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# **A Decade of Delay, Deceit and Danger**

**THREE MILE ISLAND 1979-1989**

*A Retrospective*

THREE MILE ISLAND ALERT



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## THREE MILE ISLAND 1979-1989

*A Retrospective*

Three Mile Island Alert

*Dedicated to those Three Mile Island area residents who have been harmed, who have suffered and who have fought courageously for the health and safety of their family, friends and future generations.*

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## A Chronology of Events

# 1979

### TMI-2 and the accident:

Three Mile Island Units 1 and 2 were designed by Babcock and Wilcox Co. (B&W), built in Middletown, Pennsylvania just outside of Harrisburg, and operated by Metropolitan Edison Co. (Met Ed), subsidiary of General Public Utilities (GPU). TMI-2 began operating in March of 1978. TMI-1 had already been operating for several years.

On March 28, 1979, TMI Unit 2 experienced a partial-meltdown in what is recognized as the worst commercial nuclear accident in U.S. history. The nuclear core was uncovered for approximately 2 1/2 hours until a shift supervisor finally guessed that water was leaving the reactor through a stuck-open valve. Workers shut the valve, but not in time to prevent much of the core from melting and much radiation from escaping.

Company officials withheld information about the seriousness of the accident from the public, state and federal officials for two days. Then chairman of the Nuclear Regulatory Commission (NRC)

## Becky Mease's Story

THE FOLLOWING IS an excerpt from an interview by researchers Mitsuru and Aileen Smith Katagiri with Becky Mease. Becky Mease is a nurse who works in Harrisburg, and lives in Middletown with husband Dave and young daughter Pam. Becky spoke to Mitsuru and Aileen about her family's experience during the accident. The Mease's mobile home sits about four miles north of TMI.

"I guess it would have probably been about 9 o'clock when I first started to taste it, because I was driving home from Harrisburg in my car.... I came in the door and said to Dave, 'I have a funny metallic taste in my mouth, really strange.' I didn't even associate it with the accident, to tell you the truth.

And it was late that Wednesday evening like 11 o'clock, and we were watching the news. They said everything was under control. I said to Dave, 'you know, this is really funny. I have this terrible metallic taste.' When I get my teeth filled, you can taste the filling for a while. I said the only other time I had this funny metallic taste was when I was working in the operating room and they'd come in and take a lot of X-rays from the patient who was there for surgery....

Thursday, it got worse. By Friday we were just all filled up. We couldn't get enough to drink because of this metal taste. We just kept drinking, trying to get rid of it. Five and six times a day, I mean it, I would go in and scrub the teeth because you think there would have to be a way that you could get rid of it. But it just wouldn't go away.

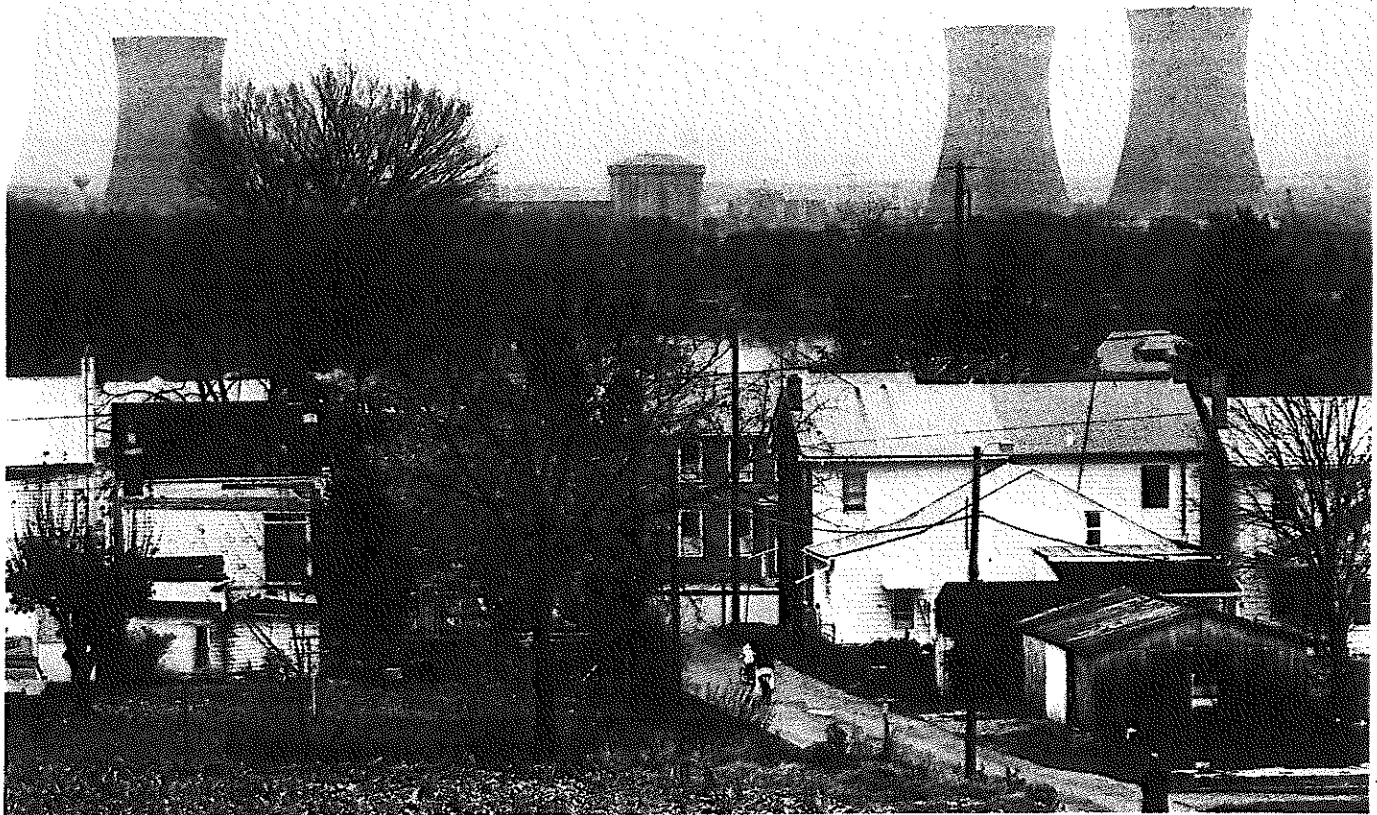
And Thursday night. Dave works in the body shop. I said to Dave, 'Did you spray some primer today?' 'No,' he said. Cause you know how primer's like, an off-colored red, like a rust color...that they spray on cars. When I drained the water out of the bathtub, there's this rust-colored orangey, rust-colored red around the tub. While we were evacuated, they said (on a national TV news show) that one of the ways that you would know if your water supply had been contaminated is that around sinks and tubs you would see this rust-colored red that it would be. That was Thursday night. That was before we even heard anything from the media how bad it was.

And Pam had been at Joyce's on Wednesday and Friday. And they were outside playing. They were out playing in the grass and eight months old, she was crawling around. And of course Thursday, they gave the all clear signal, you know, from the accident Wednesday. Thursday they said there was no problem, that everything was under control. So I imagine, more than imagine, that we were outside pretty much on Thursday too.

I was at work Friday morning. Then I heard this on the radio, you know, that there had been another accident. I was crazy.

We evacuated Friday...."

In the summer of 1981, Pam was diagnosed as having cataracts in both of her eyes, and her parents were told that the condition was caused by juvenile rheumatoid arthritis. The doctor said he had never seen a child's eyes so inflamed, that it scarred down the lenses of the eyes. Becky asked



*The town of Goldsboro in the shadow of TMI's cooling towers/ Liesl Zappler*

him if that could have anything to do with radiation from TMI. He looked at her and said, "Becky, I'm not going to say it wouldn't. I'm not going to say it did either. But I'm not going to rule it out."

*The records of over 200 area residents interviewed by the Katagiri's about their experiences during the TMI-2 accident, indicate that many people experienced symptoms associated with radiation exposure: a strong metallic taste, dryness of mouth and throat, hot sensations on the skin, irritation, burning and tearing of the eyes, nausea, vomiting and diarrhea.*

## Reporting of Information During the Accident

■ AT A 10:55 A.M. PRESS CONFERENCE on March 28, 1979, Lt. Governor William W. Scranton stated, "The Metropolitan Edison Company has informed us that there has been an incident at Three-Mile Island, Unit #2. Everything is under control. There is and was no danger to public health and safety. The incident occurred due to a malfunction in the turbine system. There was a small release of radiation to

Joseph Hendrie was quoted as saying, "We are operating almost totally in the blind, his [Governor Richard Thornburgh's] information is nonexistent, mine is ambiguous, and—I don't know—it's like a couple of blind men staggering around making decisions." On March 30, Thornburgh ordered the evacuation of pregnant women and children within a 5-mile radius from the plant. About 3,500 people were told to leave their homes, but as many as 200,000 fled the area. All radiation monitors in the vent stacks at TMI-2, where 80 percent of the radiation escaped, went off scale and thus were inoperable for three days. There is no record of

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*NRC's Harold Denton at a TMI accident news conference/The York Dispatch*

how much radiation escaped.

Shortly after the accident, chaotic cleanup operations began. The NRC cited the company for numerous violations. By August, GPU had shipped the first accident-generated waste to Richland, Washington.

Weeks after the accident, lawyers filed a class action suit on behalf of all residents and businesses within 25 miles of the plant—covering 1,900 square-miles.

On May 20, between 5,000 and 10,000 people turned out for the “Women and Children” protest march to Met Ed headquarters in Reading, Pennsylvania.

During the NRC’s investigation of the accident that spring, former control room operator Harold W. Hartman, Jr. told investigators that for months before the accident, operators, with the knowledge of at least low level management, systematically falsified primary coolant system leak rates in violation of the operating license in order to keep

the environment. All safety equipment functioned properly. Metropolitan Edison has been monitoring the air in the vicinity of the plant constantly since the incident. No increase in normal radiation levels has been detected. A state police helicopter is also at the scene to monitor the air. The civil defense has alerted all counties in the vicinity although there is no need for evacuation. There is also a team from the Federal Government on the way to investigate.”

- At a 4:30 p.m. press conference that day, Lt. Governor Scranton stated, “This is an update on the incident at Three-Mile Island Nuclear Power Plant today. This situation is more complex than the company first led us to believe. We are taking more tests. And at this point, we believe there is still no danger to public health. Metropolitan Edison has given you and us conflicting information. We just concluded a meeting with company officials and hope this briefing will clear up most of your questions. 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 the presence of dangerous levels. The company has informed us that from about 11 a.m. until about 1:30 p.m., Three-Mile Island discharged into the air, steam that contained detectable amounts of radiation.”

Two days later, Governor Richard Thornburgh ordered an evacuation of pregnant women and children within a 5-mile radius of the plant. Approximately 200,000 people fled their homes. By that time, the most serious danger and radiation releases had already occurred.

- U.S. House of Representatives committee examining reporting of information during the accident concluded:  
“The record indicates that in reporting to State and federal officials on March 28, 1979, TMI managers did not communicate information in their possession that they understood to be related to the severity of the situation. The lack of such information prevented State and federal officials from accurately assessing the condition of the plant. In addition, the record indicates that TMI managers presented State and federal officials misleading statements (i.e. statements that were inaccurate and incomplete) that conveyed the impression the accident was substantially less severe and the situation more under control than what the managers themselves believed and what was in fact the case.” “Reporting of Information Concerning The Accident at Three Mile Island,” A Report Prepared by the Majority Staff Of The Committee On

Interior and Insular Affairs Of The U.S. House of Representatives, Ninety-Seventh Congress, First Session, March 1981.

■ During December 1984 Nuclear Regulatory Commission (NRC) hearings, former NRC investigator David Gamble testified that the NRC's investigation of whether company officials withheld information during the accident, (which concluded that information was not intentionally withheld), was deliberately incomplete and inaccurate, and its conclusion exonerating the company was not supported by the facts. Around the time of these 1984 hearings, the U.S. Justice Department began an investigation of whether the NRC's handling of this matter amounted to criminal misconduct. The U.S. Attorney for the District of Columbia, however, declined to indict agency officials.

## O-Rings at Nuclear Power Plants

ACCORDING TO A 1986 report prepared by former Union of Concerned Scientists (UCS) director Daniel Ford and UCS Nuclear Safety Engineer Robert Pollard, the same kind of O-ring problems that caused the Challenger space shuttle disaster could trigger a nuclear meltdown. Virtually every safety system in every U.S. nuclear plant relies upon O-rings to prevent dangerous leaks (including the casks transporting the TMI core by rail to Idaho). Federal safety officials have known for years that nuclear plant O-rings may not be qualified to work under harsh accident conditions. Yet the NRC — like NASA — has done little in response to warnings that unqualified O-rings are in widespread use at nuclear plants.

the plant running. NRC investigators did not investigate Hartman's allegations at this time. Nor did they inform the NRC Commissioners.

On October 25, the NRC fined GPU subsidiary Met Ed, TMI's operators, \$155,000 for the accident: the maximum amount permitted under law. Although GPU denied any wrongdoing, the company paid the fine.

### The public reaction:

The accident touched off a chain-reaction of political and scientific opposition to unsafe practices of the commercial nuclear industry in America. On May 6, an estimated 100,000 people marched in Washington in response to the TMI accident to



*Pete Seeger and Dr. Benjamin Spock backstage at the May 6, 1979 rally*

demand an end to the United States' growing dependence on nuclear power. The demonstrators poured into Washington on chartered buses from all over the country, including 30 bus loads from Harrisburg. Speakers included Ralph Nader, California Gov. Jerry Brown, scientists Barry Commoner and George Wald, actress Jane Fonda and comedian Dick Gregory, in addition to a number of entertainers.

The rally was sponsored by the May 6 Coalition, a coalition of over 90 consumer, labor, environmental, senior citizen, church, minority, and women's organizations which grew out of meetings held shortly after the TMI accident. Coalition spokespeople said the turnout far surpassed their estimates and exceeded most of the anti-war demonstrations during the Vietnam era. A subsequent rally, attended by 200,000 people, was held on September 23 at Battery Park in New York City. The rally featured Nader, Fonda, Wald, Dr. John Gofman, Bella Abzug, Robert Pollard as well as Jackson Browne, Bonnie Raitt, John Hall, Graham Nash, Jesse Colin Young, Gil Scott Heron, Tom Paxton, Pete Seeger and Holly Near. The September 23 rally was held in conjunction with a series of benefit concerts in Madison Square Garden, sponsored by Musicians United for Safe Energy (MUSE)

## Physical Health Effects From the TMI Accident

ALTHOUGH THE TMI-2 containment worked as designed during the 1979 accident, large amounts of radiation were still released, particularly during the accident's first few hours. A year after the accident, accident-generated radioactive gases were released directly into the environment.

Most health effects from releases during and subsequent to the TMI accident are just beginning to appear. More than 2,000 area residents have filed suit against TMI's owners for cancers and other radiation-related health injuries. A number of cases have already been settled.

Unfortunately, because of certain governmental biases, such as the Nuclear Regulatory Commission (NRC)'s position that little radiation was released during the accident, and because no one knows precisely how much actually got out, the government has not conducted responsible health studies. Most government studies conducted so far have been discredited. Moreover, current studies do not reflect the true health impact of the accident, since cancer rates due to radiation exposure may not dramatically increase for another 10 or 20 years.

The following describes the major health studies that have been done on the area population since the accident:

**1980:** Pennsylvania Department of Health Secretary Dr. Gordon MacLeod's research showing in three Pennsylvania counties an abnormal number of babies born with serious thyroid problems. (MacLeod was fired from his job that year.)

**1981:** A report by Dr. George Tokuhata, director of epidemiology for the state Department of Health, concluding that "no significant physical health effects" were expected from the accident. The report was widely criticized.

**1984:** An informal health study by a local couple Marjorie and Norman Aamodt, showing cancer clusters in certain areas around the plant, and cancer death rates sometimes seven times the national average. Neither the NRC nor the state would properly follow-up this study.

**1985:** Another health study by Dr. George Tokuhata, finding no increase in cancer rates within 20 miles of the plant. This study was criticized for statistical flaws, and for the state's refusal to allow independent scientists to review the data.

**Expected in 1989:** A study funded by the TMI Public Health Fund, conducted by Columbia University and headed by Dr. Mervyn Susser, examining cancer rates and birthing problems.

# Nuclear Power Economics

- Costs for nuclear power plants range from \$2 billion to \$6 billion for a single unit, and the costs of disposing tens of thousands of tons of radioactive waste and decommissioning is yet to be realized. Also not realized are the costs due to health effects from radioactive contamination, particularly from subsequent nuclear accidents. The Nuclear Regulatory Commission (NRC) puts the risk of a serious nuclear accident over the next 20 years at 40 percent.
- Nuclear power provides less than 6 percent of all energy consumed in the United States, and only about 17 percent of our electricity. A 1984 survey by the Atomic Industrial Forum found that coal-powered plants operate for 3.4 cents per kilowatt/hour, compared to 4.1 cents for nuclear power. If no reactors had operated in 1985, utilities still could have produced on average 16 percent more power than their customers needed.
- The fastest-growing source of electricity is "cogeneration" which is the use of industrial heat to generate electricity. In 1986, the Department of Energy spent nearly 60 percent of its budget on nuclear power. Every dollar of subsidy spent on efficiency and renewable energy technology bought about 80 times as much energy as a subsidy dollar to nuclear power.

Source: *Nuclear Information and Resource Service*

# Worker Health and Safety: Commercial Reactors

- 1981: 83,000 workers were exposed to measurable doses of radiation — 54,555 person-rems.
- 1982: 84,322 workers exposed.
- 1983: 85,646 workers exposed, 56,507 person-rems. Over one-third of workers were exposed to more than 500 millirems, three times the amount allowed for the general public.
- 1984: A record 98,162 workers exposed.
- 1985: At Kerr-McGee's Sequoyah uranium processing plant, one worker died and others were injured when an over-filled cylinder of uranium hexafluoride exploded.
- 1986: At the Surry 2 plant in Virginia, a massive pipe break caused scalding water to spray eight workers, six of whom were severely burned. Four died.
- 1987: A record 104,458 workers exposed, collectively totalling 40,702 person-rems.

Source: *Public Citizen's Critical Mass Energy Project*.

with live transmission to 20 commercial radio stations as well as for delayed broadcasts in over 100 other cities.

## TMI-1:

At the time of the TMI-2 accident, the sister plant TMI-1 had been shut down for refueling. In July, the NRC ordered Unit 1 to remain shut down pending full hearings to determine whether TMI's owner and operator, GPU and its subsidiaries, had requisite managerial, financial, and technical capabilities to operate a reactor safely.

# 1980

## TMI-2 and the accident aftermath:

After Harold Hartman appeared on New York television in March to repeat his leak rate falsification allegations, the NRC referred the matter to the U.S. Justice Department which began a Grand Jury investigation. Meanwhile, GPU consultants substantially confirmed Hartman's allegations, but withheld these conclusions from the NRC and the public until May, 1983.

Pennsylvania Secretary of Health Dr. Gordon MacLeod, an outspoken critic of the way Pennsylvania's health department

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was handling the health aspects of the accident, released figures showing an abnormal number of babies born with serious thyroid problems. MacLeod was fired that year.

On March 28, the first anniversary of the accident, peaceful protests were held at nuclear plants and utilities in a number of states, including Connecticut, Virginia, California and Texas. About 200 people demonstrated at GPU's corporate headquarters in Parsippany, New Jersey. Fifty-six were arrested. Around 5,000 gathered for a rally at the state capitol and another 200 people gathered at the TMI plant for a 4 a.m. vigil, marking the precise time the accident began.

Despite widespread community opposition and pending litigation, GPU vented 43,000 curies of radioactive Krypton-85 and other radioactive gasses, directly into the atmosphere, for 11 days in July (TMI-2 was designed to release approximately 770 curies of Krypton-85 a year.) Later that year, in November, the U.S. Court of Appeals for the District of Columbia ruled that the venting was illegal. A court later ruled that the NRC Commissioners were immune from suit for illegally approving the venting.

Shortly after the venting, GPU sent the first worker into the reactor building since the accident.

## TMI-2 Clean Up and the Reactor Core

IN NOVEMBER 1988, James Broughton of the Idaho National Engineering Laboratory reported that the TMI accident was far more serious than originally reported. Broughton said that about 45 percent of the reactor's core, or 62 tons, had melted and as much as 20 tons of molten core materials had "relocated" to the lower part of the reactor vessel.

Broughton said the accident lasted a total of 300 minutes and that only the presence of cooling water in the reactor prevented the structure that contained the core from breaking apart under the intense heat and causing a catastrophic disaster. Much of the core did melt, however, and a large chunk of molten material dropped into the bottom of the reactor vessel. Franklin Standerfer, who has directed the plant cleanup for GPU Nuclear, the plant operator, said in an interview that "half the core clearly ended up as rubble, just undefined material."

Cleanup workers are still removing damaged fuel from the plant and performing other decontamination work. About two-thirds of the total core debris has been loaded into sealed canisters. As of January, 1989, 18 rail shipments of TMI waste have made the 2,400 mile journey across 10 states, to DOE's Idaho National Engineering Laboratory. The rail route passes through several large population centers, including Pittsburgh and St. Louis. Due to strong local opposition in cities and towns along the route, some U.S. senators are pressing DOE to change the route.

The company has announced plans to end cleanup operations prematurely once the fuel is out, and "mothball" TMI-2 at the end of 1989. GPU calls this plan "Post-Defueling Monitored Storage." According to the plan, GPU would stop further cleanup activity, leaving high levels of contamination and small amounts of fuel in the reactor building, for anywhere from 20 to 90 years. GPU estimates this would cost \$10 million in the first year and \$5 million in subsequent years. There is no guarantee, however, that such funds would be available. Members of the community are furiously opposed to the plan.

The Nuclear Regulatory Commission (NRC), which supports the plan, conservatively estimates that GPU's proposed storage plan would cost, in current dollars, between \$370 million to \$560 million, and the remaining cleanup \$170 million to \$240 million. Added to that would be decommissioning costs of \$200 million. The clean up has already cost close to \$1 billion. In late 1988, the citizen advisory panel set up to advise the NRC on cleanup voted 8 to 2 against the plan in response to vehement opposition by TMI area citizens. This vote, however, is non-binding on the NRC.



*Above: Trade union members at the TMI second anniversary rally/Tooker*

*Right: Dr. Helen Caldicott at the TMI second anniversary rally*



Later that year, the NRC established a 12-member advisory panel of State and local officials, scientists and area residents to make recommendations to the NRC Commissioners on how cleanup operations should proceed. Included on the panel were Nunzio Palladino, later selected to chair the NRC during the most heated decisions regarding TMI-1 restart, and Joel Roth, chair of Three Mile Island Alert. The commissioners have rarely adopted panel views in making major cleanup decisions.

#### **TMI-1:**

In June, the Pennsylvania Public Utilities Commission removed TMI-1 from the rate base and cut Met-Ed's rates by \$26.9 million.

In October, the NRC's TMI-1 restart proceedings began. The major issues concerned design/hardware issues, litigated by the Union of Concerned Scientists (UCS); emergency planning, litigated by the York-based group ANGRY, the Newberry Township Steering Committee, and Norman and Marjorie Aamodt; financial capability, litigated by TMIA; and management capability, litigated by TMIA and Marjorie and Norman Aamodt. Issues concerning "psychological stress" were not allowed in the hearing and the Middletown-based group PANE appealed this decision to the D.C. Circuit.



# 1981

In August, a newly formed GPU subsidiary, GPU Nuclear (GPUN) took over operation of GPU's reactors—TMI-1, TMI-2 and Oyster Creek in New Jersey.

## TMI-2 and the accident aftermath:

On March 27, Met-Ed ratepayers burned \$47,500-worth of electric bills on the state capitol



## U.S. Nuclear Power Accidents Since TMI

ACCORDING TO THE latest Public Citizen Annual Nuclear Power Safety Report, there were nearly 3,000 mishaps and at least 430 emergency shutdowns at U.S. commercial nuclear plants in 1987. Since TMI, there have been over 26,000 industry mishaps, at least 1,000 of which the NRC regards as particularly significant. Among accidents that have occurred in the United States since TMI are:

**1982:** Ginna plant in Rochester, New York. A steam generator tube burst leading to the release of 90 curies of radioactive gases into the environment.

**1982:** Salem plant, New Jersey. "Anticipated Transient Without Scram," one of the most feared occurrences in nuclear power generation and another (like TMI) which was never supposed to happen. Essentially, the plant failed to shut down automatically when so signaled.

**1985:** Kerr-McGee's Sequoyah uranium processing plant in Oklahoma. Death of one worker and injuries to others, when an over-filled cylinder of uranium hexafluoride exploded.

**1985:** Ohio's Davis-Besse plant, like TMI in design, lost both its main and auxiliary feedwater systems.

**1985:** Rancho Seco plant, near Sacramento. All power to the plant's integrated control system was lost. The plant is also similar in design to TMI.

**1988:** Illinois' LaSalle plant. Worker error resulted in uncontrolled power oscillations in the reactor, coming close to damaging the core and releasing much radiation.

## Liability in the Event of an Accident

UNDER THE Price-Anderson Act, reauthorized and modified in 1988, aggregate utility liability and DOE contractor indemnity is capped at \$7 billion if a serious accident occurs (TMI was not considered serious enough to trigger Price-Anderson's provisions). If damages exceed \$7 billion, victims' only recourse is to ask Congress to devise a system for additional payments.

*TMI-2 control room, before the accident*



# The Psychological Impact of TMI

- PHYSICIAN JOHN BARNOSKI gave the President's Commission on the Accident at Three Mile Island the following testimony shortly after the accident:

"In the first several days, there was a lot of semi-hysteria, anxiety and fear. I had six- and seven-year old children in my office acting like two-year olds, becoming very dependent, hanging on mothers, sensing the parents' fear and frustration. I had older people with blood pressure problems because of their anxieties. Later, several weeks after the accident, I began seeing people with non-specific symptoms of fatigue, nervousness, insomnia. After discussing their problems with them, I finally was able to figure out from them that the symptoms related back to their anxiety and fear over Three Mile Island and mostly to their frustration over being unable to do anything. I began to see depression. Mostly anxiety."

- In 1980, the Nuclear Regulatory Commission (NRC) refused to allow the Middletown-based group PANE to litigate the issue of psychological stress during the NRC's hearings on TMI-1 restart. In January, 1982, the D.C. Circuit Court of Appeals ruled that issues of psychological stress must be considered by the NRC under the National Environmental Policy Act, and ordered an injunction on TMI-1 restart until the agency conducted an environmental study on psychological stress. However, in April 1983, the U.S. Supreme Court reversed this decision, ruling that an environmental assessment need not be done.
- In August, 1985, Marc Schaeffer, a psychologist at the Uniformed Services University of the Health Sciences in Bethesda, Maryland released a study linking TMI-related stress with immunity impairments. Schaeffer observed that urine and blood tests showed neighbors of TMI also had increased stress-related hormones and reductions in various disease-fighting cells in their immune system. The report also stated that Middletown residents reported feeling considerably more stress and helplessness due to fear of another accident.
- In a study released August, 1987, James Rooney and Sandra Price-Embury of Penn State University reported that chronically elevated levels of psychological stress have existed among Middletown residents since the accident. The study also noted, "Residents who have lost faith in experts may feel as though no one is really in control of this complex and potentially hazardous technology or that those who could exert some control cannot be trusted to do so."
- In an April 1988 *Psychology Today* article, Andrew Baum, professor of medical psychology at the Uniformed Services University of the Health Sciences in Bethesda, Maryland discussed research he and several colleagues had conducted on TMI area residents. Baum noted that worry and uncertainty

steps in an event organized by Project David, an area-based coalition. The next day, 15,000 marched peacefully through Harrisburg at a rally organized by labor unions, environmental and safe energy groups, church groups and others.

In September, workers began cleaning up the radioactive water from the TMI-2 reactor building basement.

## TMI-1:

In a report relied on by the TMI-1 licensing board, the NRC staff concealed the fact that it knew GPU had falsified leak rates before the accident. Based partly on this report, the NRC's licensing board resolved all "management-related" issues in favor of GPU restarting the plant. (The NRC Commissioners would make the final restart decision.)

Shortly before this decision, however, the board announced that it had learned that operators had cheated on their NRC licensing exams. By October, the board was forced to "reopen the record" to examine these cheating allegations. TMIA, the Commonwealth of Pennsylvania and the Aardodts participated in these hearings.

In November and for several months thereafter, GPU discovered that TMI-1 contained 29,000 defective steam generator tubes caused by mistaken introduction of

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sulfur into the reactor coolant system. NRC official Harold Denton later called the TMI-1 steam generator damage the worst case in the country.

## 1982

### TMI-2 and the accident aftermath:

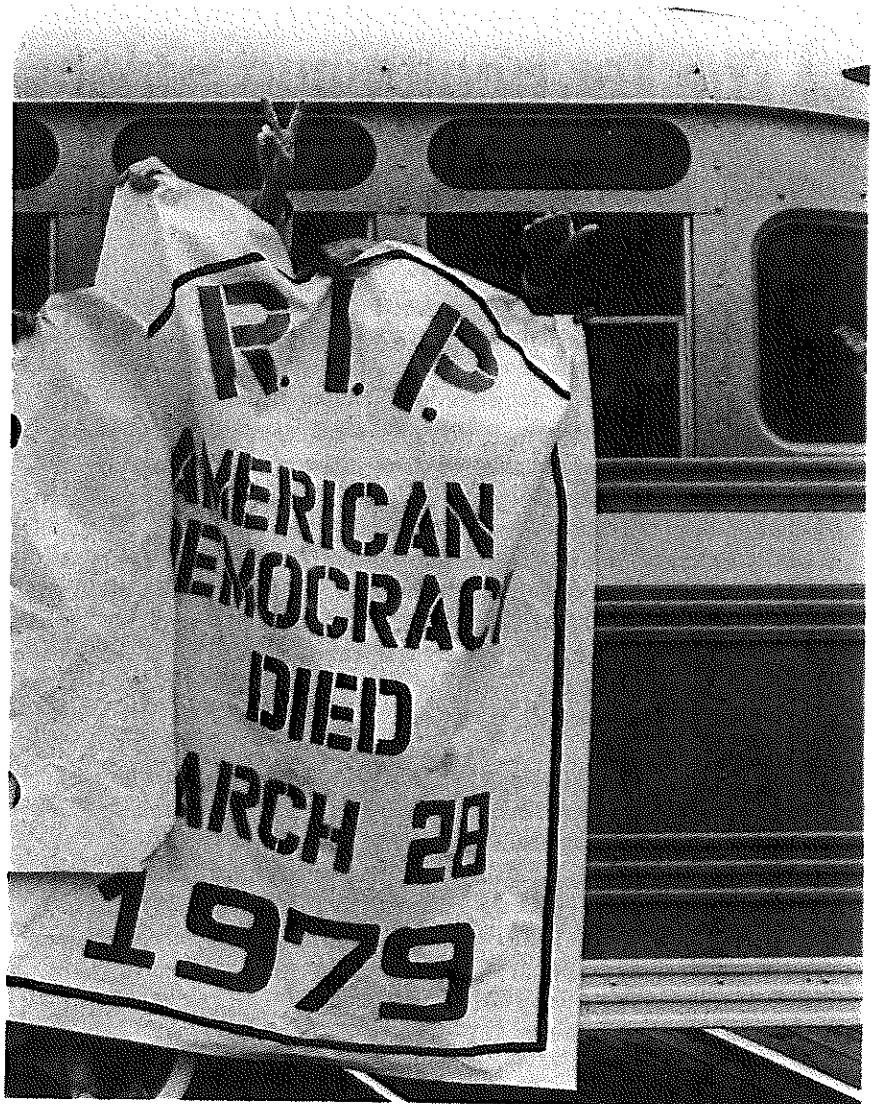
In May, the first radioactive reactor building water waste was shipped from TMI and in the summer, GPU conducted its first television camera inspection of the damaged reactor fuel inside of the reactor vessel.

On August 12, GPU fired cleanup worker William Pennsylv when Pennsylv insisted he be allowed to wear a respirator while undressing men who had entered highly radioactive areas. Pennsylv filed a complaint with the U.S. Department of Labor.

### TMI-1:

On January 7, the U.S. Court of Appeals for the D.C. Circuit ruled that issues of psychological stress need not be considered in the restart hearing, but must be considered by the NRC under the National Environmental Policy Act. The Court ordered an injunction on restart until an environmental study on psychological stress was

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*TMI area residents arrested in police bus, 1984/ Michael Lomma*

over future physical health effects “are associated with stress that persists for years. Chronic stress and the emotional, hormonal and immunological changes associated with it may cause or exacerbate many illnesses.... When we compared a groups of people living near Three Mile Island with a similar group elsewhere, we found that the Three Mile Island group reported more physical complaints, such as headaches and back pain, as well as more anxiety and depression. We also uncovered long-term changes in levels of hormones, such as epinephrine, norepinephrine and cortisol, that the body secretes during stress. These hormones affect various bodily functions, including muscle tension, cardiovascular activity, overall metabolic rate and immune-system function... Our observations at Three Mile Island support the idea that long-term psychological problems are more likely after technological disasters than after natural ones.”

# Worker Health and Safety: The TMI-2 Clean Up

IN A 1985 SERIES written by Jim Detjen and Susan FitzGerald, the *Philadelphia Inquirer* reported that: cleanup workers are often sent into radioactive parts of TMI-2 without adequate protective clothing or respirators; workers are routinely given already contaminated protective clothing; and equipment meant to detect radiation hazards for workers often malfunctions. Contamination incidents have been routine since the accident, occurring on average twice a week. Neither the government nor the utility has set up a health registry to monitor workers' health effects. In 1982, one worker was fired for insisting he wear a respirator to protect him from inhaling radioactive dust, after GPU restricted the use of respirators. (The company settled his Labor Department complaint). In 1983, three clean up workers were fired or retaliated against after raising safety concerns about cleanup operations.

## The Indictment and Conviction of Met Ed

FOR MONTHS PRECEDING the TMI-2 accident, plant operators, with the knowledge of some management personnel, systematically falsified leak test results, after results suggested the plant was leaking. This practice desensitized operators to trouble signals and may have damaged the valve that stuck open during the accident. In 1979, NRC investigators learned of the practice during a post-accident interview of former control room operator, Harold Hartman. However, the agency did nothing about it until Hartman appeared on New York television one year later. On November 7, 1983, the U.S. Department of Justice indicted Metropolitan Edison Company (Met Ed) for criminal falsification and destruction of tests. On February 28, 1984, the corporation entered a guilty plea to one count and no contest to six other counts of the 11-count indictment. The NRC, however, ignored management questions raised by the leak rate issue, and the indictment/conviction, in allowing TMI-1 to resume operation. During the court's plea bargain hearing, the U.S. Attorney made the following statements:

### ■ On the competence and integrity of GPU:

"There were a number of self-serving observations made in the defendant [Met Ed]'s response. One is basically a fairly grand promise to do in the future what in my judgment the company should have been doing the whole time it was operational in 1978 and 1979; that is, to follow the technical specifications, follow the regulations and operate the plant the way [Met Ed attorney] Mr. Curran now says in the light of all that has been learned they

conducted. The NRC appealed the decision to the U.S. Supreme Court.

In April, an NRC Special Master (Judge) Gary Milhollin concluded: a number of TMI management personnel had engaged in cheating and wrongdoing since the accident; the overall integrity of the operations staff was inadequate; the company's response to certain cheating incidents was inadequate; the company submitted a "material false statement" to the NRC in connection with the license certification of the then-TMI-2 Supervisor of Operations, who had cheated on his license requalification exam in 1979; many company witnesses gave noncredible testimony under oath; and the company's training and testing program was "poorly administered, weak in content, ineffective in its method of instruction, and not an adequate response to the Commission's Order of August 9, 1979 [establishing criteria for restart]." The NRC licensing board later reversed many of Milhollin's findings, and issued a decision supporting restart.

In a non-binding referendum held on May 18, voters in the Pennsylvania counties of Dauphin, Cumberland, and Lebanon voted 2 to 1 in opposition to TMI-1 restart.

On November 9, the NRC Commissioners came to Harrisburg for a public meeting before

1,200 Harrisburg area residents, having announced that they would vote on restart by December 10, 1982. Virtually every speaker expressed vehement opposition to TMI-1 restart. Local resident Mary Hartnett told the commissioners,

"If you don't live here, it's difficult to understand the hatred and mistrust we feel for Met Ed. If you're not here, you can't understand what we feel toward the NRC for not looking out for our health and safety."

Another resident, Kathy McCaughin, commented,

"I resent five men in Washington holding the fate of my life in your hands. I resent that it took you three and a half years to come to Harrisburg. But most of all, I resent my feeling of helplessness."

The December 10 date passed with no decision from NRC Commissioners.

## 1983

In January, GPU agreed to an out-of-court settlement in its \$4 billion suit against TMI's designers, Babcock and Wilcox Co., for causing the accident. GPU agreed to settle only after many days of trial and the accumulation of an extensive record of new evidence against GPU, raising new ques-

promise to operate it in the future. Ironically what Mr. Curran is really saying I guess for public consumption is no more than what those Unit 2 employees said to the NRC inspector on the 18th of October [1978] — we promise to be doing our job properly. And for all the weeks and months that followed, they didn't. That is an undeniable and undisputed fact....

"The company was indicted for a reason. It was to serve notice on this and all other licensees that you can't sluff off the responsibility for corporate activity on a handful of scapegoat employees... We could have indicted a number of the people whose titles were mentioned in my statement of facts, and we would obviously have convicted them... I think at the risk of debating back and forth the proposition that this company be held responsible for its conduct is unavoidable. Notwithstanding some of the disingenuous remarks of defense counsel, I think in all the self-serving remarks there is I believe an admission of guilt to Count 2. So long as that is a fact clear on the record."

### ■ On the competence and integrity of the NRC:

"This notion that the NRC investigation — whatever on earth that is — is 'a far superior vehicle' to these proceedings today is utter poppycock. I had not intended to address this issue, but I cannot stand silent and allow the charade that has been carried on by the NRC to be treated as anything but that. We are the only institution since the accident occurred that has made the slightest damn effort to see this thing through to a conclusion. The NRC has not conducted any meaningful investigation; to this day has used as a pretext that fact that the Grand Jury was conducting an investigation as a vehicle to avoid addressing its responsibilities.

"As recently as six weeks ago, the NRC voted three to two to ignore what we are doing here today. When the United States Department of Justice brought this indictment, when I got sworn into office, this investigation was virtually dormant and had been for some time.

"Mr. Curran seems to raise the issue that we are not to worry if there are any loose ends here today because the NRC will take care of it. It is utterly delusional. The NRC doesn't care what is in the indictment; they have said so. They don't care what the outcome of this case is; they have said so. They are going to proceed and do whatever they want to..."

## Emergency Planning

EMERGENCY PLANNING FOR nuclear reactor accidents was virtually nonexistent before the TMI accident. After TMI, the NRC established emergency planning requirements for all reactors, creating a 10-mile Emergency Planning Zone (EPZ). The nuclear industry is pressing for a reduction in size of the EPZ to two miles — essentially a return to the pre-TMI situation.

# The Restart of TMI-1

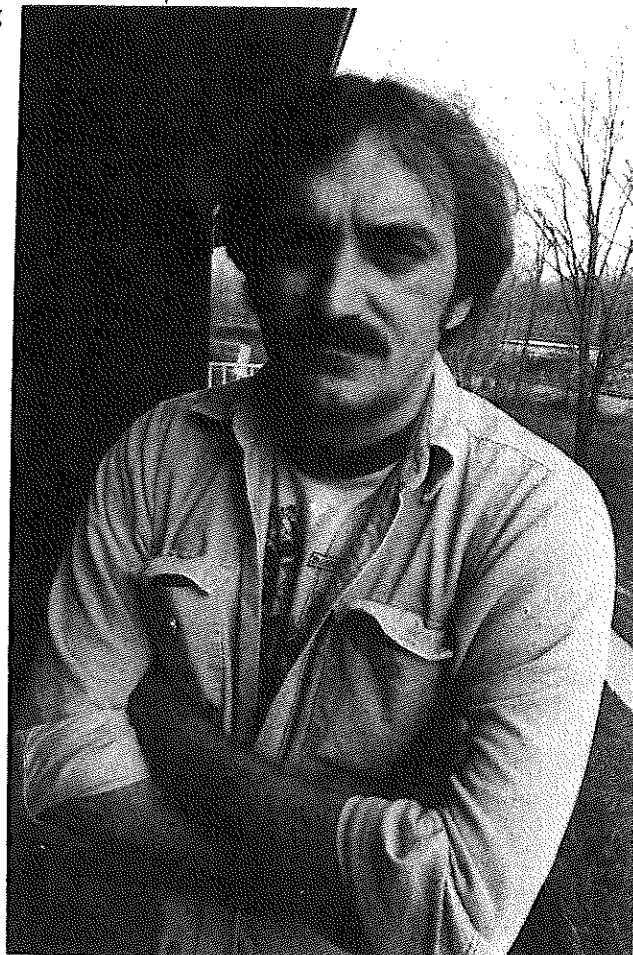
- AT THE TIME of the March 1979 accident at Three Mile Island Unit 2, TMI Unit 1, its sister reactor, was shut down for refueling.
- On July 2, 1979, the Nuclear Regulatory Commission (NRC) ordered TMI-1 to remain shut down pending public hearings. The Commission said that it lacked "reasonable assurance" that TMI-1 could be operated safely.
- On August 9, 1979, the NRC established a hearing process to examine the restart issue. Many organizations and individuals intervened in these proceedings.
- The first set of hearings lasted from October, 1980 through July, 1981. The hearings were reopened after the discovery of cheating by operators on licensing exams, and were held from November through December, 1981. The Licensing Board found in favor of restart in three decisions, the last one issued July 27, 1982.
- Intervening organizations appealed the decision supporting restart to the NRC's Appeal Board. In May, 1984, the Appeal Board found in favor of the intervening organizations and ruled that the record could not support a finding that company management was capable of safely operating the plant. Hearings were reopened.
- On February 25, 1985, the NRC commissioners stopped all further hearings concerning management capability and character, and indicated that a restart vote could occur even before decisions were rendered by the Licensing Board on the most recent hearing issues.
- On May 29, 1985, the NRC voted 4 to 1 to restart TMI-1.
- The NRC decision was upheld in a split decision by the U.S. Third Circuit Court of Appeals. U.S. Supreme Court Justice William Brennan stayed this decision, but the full Supreme Court reversed him and allowed TMI-1 to restart on October 2, 1985. The plant started up the next day.
- Public and political sentiment against the restart of TMI-1 was the strongest ever in opposition to the operation of a nuclear reactor. Opponents included:
  - Former Pennsylvania Governor Richard Thornburgh, who filed court actions to block the restart;
  - Both U.S. senators from the Commonwealth of Pennsylvania Arlen Specter and John Heinz—and a number of U.S. representatives for districts covering and adjacent to the reactors;
  - Almost all area state and local officials, including state senators, state representatives, mayors, members of city councils, county commissioners and township supervisors.
- Voters in three Pennsylvania counties voted two to one opposition to TMI-1 restart in a non-binding referendum on May 18, 1982.

tions about the competence and character of GPU management.

On March 22, TMI-2 senior-safety start-up engineer Richard Parks publicly charged GPU and Bechtel Corporation, joint-managers of the cleanup, with deliberately circumventing safety procedures, and harassing him and other workers for reporting safety violations. Parks filed a complaint with the U.S. Department of Labor, which he later won.

Five days later, Larry King,

*TMI-2 whistleblower  
Richard Parks/Robert Del Tredici*





former site operations manager at TMI-2, and Park's former boss, publicly supported Park's charges, claiming he was improperly dismissed for insisting safety procedures be followed. On April 2, TMI-2 plant engineering director Edwin Gishel signed an affidavit charging GPU and Bechtel with harassment, intimidation and circumventing safety procedures.

In April, the NRC staff began backing away from its prior endorsement of GPU management — which was crucial to the NRC's decision on whether to allow TMI-1 restart. The staff later officially withdrew its support, referring seven "management integrity" issues to the NRC's Office of Investigation for further investigation. The NRC's Appeal Board ordered the restart record reopened to examine the allegations of leak rate falsification. However, in October, the NRC Commissioners reversed their own Appeal Board and voted to stop any further hearings on the leak rate issue.

Also in April, the U.S. Supreme Court reversed the D.C. Circuit Court opinion on psychological stress, ruling that an environmental assessment need not be done.

On May 18, 12 local citizens blocked the entrance to TMI and were arrested.

On July 22, the NRC fined GPU \$140,000 for submitting a material false statement to the NRC in

## The TMI Public Health Fund

SHORTLY AFTER THE ACCIDENT, lawyers for local citizens and businesses within a 25-mile radius of the plant filed a landmark class action lawsuit against TMI's owners and builders, for damages suffered as a result of the TMI accident. In February, 1981, the lawyers settled the case for \$25 million, \$20 million to pay for economic losses, and \$5 million to set up a "Public Health Fund" to fund research and public education relating to the TMI accident and radiation hazards. (Individuals with personal injury claims were not permitted in the class action suit. Their claims have been filed separately.) The court named lead counsel David Berger, head of a Philadelphia law firm specializing in class actions, to manage the fund. But the community soon grew dissatisfied with the progress and administration of the Health Fund.

In 1986, TMIA and state and local officials asked the court overseeing the Fund for a full public accounting of Health Fund expenditures, and for the removal of Berger as administrator. TMIA's letter to the court described "Misrepresentations, failures to fulfill promises, isolated decision-making and generally condescending attitudes by Berger toward the class.... [We] believe much of the money has not and will not be appropriated with the community's best interest in mind." The court denied these requests.



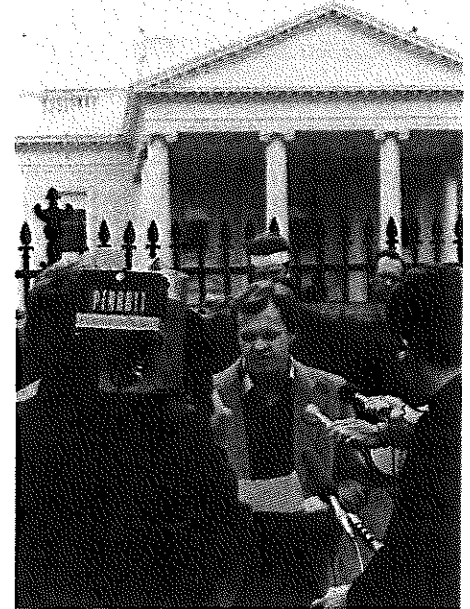
Antinuclear protesters at the White House, 1983

# General Public Utilities Corp. and Subsidiaries: TMI's Owners and Operators

- GPU AND ITS SUBSIDIARIES created conditions under which the worst commercial nuclear accident in this nation's history occurred, endangering an entire population and destroying a reactor which has become a hazardous menace to the surrounding community. There is significant evidence that GPU allowed the accident to happen by placing its own financial considerations before safety — by allowing operation before construction was complete, by providing those running the plant with insufficient resources to maintain safety, by violating regulatory requirements, and by violating the law to keep the crippled plant operating when it should have been shut down for repairs.
- Metropolitan Edison Company, the GPU subsidiary which partly owns TMI and operated it at the time of the accident, is the first and only NRC utility licensee ever criminally convicted of violating the Atomic Energy Act and its regulations. The conviction establishes that the company maintained a policy to falsify systematically critical safety data and destroy documents for months leading to the 1979 accident. The company still does not admit that leak rates were falsified.
- During the TMI accident, company officials, many of whom are still with the company, withheld critical information from government officials about its seriousness so that protective action for the community at risk was not properly considered. After the TMI accident, company officials lied to the government regarding its causes and covered up facts which eventually led to Met Ed's criminal conviction. The company rewarded and promoted those who misrepresented the facts in the interest of protecting the company from criminal, regulatory and public sanction. GPU and its subsidiaries have never accepted full responsibility for the accident.
- After the accident, cheating — by a senior plant manager who has been convicted of federal crimes — was covered up by submission of material false statements to the Nuclear Regulatory Commission (NRC). After the accident, cheating also occurred on operator exams, in part due to widespread disrespect for training by both management and operations personnel.
- The NRC staff admits that during Unit 2 clean up operations, company officials willfully violated safety procedures. It has been reported that company officials have risked worker health and safety through sloppy clean up practices, leading to excessive contamination of workers. Company officials have harassed, intimidated, discriminated against, and fired clean up workers who reported safety violations.
- There is significant evidence that company officials have given misleading and false testimony to the NRC's Licensing Board and to the Commission.

connection with the license certification of then TMI-2 Supervisor of Operations, Jim Floyd, who had cheated on his license requalification exam in 1979 — four months after the accident.

In September, the Dauphin County Commissioners passed a



*Harrisburg resident Ed Nellsen at the White House, 1983.*

resolution to establish radioactive air emission standards for TMI, and set up a task force to write the actual ordinance, marking the first time a county took a step toward legally binding action to control the hazards caused by operation of a nuclear power plant.

On November 7, 1983, the U.S. Department of Justice indicted Met-Ed for falsifying leak rate data and destroying documents before the accident, in violation of its



license, NRC regulations, and federal criminal law.

In December, the NRC staff recommended TMI-1 restart at 25 percent power, despite the indictment and the staff's inability to vouch for the integrity of GPU management. Pennsylvania public officials, including Thornburgh, senators Arlen Specter and John Heinz, area Congressmen, state, and local officials, strongly criticized the restart proposal since major issues relating to GPU's integrity and character remained unresolved. These issues included:

Evidence of deliberate falsification and destruction of leak rate data for months leading to the accident which resulted in Met Ed's criminal indictment;

Evidence of similar leak rate practices at Unit 1, which involved current TMI-1 management and operators;

Evidence confirmed by the NRC of deliberate circumvention of safety procedures during the clean up, and of illegal harassment and firing of those who reported safety violations;

Questions concerning the character and competence of GPU management arising out of the trial record developed in GPU's \$4 billion suit against Babcock and Wilcox company, settled in 1983. This included new evidence that company officials presented false

They have altered testimony in federal court based on false assumptions and unsupported facts in order to protect the company's financial interests. Company management attempted to constrain an NRC investigation of allegations critical of management, and promoted one individual who was deliberately uncooperative with NRC investigators. The company has regularly withheld documents from regulatory officials.

- Since the accident, the company has been cited for numerous regulatory violations. It has failed miserably in its obligations to fix design and hardware deficiencies revealed by the accident.
- In 1988, GPU was named "Electric Utility of the Year" by *Electric Light and Power Magazine*.

## The Chernobyl Accident

ON APRIL 26, 1986, Reactor 4 at the Chernobyl nuclear power station had a catastrophic accident. A steam and hydrogen explosion blew the cover off the reactor, releasing enormous amounts of radiation. The Soviet Union ordered a total evacuation of an 18.6 mile radius of the plant, although some towns as far as 50 miles away were evacuated as well.

The radioactive cloud moved first toward Poland and the Baltic Sea, then over Finland, Sweden and Norway. The plume then swung over much of the rest of Europe—Czechoslovakia, southern Poland, Austria, Germany, Switzerland, Italy, France, Holland, Belgium and Britain. Another plume hit Scandinavia, the Balkans, Greece and Turkey. Discharges were then more widely dispersed in the atmosphere. Food more than 1,200 miles from Chernobyl was reclassified as low-level radioactive waste and disposed of.

During and after the accident, many national governments suppressed information about the health and safety implications of the radioactive contamination caused by the Chernobyl accident.

### Chernobyl's Containment: Could it Happen Here?

One of the U.S. industry's most frequently repeated criticisms of the Soviet nuclear plant design was Chernobyl's lack of a containment structure. Containment structures can, under certain circumstances, halt the immediate release of large quantities of radiation in the event of an accident. Almost half of this country's commercial reactors, those designed by General Electric and Westinghouse, have containment designs strikingly similar to the containment vessel at Chernobyl. Forty-nine U.S. reactors have this design, known as "pressure suppression containments."

Daniel Ford, former Executive Director of the Union of Concerned Scientists (UCS), and Robert Pollard, UCS Nuclear Safety Engineer, released documents in mid-May, 1986 that showed the U.S. government had known since 1972



*Local resident Sean Downey at TMI, 1984* Michael Lomma

about the fundamental problems with the GE containment design but kept the information secret.

In one 1972 document, Joseph Hendrie, who later became Nuclear Regulatory Commission (NRC) Chairman, wrote to the late John O'Leary, former Chairman of the Board of GPU Nuclear, "the acceptance of pressure suppression containment concepts by all elements of the nuclear field...is firmly imbedded in the conventional wisdom. Reversal of this hallowed policy, particularly at this time, could well be the end of nuclear power. It would throw into question the continued operation of licensed plants, would make unlicensable the GE and (some Westinghouse) plants now in review, and would generally create more turmoil than I can stand thinking about."

Even more serious threats to the public's health and safety are presented by the nuclear weapons reactors operated by the Department of Energy. None of these reactors have adequate containment structures.

But even TMI's containment structure, which was sturdily built due to its close proximity to Harrisburg's airport, could not have withstood the force of Chernobyl's explosion.

and misleading statements to the NRC concerning its responsibility for the accident.

In December, Specter came to Harrisburg to hold public hearings on the NRC's handling of the TMI restart case.

**1984**

On January 27, the NRC Commissioners voted three to two to "separate" issues of GPU corporate character from an overall TMI-1 restart decision, and to make a final restart decision before the integrity issues were resolved. Commissioners Gilinsky and Asselstine strongly dissented. Two area Congressmen, a Dauphin County Commissioner, the parties to the restart proceeding and members of the public were all denied any opportunity to comment at the Commission meeting. Many public officials, including Thornburgh, Specter, Heinz, area Congressmen, state and local officials, as well as members of the public, expressed public outrage at the Commission's decision.

On February 29, a U.S. District Court Judge accepted a plea bargain agreement between the U.S. Justice Department and Met Ed settling the Unit 2 leak rate falsification case. Met Ed pleaded

guilty to one count, and no contest to six counts of an 11 count indictment. In May, the NRC's Office of Investigation (OI) announced it had referred to the U.S. Justice Department yet another of OI's recent investigations, specifically whether GPU/Met Ed deliberately misrepresented to the NRC facts which it knew to be true concerning its own responsibility for the accident, and whether a management decision was made to intentionally misrepresent those facts in the company's own accident investigation. The evidence surfaced during the GPU/B&W trial, settled in 1983.

Ralph Nader appeared at a rally in Harrisburg commemorating the accident's 5th anniversary. And Rev. Jesse Jackson attended a vigil at the plant gates at 4 a.m. on March 28, marking the precise time the accident began.

On April 11, GPU agreed to an out-of-court settlement with cleanup worker William Pennsylv who was fired a year before for insisting he be allowed to wear a respirator. This was two days before an administrative law judge was scheduled to hear his case.

On May 24, the NRC's Appeal Board again ordered new TMI-1 restart hearings on management competence and integrity, saying that the current record could not support a finding that management has the competence or integrity to



## Nuclear Waste and Decommissioning

- **EACH REACTOR PRODUCES** about 30 tons of lethal high-level radioactive waste per year. At present, there is no place to move high-level nuclear waste. By 1998, the federal government hopes to begin transporting the fuel to a nuclear waste dump in the western United States. A second dump is scheduled for the eastern United States by the year 2007. But these deadlines are not likely to be met. Currently, there is no technology which can store high-level waste safely so that it is isolated from the environment for hundreds of thousands of years.
- Commercial "low-level" waste is buried in one of three dumps: Beatty, Nevada; Barnwell, South Carolina; and Hanford, Washington. (Three closed dumps have experienced serious leakage problems: West Valley, New York; Sheffield, Illinois; and Moxey Flats, Kentucky.) By 1993, each state, or regional group of "compact" states, is supposed to become responsible for its own waste. The federal government has encouraged burial of the waste, but many citizens believe the waste should remain above-ground at the reactor site so it can be monitored and maintained.
- Until some form of permanent disposal is found, nuclear waste must remain in temporary storage. Each of the nation's reactors is a nuclear waste dump. Used reactor fuel, which is classified as high-level waste, is kept in "irradiated fuel pools" at the reactor site.



- The NRC says it expects plants to last 40 years, although embrittlement and other serious safety problems which arise as plants age make such predictions unlikely. When a reactor can no longer operate, it must be decommissioned. This means taking the reactor apart, after which the pieces will be classified as high-level or low-level waste (under current regulations, most of it will be considered "low level"). The costs of decommissioning range from \$100 million to well over \$1 billion per plant.

*Source: Nuclear Information and Resource Service*

*Former Harrisburg resident and mother Suzanne Patton at 1983 conference*

# Nuclear Power and the Global Warming Problem

## ■ The Problem

GLOBAL WARMING is coming: average air temperatures will rise, the sea levels will rise, and trees and plants will die. Even small climate changes can cause massive destruction (the Ice Ages were only two to four degrees C cooler than present temperatures.) If the polar ice cap melted, the ocean could rise 600 feet, putting many major cities under water.

The primary cause of global warming is production of carbon dioxide (CO<sub>2</sub>), which accounts for about half the gases which trap heat in the atmosphere and keep the earth warm. CO<sub>2</sub> is produced primarily by the burning of fossil fuels like coal and oil. In the United States, about a third of the CO<sub>2</sub> results from electricity generation; a third from transportation uses; and a third from manufacturing and heating processes. CO<sub>2</sub> is also produced by the burning and decomposition of trees, and is exacerbated by the destruction of forests which normally absorb CO<sub>2</sub>.

Another major source of greenhouse gases is chlorofluorocarbons (CFCs), used primarily in air conditioning and refrigeration, which, molecule for molecule, are 10,000 times stronger than carbon dioxide.

The United States is the largest single contributor of greenhouse emissions, creating about 25 percent of the problem.

## ■ The Solutions

Solutions to global warming include: drastic reduction in fossil fuel use (fuel efficiency), energy efficiency (energy efficiency gains made in the ten years from 1975 to 1985 reduced U.S. energy consumption per unit of GNP by 30 percent), development of renewable energy resources and least-cost energy planning, elimination of CFCs, and reforestation. During the last session of Congress, Rep. Claudine Schneider (R-R.I.) introduced a comprehensive global warming bill which aims to accomplish these goals. Her bill is expected to be reintroduced.

However, Sen. Tim Wirth (D-Colo.) has introduced a nuclear industry-supported bill in Congress also to comprehensively deal with the global warming problem. But included in the bill are funds set aside to research the development of nuclear reactors as an option to solve the global warming trend. (Nuclear reactors contribute little to the greenhouse effect.)

Nuclear power is not an appropriate option. In addition to the environmental hazards posed by nuclear power, it is the costliest method known to produce electricity. According to the Rocky Mountain Institute, switching from a fossil fuel to a nuclear power economy would require building a new reactor every one to three days for the next 40 years and would cost about \$200 billion per year. Not only would such massive nuclear energy generation produce enormous quantities of radioactive waste and pose monumental safety hazards, it would, at best, reduce global warming by only about 20 percent.

operate safely TMI.

In June, in response to a Freedom of Information Act request by the *Philadelphia Inquirer*, the NRC released transcripts of closed NRC Commission meetings dating from 1981 through 1983, which revealed a commitment on the part of a Commission majority to restart TMI-1 as soon as legally and politically possible. Also evident was significant disdain for public views on the restart issue, and a serious lack of understanding of the legal and technical issues.

On June 15, former TMI-2 Supervisor of Operations, Jim Floyd, was indicted by a federal grand jury for cheating on 1979 licensing exams, and for causing two material false statements to be submitted to the NRC in connection with his license certification. He was later convicted.

On June 21, intervenors Marjorie and Norman Aamodt filed a motion to reopen the restart record because of new information concerning increased instances of cancer found in the vicinity of TMI. The Aamodts, with the help of area residents, had conducted their own informal survey which found that the number of local people dying from cancer had increased seven-fold since the accident. The NRC has consistently refused to acknowledge that the level of releases during the accident could cause such injuries. The Commis-

sioners, by a vote of 2 to 1, later denied the Aamodt's motion.

On June 28, GPU began sending workers into the reactor building without protective breathing respirators. In July, during operations to lift off TMI-2's 160-ton reactor head, GPU vented radioactive gases into the environment. The venting occurred despite pledges by GPU and the NRC that no venting would take place during the head lift operation.

On August 13, four Pennsylvania elected officials, four New Jersey organizations, and TMIA filed a 400-page petition with the NRC requesting that GPUN's license to operate any and all nuclear reactors be revoked on the basis that the company lacks the requisite character to operate a nuclear power plant safely. Two days later, Thornburgh addressed the NRC Commissioners at a public meeting urging them not to vote on TMI-1 restart until hearings were held on certain "management integrity" issues, and until money was obtained to clean up Unit 2.

In November, the NRC notified Congress that the U.S. Department of Justice had begun a federal grand jury investigation of the NRC Staff. Inside sources confirmed that the investigation was focusing on at least the NRC's handling of GPU's reporting failures during the accident, and leak rate falsification.



*Picketers outside Pennsylvania Public Utilities Commission/Gordy Ziegler*

## What to do with the Water?

AS A RESULT of the accident, the reactor building basement at TMI-2 was covered with about 260,000 gallons of contaminated water. Additional contaminated water has accumulated from cleanup operations and the volume of water at the end of defueling is expected to be about 2.3 million gallons. This water contains tritium, a radioactive substance that bonds chemically with water. It cannot be separated from water. Tritium has a hazardous life of 120-130 years, which means it will remain radioactive for that period of time.

The Lancaster-based group Susquehanna Valley Alliance (SVA) successfully defeated GPU's original plans to dispose of the water by dumping it in the Susquehanna River. Now, GPU has proposed that the water be disposed of by forced evaporation into the atmosphere.

SVA and TMIA (through intervenor Frances Skolnick) are fighting GPU's plans in NRC proceedings, favoring on-site storage of the water which would permit radioactive decay to occur before other steps are taken. On February 3, 1989, an NRC Licensing Board approved the evaporation plan. Skolnick plans to appeal the decision.

If the tritium-water is evaporated, the radioactive vapor will condense, mix with rain, and fall to the earth, contaminating the air, water, crops and food-producing animals.

# Key Dates

- **March 28, 1979** — TMI-2 accident.
- **March 30, 1979** — Governor Richard Thornburgh orders evacuation of pregnant women and children within a 5-mile radius of the plant. Around 200,000 flee their homes.
- **July 2, 1979** — NRC directs that TMI-1 remain shut down until a hearing is held on whether there is reasonable assurance the plant can be operated safely.
- **October 25, 1979** — NRC issues Notice of Violation for the accident, fining Met Ed the maximum amount permitted under NRC regulations.
- **July, 1980** — NRC permits GPU to vent accident-generated radioactive gases into the atmosphere. Venting continues for 11 days.
- **October 15, 1980** — NRC TMI-1 restart hearings begin.
- **October 2, 1981** — NRC reopens TMI-1 hearings to inquire into allegations of cheating on operator exams.
- **May 18, 1982** — Voters in Pennsylvania counties of Dauphin, Cumberland and Lebanon express opposition (2 to 1) to TMI-1 restart, in a non-binding referendum.
- **August 12, 1982** — GPU fires cleanup worker William Pennsylv when Pennsylv insisted he be allowed to wear a respirator while undressing men who had entered highly radioactive areas.
- **November 9, 1982** — NRC Commissioners hold a public meeting before 1,200 Harrisburg area residents, on the question of TMI-1 restart.
- **March 22, 1983** — Clean up worker Richard Parks publicly charges GPU and Bechtel with deliberately circumventing safety procedures and harassing him and others.
- **April 19, 1983** — U.S. Supreme Court rules that NRC need not do an assessment of psychological stress before restarting TMI-1.
- **November 7, 1983** — Department of Justice issues an 11-count indictment against Met Ed for falsifying leak rate data and destroying documents before the accident.
- **February 29, 1984** — Plea bargain agreement between U.S. Justice Department and Met Ed, settling leak rate falsification case, is approved by the court: Guilty, one count; No contest, 6 counts.
- **November 16, 1984** — Former TMI supervisor James Floyd is convicted in federal court of cheating on NRC operator exams in 1979.
- **February 13, 1985** — NRC Commissioners stop all further TMI-1 restart hearings.
- **May 29, 1985** — NRC Commissioners vote 4 to 1 to restart TMI-1.
- **October 2, 1985** — U.S. Supreme Court allows TMI-1 to restart.
- **February 3, 1989** — NRC Licensing Board approves company plans to evaporate accident-generated water into the atmosphere.

## 1985

### TMI-1:

On January 2, the TMI-1 restart licensing board Chairman Ivan W. Smith sent a letter to a federal district court asking for leniency in the sentencing of recently convicted former TMI supervisor Jim Floyd. (Floyd was later fined \$2,000, sentenced to two years probation and ordered to provide 400 hours of community service to victims of the TMI accident.) Smith's letter prompted sharp attacks by local citizens and elected officials concerning Smith's objectivity as an NRC judge. The Commonwealth of Pennsylvania, TMIA and UCS called for the immediate removal of Smith, for showing pervasive bias in favor of GPU in the restart proceedings. The NRC Staff later supported these motions.

On January 15, the NRC Commissioners held a public meeting to discuss whether further hearings would be held in TMI restart case. Over 50 people from the Harrisburg area came to Washington for the meeting, and the Commissioners adjourned the meeting without making a decision. However, on February 13, by a 3 to 2 vote, the Commissioners voted to stop all further hearings on GPU's character and competence. After TMI

>



residents attending the meeting began demonstrating, the Commissioners were forced to recess the meeting.

In Harrisburg, 150 people protested the NRC's decision at a march and rally. On May 18, area residents fasted to protest the NRC's decision to vote on restart later that month. Four days later, Thornburgh, Specter, Heinz, area Congresspeople and local officials travelled to Washington to urge publicly that the Commissioners not vote to restart TMI-1.

On May 29, the NRC voted 4 to 1 to restart TMI-1. The decision was followed by a series of decisions by the U.S. Court of Appeals for the Third Circuit. The court almost immediately stayed the effectiveness of the decisions in response to requests by TMIA, the Commonwealth of Pennsylvania, UCS and the Aamodts. In August, however, the court ruled 2 to 1 to allow restart, although continuing the stay on restart pending Supreme Court review. Supreme Court Justice William Brennan continued the stay in response to a petition by TMIA. However, the full court reversed Brennan on October 2, and TMI-1 restarted the next day. Forty-five people gathered to protest at TMI's gate — 15 were arrested.

Over the course of the next few months, during which the plant gradually increased power, the

## Glossary

**alpha particle:** A positively charged particle of two neutrons and two protons which is emitted by certain radioactive material. A dangerous carcinogen when inhaled or ingested.\*\*

**atomic energy:** Same as "nuclear energy."

**Atomic Energy Act:** The federal law which establishes the responsibilities of the Nuclear Regulatory Commission and the regulatory process for licensing nuclear reactors, including public hearing rights.

**Atomic Energy Commission:** The federal agency created by the Atomic Energy Act of 1946, responsible for both promotion and regulation of nuclear power. The duties and staff were divided in 1974 by the Energy Reorganization Act into the NRC and the Energy Research and Development Administration (now part of the DOE).\*\*

**Atomic Safety and Licensing Appeal Board (ASLAB or Appeal Board):** The Board which holds public hearings and rules on any objections to decisions of the ASLB. Members are appointed by the Nuclear Regulatory Commission.\*

**Atomic Safety and Licensing Board (ASLB or Licensing Board):** A three-member panel which holds public hearings and rules on construction permits and operating licenses for individual nuclear plants. Members are appointed by the Nuclear Regulatory Commission.\*

**Babcock and Wilcox Co. (B&W):** Company that designed and manufactured TMI-1 and TMI-2.

**backfitting:** Retrofitting; altering an existing nuclear power plant to meet new requirements.\*\*

**background radiation:** Radiation coming from outer space (cosmic) and commonplace materials found on earth.\*\*

**beta particle:** A high energy electron emitted by decay in a radioactive nucleus. Can cause skin burns and, when ingested, cancer.\*\*

**BWR:** Boiling water reactor. Reactor with water that is allowed to boil and is converted to steam in the reactor itself.\*

**capacity factor:** The energy actually supplied by a plant in a given time interval divided by the product of the rated power and the time interval.\*\*\*

**cask:** A shielded container used to store or transport radioactive material.\*\*\*

**clean up:** Putting reactor in state where it induces no radioactivity and no fission products.\*\*\*



**Area residents march in protest to TMI**

**construction permit:** A permit granted by the NRC for the construction of a nuclear reactor.\*\*\*

**containment:** The prevention of release, even under the conditions of a reactor accident, of unacceptable quantities of radioactive material beyond a controlled area. Also the containing system itself.\*\*\*

**containment vessel:** The large concrete and steel shell around a reactor whose purpose is to contain any radioactivity that might escape from the reactor itself.\*\*

**control rod:** A rod of a material that absorbs neutrons, used to control the power of a nuclear reactor. Control rods are usually raised from the core to start a chain reaction and lowered, or "fully inserted," into the core to halt fissioning.\*\*

**core, reactor:** That part of a reactor in which most or all of the fissions occur.\*\*\*

**criticality:** The state of a nuclear reactor when it achieves a self-sustaining chain reaction.\*\*

**curie:** A unit of radioactivity giving off 37 billion disintegrations per second, the radioactivity of one gram of radium. Named after Marie and Pierre Curie, the discoverers of radium.\*\*

plant tripped, or accidentally shut down, many times due to numerous malfunctions (each time a reactor trips, the system suffers increased stress and radiation is released). Company personnel violated a significant number of procedures and misrecorded records, and many workers were contaminated. In one November incident, the plant's power increased rapidly and improperly when a technician caught his belt buckle on a control room instrument panel switch.

#### **TMI-2 and the accident aftermath:**

In February, the *Philadelphia Inquirer* reported that hundreds of TMI-2 clean up workers had been contaminated by radioactive materials either on the skin or through ingestion. As a result, many workers were living in a state of anxiety, fearing cancer, birth defects and possible genetic damage to future generations. The *Inquirer* also reported that workers generally believed clean up of TMI-2 was impossible due to the extensive plant radioactive contamination.

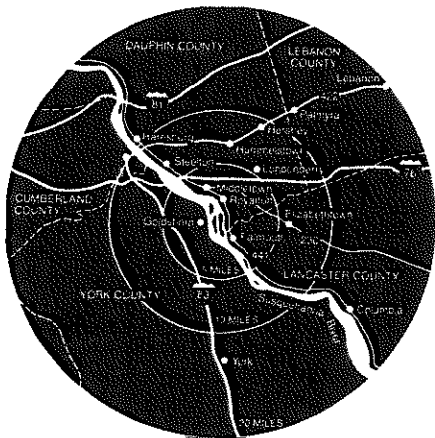
A local Dauphin County court approved GPU's \$4 million settlement offer to 70 families with children who had been injured by accident-related radioactive contamination, including \$1,095,000 for 5-year old Bradley



R. Baker, born nine months after the accident with Down's syndrome. (Bradley's parents, Blaine and Deborah Baker, were among 62 plaintiffs who filed suit in 1981 seeking damage for health-related injuries during the accident.) Also, \$855,000 was approved for Gabriella Eisen, an infant born after the accident with cerebral palsy.

In July, two cancer-stricken former TMI workers who had participated in the initial phase of cleanup joined the list of plaintiffs suing GPU.

In August, GPU's permit to ship low-level radioactive waste to Hanford, Washington was temporarily suspended after GPU mislabeled three barrels of radio-



active waste. Later that month, the NRC levied a \$64,000 fine against GPU and Bechtel Corporation for intimidating and harassing former cleanup engineer Richard Parks. And in September, GPU admitted

**decommissioning:** Those actions taken by a nuclear facility licensee to (a) decontaminate the structures and equipment, (b) remove sources of radioactivity or render them inaccessible, and (c) return the site to such a condition that it may be either safely returned to unrestricted use or maintained under the security and surveillance required for the protection of public health and safety.\*\*\*

**defuel:** Removing fuel. Part of TMI-2 cleanup.

**Department of Energy (DOE):** Energy agency opened in October 1977.

**dose:** The amount of energy absorbed in a unit of mass or an organ or individual from irradiation.\*\*

**embrittlement:** Increased brittleness of fuel rods caused by certain conditions inside the reactor.\*\*

**emergency core cooling system (ECCS):** A system that provides for removal of residual heat from a reactor following loss of normal heat removal capability from a loss-of-coolant accident (LOCA).\*\*\*

**emergency planning zone (EPZ):** The area around a nuclear facility designated by the NRC for which emergency planning is required in the event of an accident. The EPZ stands now at 10 miles radius from the plant.\*\*\*

**exposure:** Being exposed to radiation.\*\*

**fission, nuclear:** The process by which an atom splits and produces heat and nuclear radiation.\*

**fuel, nuclear:** Material containing fissile nuclides that when placed in a reactor enables a self-sustaining nuclear chain reaction to be achieved.\*\*\*

**fuel cycle:** The sequence of steps, such as fabrication, utilization, reprocessing and refabrication, through which nuclear fuel may pass.\*\*\*

**fuel rod:** A single tube of cladding filled with uranium fuel pellets.\*\*

**gamma ray:** High energy, short wavelength, electromagnetic radiation emitted by a nucleus with great penetrating power.\*\*

**General Public Utilities Corporation (GPU):** Parent company of TMI's current operator, GPUN, and TMI's owners, Metropolitan Edison Co., Jersey Central Power and Light and Pennsylvania Electric Co.

**General Public Utilities Nuclear Corporation (GPUN):** TMI's licensed operator, formed after the TMI accident.

**half-life:** The time it takes for half of any radioactive substance to disintegrate. Half-lives range from a second to millions of years.\*\*

**intervenor:** The legal designation of a participant other than NRC officials or utility representatives in an NRC licensing hearing.\*\*

**kilowatt hour:** A unit of energy equal to one kilowatt for one hour. Monthly utility bills charge by the kilowatt hour.\*\*

**low-level:** Refers to radioactivity of low intensity.\*\*

**meltdown:** Melting of the fuel in the reactor core due to a rapid, uncontrolled increase in core temperature which would cause the fuel cladding and rod assemblies to liquify or melt.\*\*

**millirem (mrem):** One-thousandth of a rem.

**megawatt (MWe):** The electrical capacity of a power plant. A megawatt is 1,000 kilowatts, or a million watts. Typical large, modern coal and nuclear power plants are about 1,000 megawatts-electric.\*

**Metropolitan Edison Company:** GPU subsidiary which partially owned and operated TMI before the accident, and still partially owns the plants.

**nuclear energy:** Energy released in nuclear reactions or transitions.\*\*\*

**nuclear power plant:** Any generating plant that uses nuclear energy as its power source. Nuclear-fueled electrical power generating stations.\*\*

**Nuclear Regulatory Commission (NRC):** Created in January 1975 from portions of the Atomic Energy Commission, it is the federal agency with responsibility for regulating nuclear power.\*

**operating license:** Permission granted an applicant by the NRC to operate a nuclear reactor.\*\*\*

**operator:** A licensed individual or organization that controls operation of a nuclear reactor.\*\*\*

**plutonium (Pu-239):** A heavy, highly toxic, radioactive metallic element, man-made, used as breeder reactor fuel and for atomic weapons. Highly carcinogenic.\*\*

**Post-Defueling Monitored Storage (PDMS):** GPU's proposal for "mothballing" TMI-2, stopping all cleanup activity and allowing the plant to sit uncleaned for at least 20 years.



*Former NRC chairman Nunzio Palladino who voted to restart TMI-1*

that its instrument used to measure Strontium-90, was incorrectly calibrated in 1981. Strontium-90 levels were twice as high as previously thought.

In September, the Pennsylvania state health department released a study in which it found no evidence of increased cancers from the TMI accident. However, experts called the study statistically flawed, and the state would not allow non-government epidemiologists to review its statistics.

At the bottom of TMI-2's reactor, workers found a mound of rubble, estimated to weigh about 30 tons, indicating that during the accident temperatures reached 5,100 degrees F — far higher than the company ever admitted.

**1986**

### **TMI-1:**

An excess number of reactor trips at TMI-1 continued throughout the year. In March, a valve at TMI-1 accidentally opened releasing into the atmosphere excess quantities of Xenon 133 gas. Later that month, 100 workers were tested for internal contamination, five of whom received skin contamination when workers took off the top of the steam generators for testing. Radiation levels exceeded what

GPU said they expected. Gases were vented into the atmosphere for several hours to allow workers to reenter the reactor building. In May, the NRC reported that GPU was plagued by a number of recurring problems, including: lack of adherence to procedures, inability to balance work and safety properly, failure to report maintenance problems, and poor performance in other areas. Another NRC report in September said that the company was performing a number of practices and methods inadequately or poorly.

#### **TMI-2 and the accident aftermath:**

In February, a number of one-celled organisms believed to be fungus, bacteria and algae-like creatures began growing in the TMI-2 reactor vessel, obscuring the view of the reactor core and impeding the progress of cleanup.

In May, argon gas was found leaking from nine TMI-2 fuel canisters with faulty metal gaskets, containing highly radioactive material.

**1987**

The NRC continued to report problems at TMI-1. In March, workers who were not using respi-

**Price-Anderson Act:** An act first passed in 1957 and since renewed that limits the liability of reactor owners and provides for limited federal indemnity.\*\*

**PWR:** Pressurized water reactor. The water circulating in the reactor does not boil, due to very high pressure, but instead transfers its heat via a heat exchanger to another system of water, and that water is converted to steam.\*

**rad:** A measure of exposure to radiation, the absorbed dose.\*\*

**radiation, external:** Ionizing radiation reaching the body from sources outside the body.\*\*\*

**radiation, ionizing:** Alpha, beta or gamma radiation, which, when passing through matter can ionize it. Ionizing radiation can cause cell damage as it passes through tissue.\*\*

**radiation, non-ionizing:** Electromagnetic radiation having energy insufficient to produce ionization, like microwave radiation.\*\*\*

**radiation monitor:** A radiation detector used to determine radiation levels.\*\*

**radiation monitoring:** The determination of the amount of radioactivity present in a region. May be performed continuously (such as in a reactor exhaust gas vent stack) or periodically (such as monthly air or water samples).\*\*

**radioactive waste:** Unwanted radioactive materials obtained in the processing or handling of radioactive materials.\*\*\*

**radioactivity:** The spontaneous decay of an unstable atomic nucleus accompanied by the emission of ionizing radiation.\*\*

**radon:** An alpha-emitting radioactive gas given off by radium, also present during the mining of uranium.\*\*

**reactor, nuclear:** An assembly of nuclear fuel which can sustain a controlled chain reaction based on nuclear fission.\*\*

**reactor, prototype:** A reactor that is the first of a series of the same basic design.\*\*\*

**reactor vessel:** The principal structure surrounding the reactor core.\*\*\*

**rem:** Abbreviation for roentgen equivalent man. A standard measure of biological damage done by ionizing radiation.\*

**scram:** The sudden shutdown of the fission reaction in a reactor usually by remote control insertion of the control rods.\*\*

**shut-down:** Stopping a nuclear chain reaction, usually by insertion of control rods.\*\*

**spent fuel:** Reactor fuel that is depleted to the extent that it can no longer sustain a chain reaction.\*\*

**steam generator:** A boiler in which hot coolant from a reactor raises steam to turn a turbine generator.\*\*

**transient:** A change of conditions, in temperature or pressure, within a nuclear reactor.\*\*

**tritium:** A radioactive nuclear by-product, a heavy version of ordinary hydrogen.

**uranium (u):** Element 92; a heavy metallic, slightly radioactive element. U-235 and the artificially produced U-233 are fissile.\*\*

*Sources:*

\* *Nader, Abbot, The Menace of Atomic Energy, 1977.*

\*\* *Gyorgy, No Nukes; Everyone's Guide to Nuclear Power, 1979.*

\*\*\* *Nuclear Science and Technology, American Nuclear Society.*

## Facts You Should Know

- Experts agree that the exact amount of radiation released during the '79 accident is not known.
- Daily venting of radiation continues from the operation of TMI-1.
- TMI's owner is the only nuclear utility criminally convicted of falsifying and destroying safety data, which led to the '79 accident.
- GPU has been cited and fined for numerous NRC violations, including:
  - circumvention of safety procedures
  - improper handling of radioactive wastes
  - inadequate training and management
  - harassment of workers
- The TMI site will remain highly radioactive well into the 21st century.
- Every reactor ordered in the United States since 1973 has been cancelled, and there have been no orders at all since 1978. Since Chernobyl, reactor orders have dropped worldwide.

rators received excessive internal radiation doses. Reactor trips continued, accompanied by radiation releases into the environment.

Later that month, ten Unit 1 and 2 workers tested positive for illegal drug use. Eight employees were suspended for 30 days without pay; one resigned. In addition, two employees were dismissed when they refused to cooperate with the investigation. Thirty-three people were tested for drugs in all. Since March 1986, 16 employees have tested positive for drugs.

In October, the NRC reported that GPU had sent a shipment of solidified sludge for burial at the Chem-Nuclear Waste Management Facility in Barnwell, South Carolina, in a defective, structurally unstable condition. As a result, Barnwell barred shipment of waste from TMI.

And in December, GPU fired a shift supervisor for sleeping on the job. This individual had a record of sleeping on the job beginning in the early 1980s.

# 1988

The NRC continued citing GPU for numerous procedural violations, and technical and operational weaknesses at TMI-1. In



October, the reactor shut down when valves in the TMI-1 turbine became stuck — the eighth time in eight years of TMI-1's operation that the plant experienced a "scram," i.e., an emergency shut down of the reactor.

Due to extensive damage to the steam generators in 1982, GPU has had to plug, or remove from service, 1,560 tubes. NRC safety limits prohibit the company from plugging more than 2,000 tubes.

In January, a 500-page report by the Institute for Energy and Environmental Research, prepared for the TMI Public Health Fund, concluded that radiation monitoring equipment at TMI remained "grossly inadequate." Sometime thereafter, GPU proposed removing Dauphin County's only link to radiation monitoring at TMI, the Reuter-Stokes off-site monitoring system. The monitors, which were installed at TMI in 1980, provide instant readings of radiation levels from 16 stations located on and around the island, and Dauphin County has a printer in its Emergency Management Agency office that records the readings.

The county, which pays \$3,000 to \$5,000 per year to maintain a dedicated phone line to receive the Reuter-Stokes data, has no other source for instant information.

More than 150 lawsuits involving over 2,000 people who filed

## TMI Area Groups

### Three Mile Island Alert

THREE MILE ISLAND ALERT (TMIA) is the oldest and largest non-profit citizens group in the TMI vicinity. TMIA was formed in 1977 after the construction and licensing of TMI Units 1 and 2.

TMIA was the lead citizen intervenor in legal proceedings to stop the restart of TMI-1 after the TMI-2 accident, based primarily on the lack of management competence and character of TMI's operators. TMIA pursued the restart case in the courts until the U.S. Supreme Court allowed the plant to restart on October 2, 1985.

TMIA also has served as a key resource and information center for the community, the nation and the world, providing information, educational materials and speakers.

TMIA continues to monitor the cleanup of Unit-2 and the operation of Unit-1 and is actively involved with the following issues: legal proceedings to stop the proposed evaporation into the atmosphere of 2.3 million gallons of accident-generated radioactive water from Unit-2; responsible management of the Public Health Fund; opposition to the relaxation of evacuation zones at TMI and other plants in Pennsylvania; tracking adverse health effects as a result of the accident at Unit-2 and the operation of Unit-1 (since 1974); assisting groups around the nation to monitor the transportation of waste from Unit-2; and keeping track of chronic technical and managerial problems at Unit-1.

TMIA's policy is generated by a seven member planning council which meets monthly. The Radiation Monitoring Committee meets when necessary, and independently checks radiation levels at TMI by examining the Reuter-Stokes monitoring system at the Dauphin County courthouse. TMIA has two staff people who work as volunteers. Additionally, several individuals volunteer to write, edit and mail TMIA's two publications. TMIA's newsletter is printed on a monthly basis. Island Updates, a newspaper clipping service which chronicles recent events at TMI, is printed quarterly. All of TMIA's funding comes from membership dues and private contributions.

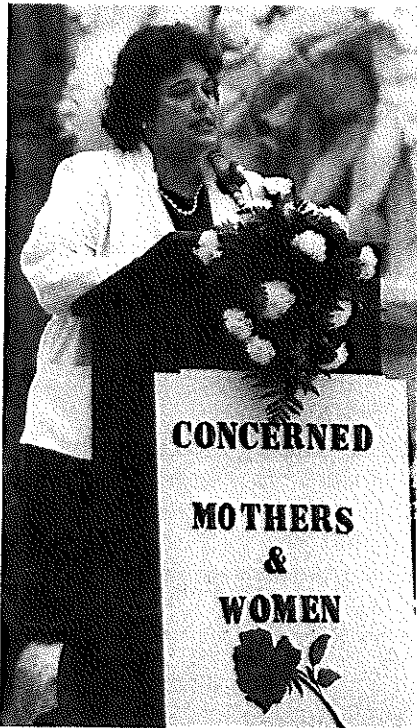
TMIA's office, at 315 Peffer St., Harrisburg, PA, 17102, is open five days a week from 10:00 a.m. to 6:00 p.m. Members of the public or the media are encouraged to stop by or contact TMIA by phone, at (717) 233-7897.

### Other TMI Area Groups

- **Anti-Nuclear Group Representing York (ANGRY)** was formed in 1979. The group intervened before the Pennsylvania Public Utilities Commission in proceedings that stripped Unit 1 from Met Ed's ratebase, and before the NRC during the TMI-1 restart proceedings.
- **Concerned Mothers and Women**, originally Middletown-based, was formed after the accident to fight for health and safety rights of families in the TMI area. The group has routinely met with NRC and public officials to express concern over GPU and NRC practices at TMI.
- **Environmental Coalition on Nuclear Power** is based in State College,



*Above: Harrisburg residents stage protest, 1981*



*Left: Middletown resident and mother Joyce Corradi at the capitol steps*

ing over 2,000 people who filed compensation claims for injuries suffered as a result of the TMI accident, were moved to federal court.

Among the numerous incidents during the clean up, including several fires, for which the NRC cited GPU for violations, were the following: two liquid radioactive waste spills after a hose in the sludge processing system split; contamination of a clean up worker who fell into an opening above the Unit 2 reactor vessel, immersing his legs in radioactive water up to his knees; discovery of six pages of word puzzles in the clean up operations procedures manual. And in July, a rail car carrying a loaded shipping cask full of waste drifted for approximately 60 yards on the rail tracks, stopping only when the natural grade of the rails rose.

The company announced plans to "mothball" TMI-2 at the end of 1989. The plan is called "Post-Defueling Monitored Storage." According to the plan, GPU would stop further cleanup activity, leaving high levels of contamination and small amounts of fuel in the reactor building, for anywhere from 20 to 60 years. In September, the citizen advisory panel set up to advise the NRC on cleanup voted 8 to 2 against the plan in response to vehement opposition by TMI area citizens. The vote, however, is non-binding on the NRC. ➤

Pennsylvania. The group, a loosely-knit federation of organizations and individuals, intervened in, among other proceedings, the TMI-2 licensing hearings. At the time of the TMI-2 accident, these hearings still had not been completed.

- **Labor Committee for Safe Energy and Full Employment** was formed after the accident to provide a voice for union members and organizations in the fight for safe energy and full employment. Among its national sponsors are: United Mine Workers, International Association of Machinists, United Auto Workers, United Furniture Workers of America, International Woodworkers of America, Graphic Arts International Union and the International Chemical Workers Union.
- **March 28 Coalition** was formed in 1979 to plan and organize the TMI accident first anniversary rally in Harrisburg. The group then turned to organizing non-violent direct-action activities to stop TMI-1's restart.



# 1989

On February 3, an NRC licensing board rejected the contentions of Susquehanna Valley Alliance and TMIA that GPU's plan to evaporate 2.3 million gallons of accident and clean up-generated radioactive water was unsafe. The board approved the evaporation plan, leaving the NRC Commissioners with the responsibility to make the final decision. ■

- **Newberry Township TMI Steering Committee** was formed shortly after the accident by the Newberry Township Board of Supervisors, to investigate all aspects of the accident. The group has participated in area activities and has testified before public bodies. They intervened before the NRC in the TMI-1 restart proceedings.
- **People Against Nuclear Energy (PANE)** is the Middletown-based group formed to educate the public about nuclear power. PANE petitioned the NRC to consider the issue of psychological stress in the restart proceedings. This issue was denied consideration by the NRC and later the courts.
- **Susquehanna Valley Alliance (SVA)** is the Lancaster-based group founded in 1979. SVA successfully blocked GPU from dumping the accident-generated water into the Susquehanna River, and has fought company plans to evaporate the water into the atmosphere.
- **TMI Public Interest Resource Center (PIRC)** is a coalition of TMI area groups formed after the accident as an information clearinghouse on TMI issues.
- **TMI Legal Fund**, also a coalition of TMI area groups, raises funds for, and distributes money to groups involved in various TMI-related legal issues.

***"Nothing is going to make it worthwhile for us to have gone through it, but if we can keep anyone else from going through this same thing, it's going to mean something. It will ease the pain a little bit."***

—Vickie DiSanto, TMI area resident

*Voices From Three Mile Island*  
Robert Leppzer

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