack Watson to the President on "Status Report -- Three Mile Island Nuclear Facility Report #3," p. 2.

94/ Task force interview with Edson Case, pp. 38-39; see also NRC/IRC telephone logs, 04-237-CH6/24-LFR-1 to 6.

95/ Task force interview with Edson Case, p. 38.

96/ Task force interview with Edson Case, pp. 43-55.

97/ Task force interview with Edson Case, p. 45.

98/ Task force interview with Frank Ingram, p. 17.

99/ NRC/IRC telephone logs, 03-841-CH19/203D-SAC-9.

100/ NRC/IRC telephone logs, 03-841-CH19/203D-SAC-9.

101/ Task force interview with Karl Abraham, p. 6.

102/ Task force interview with Karl Abraham, p. 25.

103/ Task force interview with Robert Bernero, p. 13.

104/ Task force interview with Robert Bernero, pp. 15-16.

105/ Task force interview with Robert Bererno, pp. 4 and 17.

106/ Task force interview with Robert Bererno, p. 61.

107/ Task force interview with Robert Bernero, p. 7.

108/ Task force interview with Karl Abraham, p. 27.

109/ Task force interview with Harold Denton, p. 68.

110/ Task force interview with Mary Bradley.

111/ Task force interview with Karl Abraham, p. 35.

112/ Task force interview with Karl Abraham, p. 32.

113/ Task force interview with Joseph Fouchard, p. 121.

114/ Transcript of Denton press conference of April 2, 1979, p. 8.

115/ Metropolitan Edison's Three Mile Island Emergency Plan (as revised 6/23/77), Section 3 (3.2.1) and Section 5 (1670.13).

116/ Metropolitan Edison chronology of the accident, supplied to the Public's Right to Information Task Force, entry for March 28, 1979, 8:30 a.m.

117/ Task force interview with Michael Buring, p. 25.

118/ Task force interview with John Herbein, p. 78.

119/ Testimony of John H. MacMillan before the President's Commission on the Accident at Three Mile Island, July 20, 1979, pp. 440-442.

120/ Task force interview with Blaine Fabian, p. 6.

121/ Task force interview with Blaine Fabian, p. 23.

122/ Task force interview with Mary Bradley.

123/ Task force interview with David Klucsik, p. 30.

124/ Task force interview with Robert Arnold, p. 23.

125/ Task force interview with R. H. *Klingaman*, pp. 46, 22-23.

126/ Task force interview with David Klucsik, p. 35.

127/ Task force interview with Blaine Fabian, p. 85.

128/ Task force interview with Blaine Fabian, p. 86.

129/ Chronology of the accident at Three Mile Island supplied to the Public's Right to *Information* Task Force by Judy Botvin, p. 2.

130/ Chronology of the accident at Three Mile Island supplied to the Public's Right to *Information* Task Force by Judy Botvin, p. 2.

131/ Task force interview with Blaine Fabian, p. 123.

132/ Task force interview with Blaine Fabian, pp. 145-149.

133/ Task force interview with Blaine Fabian, pp. 29-30.

134/ Memo of March 31, 1979, from Jack Watson to the President on "Status Report -- Three Mile Island Nuclear Facility Report #3, p. 2.

135/ Task force interview with John Herbein, p. 8.

136/ Task force interview with John Herbein, p. 8.

137/ Task force interview with Robert Bernero, pp. 93-94.

138/ Task force interview with Walter Creitz, notes.

139/ Task force interview with Blaine Fabian, p. 58.

140/ Transcript prepared by Metropolitan Edison of John Herbein's press conference of March 30, 1979, at Legion Hall in Middletown, 11 A.M., p. 7.

141/ Task force interview with Blaine Fabian, p. 109.

142/ Task force interview with John Herbein, p. 72.

143/ The analysis of the public relations adequacy of Legion Hall was done for the task force by Roy Popkin, expert in disaster public relations for the Red Cross and a consultant to the Commission.

144/ Task force interview with Blaine Fabian, pp. 15-19.

145/ Task force interview with George Troffer, pp. 72-73.

146/ Task force interview with George Troffer, p. 73.

147/ Task force interview with George Troffer, p. 46.

148/ Task force interview with R.H. Klingaman, p. 11.

149/ Task force interview with Richard Lyons.

150/ Task force interview with Blaine Fabian.

151/ Task force interview with George Troffer, pp. 63-64.

152/ Task force interview with George Troffer, p. 69.

153/ Task force interview with George Troffer, p. 76.

154/ Task force interview with Blaine Fabian, p. 179.

155/ Task force interview with Paul Critchlow, p. 41.

156/ Task force interview with Paul Critchlow, p. 3.

157/ NRC/IRC telephone logs, 04-091-CH 3/21-SW-1 through 04-092-CH 3/21-SW-1 to 4.

158/ Task force interview with Paul Critchlow, p. 35.

159/ Task force interview with Paul Critchlow, p. 51.

160/ Task force interview with Thomas Gerusky, p. 132.

161/ Task force interview with Paul Critchlow, p. 5.

162/ Task force interview with Paul Critchlow, p. 17.

163/ Task force interview with Paul Critchlow, pp. 5-26.

164/ Task force interview with David Milne, pp. 57-58.

165/ Task force interview with Kevin Molloy, pp. 51-55.

166/ Task force interview with Kevin Molloy, pp. 81-82.

167/ Task force interview with Kevin Molloy, pp. 120-121.

168/ Task force interview with Paul Critchlow, p. 58.

169/ Gulf Oil Company, Public Relations Policies and Procedures, September, 1972.

170/ Memo from Daniel Prewitt, Eastern Field Office, American Red Cross, to Peg Mott, Pennsylvania State Liaison, American Red Cross, June 12, 1979.

171/ Task force interview with Carlton Kammerer, notes.

172/ Task force interview with Edson Case, pp. 21-24.

173/ Metropolitan Edison chronology of the accident, supplied to the Public's Right to Information Task Force, entry for 1300 hours, p. 6.

174/ Task force interview with Carlton Kammerer, notes.

175/ Task force interview with Carlton Kammerer, notes.

176/ Task force interview with Walter Creitz, p. 28.

177/ Task force interview with George Troffer, p. 40.

178/ Task force interview with R.H. Klingaman, p. 53.

179/ Task force interview with John Herbein, p. 64.

180/ Task force interview with Ken Clark, notes.

181/ Task force interview with John Hilbish, p. 9.

182/ Task force interview with Robert Bernero, pp. 15-16.

183/ Task force interview with Roger Mattson, p. 15.

184/ Task force interview with Harold Denton, pp. 72-73.

185/ Task force interview with John Herbein, pp. 31, 50-51, 82, 100, 104-5.

186/ Task force interview with Karl Abraham, p. 49.

187/ Memo of August 23, 1978, from Karl Abraham to Joseph Fouchard on "Request of 8/14/78 for Comments on the Recommendation by J. Bennett Easterling," p. 6.

188/ Task force interview with Robert Bernero, pp. 111-114.

189/ Three Mile Island Emergency Plan, Volume I, 1004 Revision 1, June 1, 1978, Section Two, pp. 7.0-8.0.

190/ Ibid., pp. 7.0-8.0.

191/ Three Mile Island Emergency Plan, Volume I, 1670.13 Revision 1, June 23, 1977, p. 1.0.

192/ Three Mile Island Emergency Plan, Volume I, 1670.13 Revision 1, June 23, 1977, p. 1.0.

193/ Dubiel, p. 24, 8. In some cases, transcripts of interviews have been edited for grammar and fluency.

194/ Transcripts of telephone conversations at the Nuclear Regulatory Commission's Incident Response Center (IRC) in Bethesda, Md., #01-01018CH2/20 GFC-5,6. Researchers who consult the NRC's transcripts of these tapes will find that they do not always correspond to the versions in this report. In most instances, the task force has listened to the tapes in order to identify speakers and portions of the tapes labelled "Inaudible" by the transcribers.

195/ Scranton, p. 12.

196/ Milne, pp. 16, 26.

197/ Molloy, p. 12.

198/ Critchlow I, p. 43.

199/ Jackson, p. 14.

200/ Dornsife, p. 28.

201/ Milne, p. 67 In early October 1976, a cloud of fallout from an atmospheric nuclear test conducted by the Chinese passed over the United States. Over Pennsylvania, a rainstorm washed radioactivity out of the atmosphere. DER traced greater measurements of radioactivity over a wider area than during the accident at TMI.

202/ Milne, pp. 17, 18, 19.

203/ Henderson, p. 23.

204/ Scranton, p. 80.

205/ Knouse, p. 13.

206/ Dubiel, p. 9.

207/ Ibid., pp. 11-12.

208/ Gerusky, p. 38.

209/ 10:55 a.m. State press conference transcript, March 28, p. 2.

210/ Dornsife, p. 49.

211/ McKee, pp. 19-20.

212/ Ibid., p. 17.

213/ Ibid., p. 22.

214/ 10:55 a.m. State press conference transcript, March 28, p. 2.

215/ Ibid., p. 3a.

216/ Gerusky deposition, p. 34; Gerusky interview, pp. 38-41; Milne, p. 13; Critchlow I, p. 45.

217/ Dornsife, p. 55.

218/ Milne, p. 26.

219/ Dornsife, p. 50.

220/ Critchlow I, pp. 46-47.

221/ Gross, p. 1.

222/ Ibid., p. 20.

223/ Ibid., p. 21.

224/ Ibid., pp. 23, 30.

225/ Ibid., p. 4.

226/ Floyd and Kunder, p. 39.

227/ Gross, p. 28; Parker, p. 11.

228/ Gross, p. 27.

229/ Ibid., p. 4.

230/ Ibid., p. 29.

231/ Ibid., p. 45.

232/ Cunningham's notes on Hackes, July 20, 1979; Gross, pp. 113-114.

- 233/ Gross, pp. 31-32.
- 234/ Herbein, p. 60.
- 235/ Scranton, p. 15.
- 236/ Milne, pp. 7, 8, 10; Curry, p. 28.
- 237/ Milne, pp. 7, 8.
- 238/ Klingaman, pp. 3-4.
- 239/ Schleicher, pp. 1-2.
- 240/ Troffer, pp. 9-10.
- 241/ Troffer, p. 11.
- 242/ Arnold, pp. 7-11.
- 243/ Ibid., p. 26.
- 244/ Fabian, p. 128.
- 245/ Klucsik, p. 30.
- 246/ Botvin, p. 61.
- 247/ Fabian, p. 118.
- 248/ Ibid., p. 119.
- 249/ Ibid., p. 148.
- 250/ Ibid., pp. 121, 122.
- 251/ Ibid., p. 123.
- 252/ Blank, pp. 11, 21.
- 253/ Fabian, p. 124.
- 254/ Ibid., p. 124.
- 255/ Ibid., p. 131.
- 256/ Stevens' notes on Pintek.
- 257/ Botvin, p. 10.
- 258/ Ibid., p. 3; Seldomridge, p. 7.
- 259/ Botvin, p. 57.

260/ Ibid., pp. 55-56.

261/ Fabian, p. 134.

262/ Met Ed transcript, Attachment C., pp. 1-2.

263/ Cunningham's notes on Miller, July 20, 1979. The task force has relied heavily on Miller because he taped all his interviews, including those that did not go on the air.

264/ Botvin's chronology, written for Fabian, April 8, 1979, p. 1.

265/ ABC Radio News C. A. T. No. A44, A45.

266/ Cunningham's notes on Hudson, August 14, 1979.

267/ Botvin, pp. 51-52.

268/ Fabian, pp. 136-142.

269/ Ibid., p. 145.

270/ Met Ed chronology, p. 7.

271/ Troffer, p. 27.

272/ Ibid., p. 37.

273/ Botvin's chronology, written for Fabian, April 8, 1979, p. 2.

274/ Botvin, p. 29.

275/ Milne, p. 76; Dornsife, p. 47; Gerusky, p. 40.

276/ Critchlow I, p. 44, Scranton, p. 15.

277/ Critchlow I, p. 47.

278/ Knouse, p. 16.

279/ Herbein, p. 63.

280/ Knouse, pp. 17-18.

281/ Gerusky, p. 41.

282/ Knouse, pp. 19-20.

283/ Critchlow I, p. 54.

284/ Reilly, p. 145.

285/ IRC telephone transcript #01-01019-CH2/20-GFC-4.

286/ IRC telephone transcript #01-27-CH2/20sw-7.

287/ Stello, p. 6.

288/ IRC telephone transcript #01-227-CH24-LFR-11; #01-124-CH4/22-HR-2.

289/ Cunningham's notes on Miller, July 20, 1979.

290/ Abraham, p. 81.

291/ Critchlow I, p. 48.

292/ Scranton, p. 17; Knouse confirms, p. 20.

293/ 4:30 p.m. state press conference transcript, March 28, pp. 1-2.

294/ Milne, p. 13; Gerusky, p. 39.

295/ 4:30 p.m. state press conference transcript, March 28, p. 9A.

296/ Ibid., p. 3.

297/ Gerusky, p. 61.

298/ Miller, p. 16; Dornsife confirms that Met Ed was conscientious about passing along candid radiation figures, p. 183.

299/ Gerusky deposition, p. 36.

300/ Gerusky's letter to Bruce Lundin, June 18, 1979, p. 2.

301/ Milne, p. 5.

302/ Gerusky, p. 132.

303/ Reilly, p. 89; Gerusky, p. 129.

304/ Gerusky, p. 130.

305/ Reilly, p. 88.

306/ MacLeod, p. 95.

307/ Henderson, pp. 13-14.

308/ Williamson, Lamison, Kuehn, pp. 29-30.

309/ Deal, pp. 14-15, 19.

310/ Waldman, p. 12.

311/ Knouse, pp. 30-31.

312/ 10:20 p.m. press conference, p. 2.

313/ IRC telephone transcript, #02-02234-CH6/DC-13.

314/ Met Ed chronology, p. 5.

315/ Troffer, p. 10; Fabian, p. 120; Dornsife, p. 31.

316/ Floyd and Kunder, p. 17; Miller, pp. 31, 34.

317/ Met Ed Attachment C.

318/ Klingaman, pp. 15-17.

319/ Transcript of state press conference, 10:55 a.m., March 28, p. 1.

320/ Ibid., p. 3.

321/ Milne, p. 39.

322/ Ibid., p. 35; Gerusky, p. 44.

323/ Scranton, p. 78.

324/ Gerusky, p. 44; Knouse, pp. 25-27.

325/ Transcript of state press conference, 10:00 p.m., March 28, p. 3.

326/ Ibid., p. 6.

327/ Cunningham's notes on Miller, July 20, 1979.

328/ Transcript of state press conference, March 28, 10:00 p.m., p. 6.

329/ Miller, p. 31; Herbein, p. 49.

330/ Knouse, p. 12.

331/ Herbein, p. 82.

332/ Troffer, p. 21.

333/ Ibid., p. 45.

334/ Ibid., p. 45; transcript of Met Ed press conference, March 29, p. 2.

335/ Klingaman, p. 27.

336/ Hilbish, pp. 17-18.

337/ Cunningham and Rubin's notes on Eisenhower.

338/ Memo from Stello to Fouchard, Aug. 21, 1979.

339/ Memo from Denton to Fouchard, Sept. 5, 1979.

340/ Stello, pp. 41, 42, 43.

341/ IRC telephone transcripts #01-01019-CH2/20-GFC-9, 9:01 to 9:30 a.m.; #01-01020-CH2/20-GFC-9, 10, 9:30 to 10:00 a.m.

342/ #01-227-CH6/24-LFR-8,9.

343/ Ibid., #01-227-CH6/24-LFR-15.

344/ Case, p. 22.

345/ Ibid., pp. 11, 14.

346/ IRC telephone transcripts, #01-181-CH5/23-WH-2.

347/ Transcript of Commissioners' meeting, 10:00 a.m., March 29, p. 11.

348/ Transcript of briefing on Three Mile Island Nuclear Plant, March 29, 1979, U.S. House of Representatives Committee on Interior and Insular Affairs, Subcommittee on Energy and the Environment.

349/ "Good Morning, America" transcript, March 29, p. 22.

350/ Creitz, pp. 21-22.

351/ Transcript of Met Ed press conference, March 29, p. 2.

352/ Vollmer, p. 25-28.

353/ Asselstine, pp. 5-6.

354/ Critchlow I, p. 51.

355/ Milne, p. 40.

356/ Transcript of state press conference, March 29, 10:20 p.m., p. 6.

357/ Transcript of Denton's press conference, March 30, 10:00 p.m., Part 2, p. 3A; Milne, p. 41.

358/ Transcript of Denton and Mattson's press conference, April 2, p. 23.

359/ Denton, pp. 15-18, 20.

360/ Cunningham's notes on Bukro and Lyons.

361/ Investigative Report No. 50-320/79-10, p. 2.

362/ Bernero, pp. 82-89.

363/ Gerusky deposition, p. 25.

364/ Case, p. 62.

365/ Dubiel, p. 55.

366/ Reilly, p. 94.

367/ (02-077-CH3/21-SAC-13).

368/ (02-078-CH3/21-SAC-3).

369/ (02-078-CH3/21-SAC-8).

370/ Case, p. 34.

371/ (02-081-CH3-KD-3).

372/ (02-228-CH6/KD-2-6).

373/ Abraham, p. 178.

374/ (02-084-CH3/21-KD-11).

375/ (02-084-CH3/21-KD-7).

376/ Grier, p. 32.

377/ (02-228-CH6-KD-12, 13).

378/ (02-037-CH2-EC-3, 5).

379/ (02-02229-CH6-DC-4).

380/ (02-02231-CH6-DC-3, 4).

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382/ (02-02234-CH6-DC-4).

383/ (02-02234-CH6-DC-1, 5).

384/ (02-02234-CH6-DC-9).

385/ (02-235-CH6-DFR-4).

386/ Gerusky, p. 24; Case, p. 75; Dornsife, p. 138; Milne, p. 64;
Reilly, p. 113.

387/ Milne, p. 24.

388/ Reilly, p. 99.

389/ Thornburgh deposition, pp. 42-43.

390/ (02-041-CH2-TMB-14).

391/ Milne, tape 2, p. 5.

392/ (02-182-CH5/23-CRF-1).

393/ Milne, p. 6, tape 2; Critchlow II, pp. 19-20.

394/ Critchlow II, pp. 19-20.

395/ Critchlow II, p. 20.

396/ Critchlow II, p. 21.

397/ Knouse, p. 46-47.

398/ Milne, tape 2, pp. 6, 7.

399/ (02-236-CH6-DRF-12).

400/ Milne, tape 2, p. 8.

401/ Milne, tape 2, p. 23.

402/ Abraham, p. 177.

403/ Abraham, p. 185.

404/ Critchlow, p. 81; Milne, p. 24.

405/ Thornburgh deposition, p. 41.

406/ Abraham, p. 184.

407/ Press conference transcript, p. 7.

408/ Fabian, p. 110; Rubin's notes on Creitz.

409/ Bernero, pp. 41-42.

410/ Barrett deposition, p. 52.

411/ Barrett deposition, pp. 56-57.

412/ (03-259-CH7/25-PD-2).

413/ Barrett deposition, p. 59.

414/ Collins deposition, p. 91.

415/ Denton deposition, pp. 22-23.

416/ Collins deposition, p. 93.

417/ Barrett deposition, p. 62.

418/ Case p. 67-68; Barrett deposition, p. 63.

419/ Denton deposition, pp. 25-29.

420/ Barrett deposition, p. 64.

421/ Collins deposition, pp. 93-96.

422/ Denton deposition, p.22.

423/ Collins deposition, p. 112; Denton deposition, p. 84.

424/ (03-019-CH2/2-SW-11).

425/ (03-019-CH2/20-SW-11).

426/ Case, p. 71-72; Collins deposition, p. 71; Denton, p. 29.

427/ (03-019-CH2/20-SW-13).

428/ (03-259-CH7/25-PD-6).

429/ (03-259-CH7/25-PD-6).

430/ (03-259-Ch7/25-PD-7).

431/ Case, pp. 71-72.

432/ Case, p. 74.

433/ Denton, p. 27.

434/ (03-260-CH7/25-PD-12).

435/ (03-260-CH7/25-PD-11-13).

436/ (03-260-CH7/25-PD-10).

437/ (03-260-CH7/25-PD-14).

438/ NRC commissioners transcript, March 30, p. 14.

439/ Gallina, p. 10.

440/ Case, pp. 79-80.

441/ NRC commissioners transcript, March 30, p. 19.

442/ NRC Commissioners transcript, March 30, pp. 26-27.

443/ Case, pp. 72-75.

444/ Collins, p. 142.

445/ Case, p. 5, tape 2.

446/ Denton, pp. 23, 28.

447/ (03-503-CH12/VIP-I-BKR-10).

448/ (03-262-CH7/25-PD-4).

449/ (03-262-CH7/25-PH-6).

450/ (03-262-CH7/25-PD-9).

451/ Case, p. 3, tape 2.

452/ (03-263-CH7/25-PD-5)

453/ (03-262-CH7/25-PD-17).

454/ Floyd and Kunder, tape 3, p. 10.

455/ Floyd and Kunder, tape 2, p. 68.

456/ Floyd and Kunder, tape 2, p. 73.

457/ Floyd and Kunder, tape 2, p. 68.

458/ Floyd and Kunder, tape 2, p. 68.

459/ Miller, pp. 59-60.

460/ Gallina deposition, p. 68.

461/ Dornsife, p. 85.

462/ Floyd and Kunder, p. 70.

463/ Floyd and Kunder, p. 72.

464/ Floyd and Kunder, pp. 75-76.

465/ Floyd and Kunder, p. 77.

466/ Floyd and Kunder, pp. 76-77.

467/ Floyd and Kunder, p. 1, tape 3.

468/ Floyd and Kunder, p. 32; Miller, p. 68; Gallina, p. 64; Dubiel, p. 72.

469/ Gallina deposition, pp. 69-70.

470/ Gallina deposition, p. 70.

471/ Gallina deposition, p. 70.

472/ Gallina deposition, p. 71.

473/ Gallina deposition, p. 77.

474/ Gallina deposition, p. 80.

475/ Gallina deposition, p. 82.

476/ Gallina deposition, p. 82.

477/ Gallina deposition, p. 84.

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479/ Gallina deposition, p. 86.

480/ Gallina deposition, pp. 86-87.

481/ Gallina deposition, p. 92.

482/ Gallina deposition, p. 93.

483/ Gallina deposition, pp. 98-99.

484/ Troffer, pp. 95-96.

485/ Herbein, p. 91.

486/ Herbein, p. 92.

487/ Arnold, pp. 51-52.

488/ Arnold, p. 52.

489/ Gerusky deposition, p. 50; Reilly, p. 108.

490/ Gerusky deposition, p. 51.

491/ Dauphin Co. Emerg., Op. Crt. Log, p. 5.

492/ Molloy, p. 60.

493/ Williamson and Lamison, p. 52; Henderson, p. 39; Cassidy, p. 18.

494/ Henderson, p. 39.

495/ PEMA log, March 30, 1979, p. 2.

496/ Cassidy, p. 20.

497/ PEMA log, March 30, 1979, p. 2.

498/ Henderson, p. 40.

499/ Lamison, p. 54; Henderson, p. 41; Reilly, p. 109; PEMA log, March 30, 1979.

500/ Henderson, p. 41.

501/ Lamison, p. 48; Reilly, p. 10; PEMA log March 30, 1979, p.30.

502/ Scranton, p. 24.

503/ PEMA log, March 30, 1979, p. 3.

504/ Henderson, p. 45.

505/ Leese, p. 18; Jackson, p. 21.

506/ Molloy, p. 65.

507/ Report to the Federal Communications Commission by American Telephone and Telegraph Co., about telephone service during the accident at Three Mile Island, April 10, 1979, p. 5.

508/ PEMA log, March 30, 1979, p. 3; Deal, p. 31.

509/ PEMA log, March 30, 1979, p. 3; Henderson, p. 50; Williamson, p. 58.

510/ PEMA log, March 30, 1979, p. 3; Henderson p. 52; Williamson, p. 39.

511/ Henderson, p. 55.

512/ Henderson, p. 51.

513/ PEMA log, March 30, 19/9, p. 3; Williamson, p. 62; Henderson, p. 55; Gerusky deposition, p. 53.

514/ Gerusky, deposition, p. 53.

515/ Gerusky deposition, p. 54; supported by Gallina interview p. 38.

516/ (03-117-CH4/22-CLB-9).

517/ (03-117-CH4/22-CLB-10).

518/ Gerusky deposition, p. 55; Reilly, p. 113.

519/ PEMA log, March 30, 1979, p. 3.

520/ Henderson, p. 61.

521/ PEMA log, March 30, 1979, p. 3; Henderson, p. 63; Williamson, p. 55.

522/ Thornburgh deposition, p. 50.

523/ Henderson, p. 64.

524/ Henderson, p. 64.

525/ PEMA log, March 30, 1979, p. 3.

526/ Gerusky deposition, p. 55; Reilly, p. 113.

527/ MacLeod deposition, p. 49.

528/ Thornburgh deposition, p. 51.

529/ NRC Commissioners transcripts, March 30, 1979, p. 19.

530/ NRC Commissioners transcripts, March 30, 1979, p. 29.

531/ Gerusky deposition, p. 56.

532/ Gerusky deposition, p. 56; Williamson and Lamison, part II, p. 14.

533/ Thornburgh deposition, p. 54.

534/ Williamson, part II, p. 16.

535/ Williamson and Lamison, part II, p. 15.

536/ Gerusky deposition, p. 56; Williamson and Lamison, part II, p. 15.

537/ Williamson, part II, p. 16.

538/ PEMA log, March 30, 1979, p. 3.

539/ Transcript of March 30, 1979, press conference, p. 1.

540/ March 30, 1979, press conference, p. 2.

541/ March 30, 1979 press conference, part II, p. 2a.

542/ Critchlow, part II, p. 32.

543/ Case, p. 81; Collins, p. 112.

544/ Collins, p. 98.

545/ Critchlow, part II; Milne, tape 2, p. 66.

546/ NRC Preliminary Notification of Occurrence or Unusual Event, March 30, 1979, 9:50 a.m., PNO-79-67B.

547/ Mattson chronology of TMI-2 Hydrogen Bubble Concerns, p. 1.

548/ Task force interview with Gary Miller, tape 2, p. 2.

549/ Task force interview with Gary Miller, tape 2, p. 5.

550/ Transcript of Metropolitan Edison news briefing, March 30, 1979,
p 11

551/ Transcript of closed NRC commission meeting, March 30, 1979, p. 68.

552/ Transcript of closed NRC commission meeting, March 30, 1979, p. 85.

553/ Transcript of closed NRC commission meeting, March 30, 1979,
p. 130.

554/ Transcript of closed NRC commission meeting, March 30, 1979, p. 82.

555/ Task force interview with Edson Case, pp. 9-10.

556/ Task force interview with Darrell Eisenhut, p. 6.

557/ Task force interview with Frank Ingram, p. 42.

558/ Task force interview with Brian Grimes, tape 3, p. 1.

559/ Task force interview with Dudley Thompson, p. 12.

560/ Task Force interview with Dudley Thompson, p. 13.

561/ Task Force interview with Joseph Fouchard, tape 1, p. 62.

562/ Task force Interview with David Milne, p. 47.

563/ United Press International, March 30, 1979, 4:02 p.m.

564/ Transcript of closed NRC commission meeting, March 30, 1979,
p. 163.

565/ NRC/IRC telephone logs, March 30, 1979, 03-183-CH 7/25 1 LFR 1.

566/ Task force Interview with Frank Ingram, tape 2, p. 2.

567/ Transcript of Jody Powell news conference at the White House, March 30, 1979, 5:15 p.m., p. 7.

568/ Metropolitan Edison press statement, March 30, 1979, 5:30 p.m.

569/ Transcript of closed NRC commission meeting, March 30, 1979, p. 164.

570/ Transcript of closed NRC commission meeting, March 30, 1979, p. 174.

571/ Transcript of closed NRC commission meeting, March 30, 1979, p. 177.

572/ NRC press release, March 30, 1979, 6:30 p.m.

573/ Task force interview with Robert Bernero, p. 78.

574/ Task force interview with Joseph Fouchard, p. 120.

575/ NRC, Preliminary Notification of Event or Unusual Occurrence, March 30, 1979, 4:15 p.m., PNO-79-67C.

576/ Transcript of closed NRC commission meeting, March 30, 1979, p. 189.

577/ Transcript of closed NRC commission meeting, March 30, 1979, p. 190.

578/ Transcript of closed NRC commission meeting, March 30, 1979, pp. 198-199.

579/ Transcript of closed NRC commission meeting, March 30, 1979, p. 199.

580/ Memo of March 30, 1979, from William E. Odom to Zbigniew Brzezinski on "Report to the President on Ad Hoc Meeting on Nuclear Reactor Accident."

581/ Transcript of Jody Powell news conference at the White House, March 30, 1979, 5:15 p.m., p. 1.

582/ Transcript of Jody Powell news conference at the White House, March 30, 1979, 5:15 p.m., p. 8.

583/ Transcript of Jody Powell news conference at the White House, March 30, 1979, 5:15 p.m., p. 7.

584/ Jessica Tuchman Mathews deposition, p. 54.

585/ Jack Watson deposition, p. 72.

586/ Eugene Eidenberg deposition, p. 114.

587/ Transcript of Denton press conference, March 30, 1979, 10 p.m., part I, p. 4.

588/ 03235CH6/24-EC-11, NRC telephone logs.

589/ Transcript of closed NRC commission meeting, p. 40.

590/ NRC, Preliminary Notification of Event or Unusual Occurrence, March 31, 1979, 1:10 a.m., PNO-79-67D.

591/ NRC, Preliminary Notification of Event or Unusual Occurrence, March 31, 1979, 9:04 a.m., PNO-79-67E.

592/ NRC/IRC telephone logs, March 31, 1979, 04-214-CH6/24 LFR 5.

593/ Transcript of closed NRC commission meeting, March 31, 1979, p. 45.

594/ Transcript of closed NRC commission meeting, March 31, 1979, pp. 45-49.

595/ NRC/IRC telephone logs, March 31, 1979, 04-024-CH2/20 HF 11.

596/ Metropolitan Edison news briefing, March 31, 1979, p. 2.

597/ Metropolitan Edison news briefing, March 31, 1979, p. 4.

598/ Metropolitan Edison news briefing, March 31, 1979, p. 4.

599/ Task force interview with Frank Ingram, p. 8.

600/ Task force interview with Edson Case, pp. 12-14.

601/ Hendrie/NRC press conference transcript, March 31, 1979, 2:45 p.m., pp. 2-4.

602/ Hendrie/NRC press conference transcript, March 31, 1979, 2:45 p.m., p. 14.

603/ Task force interview with Roger Mattson, cassette 16, parts 5 & 6, pp. 4-35.

604/ Hendrie/NRC press conference transcript, March 31, 1979, 2:45 p.m., p. 11.

605/ Associated Press, March 31, 1979, 8:30 p.m.

606/ Associated Press, March 31, 1979, 9:02 p.m.

607/ IRC/NRC telephone log transcripts, March 31, 1979, 04-283-CH7/25 HF 2-4.

608/ Transcripts of closed NRC commission meeting, March 31, 1979, p. 40.

609/ Task force interview with Richard Vollmer, p. 45.

610/ NRC/IRC telephone logs, March 31, 1979, 04-237-CH6124 LFR 9 to 12.

611/ NRC/IRC telephone logs, March 31, 1979, 04-283-CH7/25 HF 11 to 13.

612/ Jessica Tuchman Mathews deposition, p. 115.

613/ Eugene Eidenberg deposition, p. 88.

614/ Task force interview with Edson Case, pp. 33-35.

615/ Task force interview with Edson Case, cassette 2, p. 35.

616/ Jack Watson deposition, p. 97-98.

617/ Memo of March 31, 1979, from Jack Watson to the President, on "Status Report - Three Mile Island Nuclear Facility Report #3," p. 2.

618/ Jack Watson deposition, p. 98.

619/ Eugene Eidenberg deposition, p. 115.

620/ Eugene Eidenberg deposition, P. 115.

621/ NRC/IRC telephone logs, March 31, 1979, 04-285-CH7/25, HF 7 to 8.

622/ Press release 323-D79, Governor Thornburgh's press office, March 31, 1979, 11 p.m.

623/ Denton press conference transcript, March 31, 1979, p. 6.

624/ Denton press conference transcript, March 31, 1979, pp. 3-4.

625/ Task force interview with Roger Mattson, cassette 16, parts 5 and 6, p. 34.

626/ Task Force interview with Roger Mattson, cassette 16, parts 5 and 6, p. 34.

627/ Task force interview with Harold Denton, page 43.

628/ Task force interview with Roger Mattson, cassette 16, parts 5 and 6, p. 35, parts 7 and 8, p. 2.

629/ Task force interview with Roger Mattson, cassette 17, parts 7 and 8, p. 4.

630/ Task force interview with Roger Mattson, cassette 17, p. 22.

631/ NRC, Preliminary Notification of Unusual Event or Occurrence, April 1, 1979, 8:28 a.m., PNO-79-67G.

632/ Metropolitan Edison internal update, April 2, 1979, 8:30 a.m.

633/ Task force interview with George Troffer, p. 62.

634/ Task force interview with George Troffer, p. 66.

635/ Denton press conference transcript, April 2, 1979, 11:15 a.m.,
p. 3

636/ Denton press conference transcript, April 2, 1979, 11:15 a.m.,
p. 3

637/ Task force interview with Roger Mattson, cassette 17, parts 7
and 8, p. 7.

638/ Denton press conference transcript April 2, 1979, p. 4.

639/ Denton press conference transcript, April 3, 1979, p. 2.

640/ Gilinsky deposition, p. 120.

641/ Watson deposition, pp. 90-91.

642/ Task force interview with Case, p. 57.

643/ Task force interview with Miller, tape 1, p. 17.

644/ Task force interview with Case, p. 29.

645/ NRC closed commission meeting transcript, March 30, 1979, p. 59.

646/ NRC closed commission meeting transcript, March 30, 1979,
pp. 178-179.

647/ Task force interview with Floyd and Kunder, p. 20.

648/ NRC closed commission meeting transcript, March 30, 1979, p. 13.

649/ Mattson deposition, p. 197.

650/ Brunn, Stanley H., Preliminary Results of an Opinion Survey of
Residents Around Three Mile Island, Dept. of Geography, Michigan State
University, 1979.

651/ Smith, Martin H., untitled opinion poll of TMI residents, Social
Research Center, Franklin and Marshall college, 1979.

652/ Haight, Timothy and Sterling, Chris, Mass Media Statistics, New York: Praeger, 1978, p. 143.

653/ Task force interview with Steve Liddick, July 5, 1979.

654/ Task force interview with Mike Pintek, July 11, 1979.

655/ Task force interview with Harvey Tate, July 17, 1979.

656/ These two were Mike Pintek of WKBO and Jim Moyer of WHP.

657/ Task force interview with Jeff Bitzer, July 23, 1979.

658/ Cataloged as 812008 in Commission Document Control Center.

APPENDIX A

PERSONS INTERVIEWED

PRESS

Saul Kohler, Executive Editor, Harrisburg Patriot-News
Dale Davenport, City Editor, Harrisburg Evening News
Mary Bradley, Reporter, Harrisburg Evening News
Patrick Carroll, City Editor, Harrisburg Patriot
Richard Roberts, Reporter, Harrisburg Patriot
Herbert Field, Editorial Page Editor, Harrisburg Patriot
Richard Halverson, Editor, The Guide (Harrisburg)
David Delzingaro, Reporter, York Dispatch
Henry Merges, Editor, present for part of the interview,
York Dispatch
Wiley Brooks, Jr., Executive Editor, York Daily Record
Kathryn Duncan, City Editor, York Pail Record
James Hill, Reporter, York Daily Record
David Henningan, City Editor, Lancaster Sunday News
Bernard Shire, former reporter, Lebanon Daily News, now a reporter
for the Lancaster Sunday News
Charles Shaw, Business Writer, Lancaster Intelligencer-
Journal
William Schultz, Editor, Lancaster Intelligencer-
Journal
Charles Kessler, Reporter, Lancaster New Era
Robert Kozak, News Editor, Lancaster New Era
Ernest Schreiber, Reporter, Lancaster New Era
Timothy McKeel, Reporter, Lancaster New Era
Daniel Cherry, Editor, Lancaster New Era
David Graybill, Reporter, Middletown Press and Journal
Joseph Sukle, Associate Editor, Middletown Press and
Journal

BROADCAST

Hal German, Producer/Anchor, WHP-TV, Harrisburg
Herbert Thurman, News Director, WHP-TV, Harrisburg
Michael Pintek, News Director, WKBO Radio, Harrisburg
Jerry Edling, News Director, WNOW Radio, York
Mary Lawler, Reporter, WNOW Radio, York
Linda Pintek, Public Affairs Director, WRYH Radio, York
Robert Brutsch, News Director, WSBA-TV, York
Lew Doolittle, Public Affairs Director, present for
part of interview, WSBA-TV, York
Douglas Walker, News Director, WZIX Radio, York
Edmund Wickenheiser, News Director, WSBA Radio, York
Paul Heil, News Director, WGAL-TV, Lancaster
Phyllis Clugman, News Director, WLPA Radio, Lancaster
Wes Maley, News Director, WLYH-TV, Lebanon

CITIZENS

Beverly Hess, Susquehanna Valley Alliance, Lancaster
Christopher Sayer, Lee Musselman, and Kay Pickerling,
members, Three Mile Island Alert, Harrisburg
John Davenport, York Committee for A Safe Environment,
York
Elizabeth Stines, ANGRY, York
League of Women Voters, six members, Middletown
Carl Kupp, citizen, Middletown

MET EDPERSONNEL

John Herbein, Vice President for Generation
George Troffer, Manager, General Quality Assurance
David Klucsik, Coordinator of Editorial Services
William Gross, Public Information Coordinator,
Observation Center
Blaine Fabian, Manager, Communications Services Department
Ernest Schleicher, Vice President for Consumer Affairs
Judith Botvin, Public and Internal Communications
Representative
Howard Seldomridge, Director of Internal and Public
Communications
Willard Vollertsen, Accountant
Donald Curry, former employee, Public and Internal
Communications Representative

GPUPERSONNEL

William Murray, Vice President for Communications
Kenneth McKee, Director of Communications Services
Robert Arnold, Vice President for Generation

APPENDIX B

LOCAL BROADCAST STATIONS

HARRISBURG STATIONS

WCMB-AM	Programming:	Middle-of-the-road music
	News staff:	2 full-time, 1 part-time
WSFM-FM	Co-owned with WCMB-AM	
WFEC-AM	Programming:	Disco
	News staff:	2 full-time, 1 part-time
WHP-AM	Programming:	Middle-of-the-road music
	News staff:	3 full-time, 1 part-time
WHP-FM	Co-owned with WHP-AM and WHP-TV	
WKBO-AM	Programming:	Top-40 music
	News staff:	3 full-time, 1 part-time

LANCASTER STATIONS

WDAC-FM	Programming:	Religious
	News staff:	none
WDDL-AM	Programming:	Middle-of-the-road music
	News staff:	2 full-time, 2 part-time
WLAN-AM	Programming:	Top-40 music
	News staff:	2 full-time, 2 part-time
WLAN-FM	Co-owned with WLAN-AM	

YORK STATIONS

WNOW-AM	Programming:	Country and Western music
	News staff:	3 full-time, 1 part-time
WQXA-FM	Co-owned with WNOW-AM	
WSBA-AM	Programming:	Middle-of-the-road music
	News staff:	7 full-time, 2 part-time
WSBA-FM	Co-owned with WSBA-AM and WSBA-TV	
WZIX-AM	Programming:	Contemporary music
	News staff:	1 full-time

Compiled from interviews with local broadcasters and from Broadcasting Yearbook, 1978

Staff Reports To

THE PRESIDENT'S COMMISSION ON
THE ACCIDENT AT
THREE MILE ISLAND

The Nuclear Regulatory Commission, Report of the Office of
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The Role of the Managing Utility and Its Suppliers, Report of the
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"Technical Staff Analysis Reports Summary"
"Summary Sequence of Events"

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"Thermal Hydraulics"
"Core Damage"
"WASH 1400 -- Reactor Safety Study"
"Alternative Event Sequences"

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Mile Island Reactor Operating Personnel"
"Technical Assessment of Operating, Abnormal, and Emergency
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"Control Room Design and Performance"

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"Pilot-Operated Relief Valve Design and Performance"
"Containment: Transport of Radioactivity from the TMI-2 Core to
the Environs"
"Iodine Filter Performance"
"Recovery: TMI-2 Cleanup and Decontamination"

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"Health Physics and Dosimetry"
"Radiation Health Effects"
"Behavioral Effects"
"Public Health and Epidemiology"

Report of the Emergency Preparedness and Response Task Force

Report of the Public's Right to Information Task Force