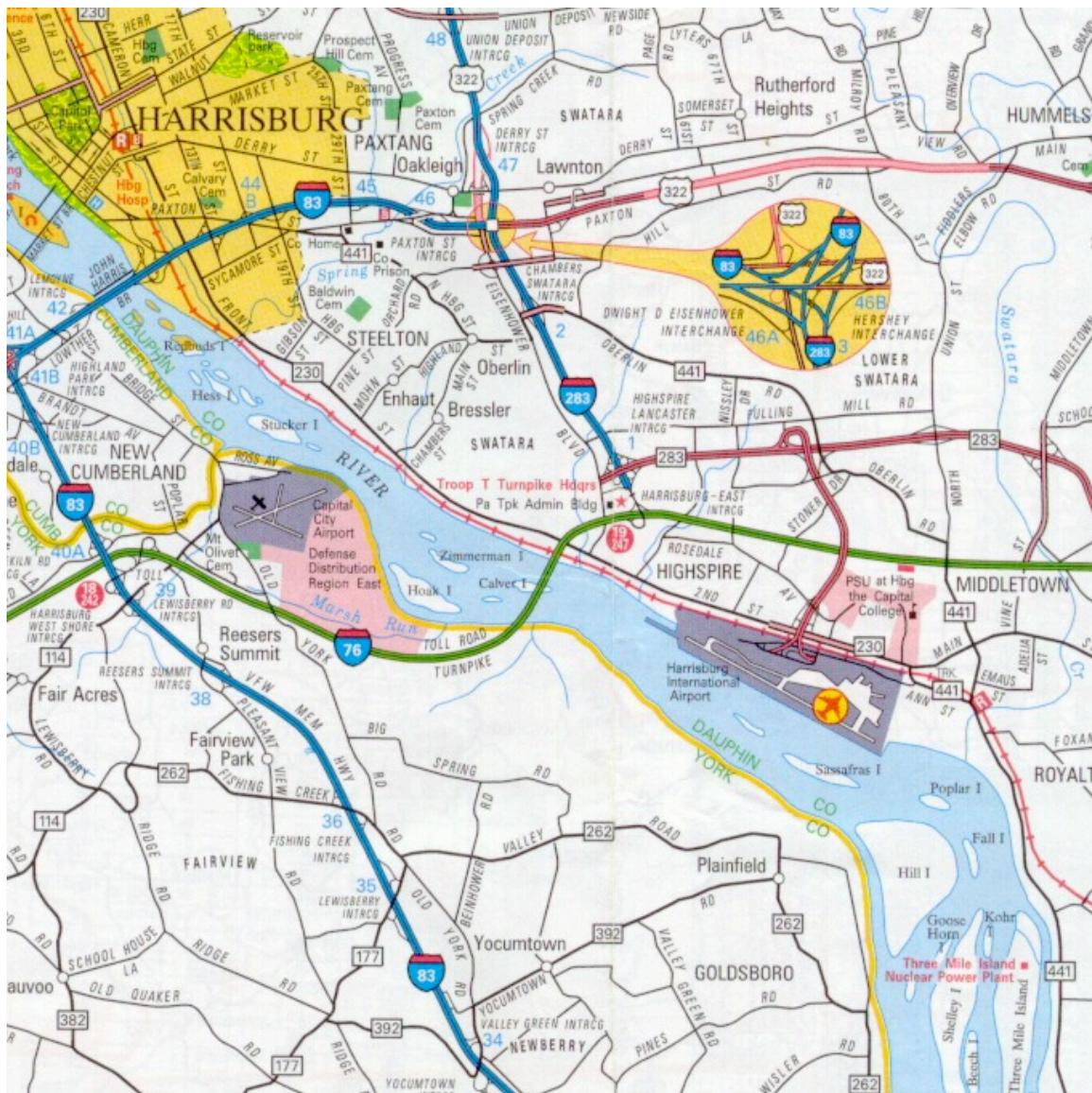


<http://pahighways.com/features/threemileisland.html>



Three Mile Island



Location of Three Mile Island in relation to Harrisburg and the state capitol. (PennDOT)



Aerial picture of Three Mile Island. (USGS)

Before March 28, 1979, hardly anyone aside from those living in Central Pennsylvania, knew where Three Mile Island was located. However, after that date, anyone in the world with access to a TV, a radio, or a newspaper could take a map of Pennsylvania and point to a sandbar in the middle of the Susquehanna River.

The TMI-2 reactor had just come online in December 1978, and was the same design as the reactors of the Shippingport Nuclear Power Plant near Beaver. The accident began in the early morning of March 28, when a little after 4:00 AM, pumps supplying water to TMI-2's steam generators tripped. With no water, there would be no steam, and therefore the plant's safety system kicked into action and shut down the steam turbine and the generator it powered. The nuclear reactions in the core continued until the system dropped the control rods into the core to halt the fission process, which is a process called "scramming." Even with the control rods in the core, heat continued to rise because decaying radioactive materials left from the fission process continued to heat the water.

The accident fell into the laps of four men: William Zewe, shift supervisor for TMI-1 and TMI-2; Fred Scheimann, shift foreman for TMI-2; and two control room operators, Edward Frederick and Craig Faust. Each man had been trained by Metropolitan Edison and Babcock & Wilcox and licensed by the NRC. However, nothing in their training had prepared them for this problem.

The first word of the accident came at 8:25 AM, with a report from WKBO-AM in Harrisburg. Using a yellow Camero with a CB radio, the station's traffic reporter Dave "Captain Dave" Edwards relayed information that police and fire fighters were mobilizing in Middletown. He also mentioned that there was no steam emanating from the plant's cooling towers. Mike Pintek, then WKBO's news director and who would later move onto KDKA-AM in Pittsburgh, called the plant to speak to someone in the public relations office. The receptionist, hurried as she was, instead connected him to the control room to a man who said, "I can't talk now, we've got a problem. Call Reading and talk to them." The man denied that "there are any fire engines," and told Pintek to telephone Met Ed, owners of the plant, in Reading.

After he made the call, Pintek went on the air announcing, "There is a general emergency at Metropolitan Edison Company's Three Mile Island nuclear power plant. A utility spokesman says there is a problem with a feed-water pump..." Pintek included in his report the company's assurance that the public was in no danger.

The Associated Press filed its first story at 9:06 AM to newspapers, television stations, and radio stations across the country. The article mentioned that the Pennsylvania State Police said a general emergency had been declared, "there was no radiation leak, and that Met Ed requested a State Police helicopter "that will carry a monitoring team." At the same time, Lieutenant Governor William Scranton, III, focused his attention on the island, since he oversaw the commonwealth's emergency preparedness functions. He faced reporters in Harrisburg with a brief opening statement saying that the Metropolitan Edison Company informed the state government that there had been an accident at Three Mile Island, Unit 2. Everything is under control and there is and was no danger to public health and safety. Then he said there was a small release of radiation into the environment, but that all safety equipment functioned properly. Met Ed had been monitoring the air near the plant since the incident and no increase of radiation had been detected.

The control room was crowded with operators and supervisors trying to bring control. Trying to establish a natural circulation cooling, which means setting up a flow of water, without the help of pumps, by heating water in the core and cooling it in the steam generators failed. It failed because the coolant system was not filled with water and a gas bubble forming in the top of the reactor blocked the flow of water. At 11:38 AM, operators began to decrease pressure in the reactor system. The pressurizer block valve was opened and high pressure injection cut sharply. This resulted again in a loss of coolant and an uncovering of the core. The depressurization attempt ended at 3:08 PM; however, the amount and duration of core being uncovered remains unknown.

At 12:45 PM, the Pennsylvania State Police closed PA 441 to traffic near Three Mile Island at the request of the commonwealth's Bureau of Radiation Protection. An hour later, the US Department of Energy team began its first helicopter flight to monitor radiation levels. At 1:50 PM, a noise penetrated the TMI-2 control room. The sound was that of a hydrogen explosion inside the containment building. The noise at the time was dismissed at the time as a slamming of a ventilation damper.

The country first heard of the accident from the most trusted newsman of the day: Walter Cronkite. He led off the CBS Evening News with, "It was the first step in a nuclear nightmare; as far as we know at this hour, no worse than that. But a government official said that a breakdown in an atomic power plant in Pennsylvania today is probably the worst nuclear reactor accident to date. There was no apparent serious contamination of workers. But, a nuclear safety group said that radiation inside the plant is at eight times the deadly level, so strong that after passing through a three-foot thick concrete wall, it can be measured a mile away."

On March 30, Governor Thornburgh convened a meeting of his cabinet, and around 11:40 AM received a phone call from the NRC chairman. The chairman apologized for the NRC staff error in recommending evacuation. He added after hearing the Secretary of Health's recommendation that pregnant women and children under age two be evacuated, "If my wife were pregnant and I had small children in the area, I would get them out because we don't know what is going to happen." After the call, Thornburgh decided to recommend that pregnant women and preschool children in a five mile radius of Three Mile Island leave and to close all schools within that area. He issues the advisory shortly after 12:30 PM. Thornburgh was conscious throughout the accident that an evacuation might be necessary, and this weighed upon him.

He knew the risks in an evacuation, such as the movement of elderly persons, people in intensive care units, babies in incubators, traffic on the highways, would all exert a toll in lives and injuries. Moreover, this type of evacuation had never been carried out before on the face of the Earth. When you talk about evacuating people within a 5-mile radius of a nuclear reactor, you must also recognize that it will affect people in a 10, 20, even 100 mile radius.

Friday, Saturday, and Sunday were hectic days in the emergency preparedness offices of the counties close to Three Mile Island. Officials labored to develop a 10-mile evacuation plan and ones covering 20 miles out from the plant. The Pennsylvania Emergency Management Agency recommended Friday morning that 10-mile plans be prepared. The three counties nearest to the plant already had plans to evacuate their residents, which came to a total of about 25,000. Late Friday night, PEMA told county officials to draw up a 20-mile evacuation plan. Suddenly the number of counties involved doubled and the number of people affected reached 650,000 which included 13 hospitals and a prison.

By 2:00 PM, the hydrogen situation in the reactor system became apparent. A bubble estimated at 1,000 cubic feet of gases, was indeed comprised of hydrogen. The question now arose whether there was a potential for a hydrogen explosion. Working with calculations that indicated that the bubble could not self-ignite for five to eight days, works focused their immediate attention on finding ways to eliminate the bubble. Governor Thornburgh was briefed that the fuel damage was extensive and the bubble posed a cooling problem. Upon hearing this he reiterated that no evacuation was needed, lifted his advisory that people living within 10 miles of Three Mile Island stay indoors, but continued his recommendation that pregnant women and preschool children remain more than five miles from the plant. The bubble was safely evacuated from the reactor core the following day and the emergency slowly winding down.

Central Pennsylvania got a welcomed boost of morale on April 1, when President Jimmy Carter visited the plant. A trained nuclear engineer, Carter knew the danger going to Harrisburg posed.

On April 9, Thornburgh lifted the advisory he announced on March 30, and the crisis was over with only a partial meltdown of the reactor's core. Only a couple months after the accident, the Nuclear Regulatory Commission ordered an indefinite shutdown of TMI-1 until assurances could be provided by General Public Utilities/Metropolitan Edison that the plant could be operated safely.

The ironic part of the whole story was that only twelve days prior to the trouble on the island, the public got to see first hand a nuclear power plant emergency on the silver screen. The China Syndrome debuted right before, with some dialog that you wouldn't think twice about, but make your skin crawl after the accident. First man: "I don't know. They might have come close to exposing the core." Second man: "If that's true, then we came very close to the China Syndrome. The number of people killed would depend on which way the wind was blowing. Render an area the size of Pennsylvania permanently uninhabitable."

The story did not end there, but instead continued through the 1980s and 1990s. On March 25, 1980, after blaming plant designer Babcock & Wilcox, GPU/Met Ed sued them for \$500 million. GPU/Met Ed also tried to sue, unsuccessfully, the NRC for \$4 billion for negligence that contributed to the accident. On July 23, 1980, the first human entry into the TMI-2 containment building occurred since the accident.

On July 21, 1982, the public got the first look at the core via a miniature TV camera. Bob Long, Supervising Engineer recalls seeing the videotape of the camera going through the top of the core, and hearing the mechanic who is lowering it saying, "One foot, two foot, we're now two feet into the core, we're now approaching three feet...Five foot. Got something." He said, "And that recognition for the first time, five feet of the core was gone. That's when we really saw that the core had been severely damaged."

Later that year, on November 1, 1982, the Babcock & Wilcox trial began. On January 24, 1983, GPU/Met Ed and Babcock & Wilcox settled out-of-court.

The NRC Commissioners voted on May 29, 1985, by a 4-1 margin, to restart the idle TMI-1 reactor. In October 1985, the removal of the damaged fuel from the TMI-2 reactor began, which over the course of eight years, would produce four serious accidents involving workers and one in 1989 made GPU issue a temporary shutdown of the cleanup. The NRC "suggested" the defueling may be halted. Robots created by RedZone Robotics of West Homestead, entered the core to do the work. The defueling workforce would peak at 2,000 in 1986, with the first shipment of damaged fuel being shipped to the Idaho National Engineering Lab in Idaho Falls, Idaho. I can still remember news reports of the first shipments coming through my area, and the controversy and worry they caused. In December 1993, GPU placed TMI-2 in Post-Defueling Monitored Storage, which in laymen's

terms means it is shut down and will never be restarted. The same fate may happen to TMI-1 in 2014 when the plant license expires.

Three Mile Island has remained in a part of pop culture. In 1997, it was mentioned in the movie Men in Black towards the end when the aliens were escaping Earth. In the movie, it was supposed to be an alien ship and the accident a cover-up to them landing. Tommy Lee Jones' character asks Rip Torn's character about every interstellar vehicle within a 100 mile radius of New York City, "All right, there's Three Mile Island," to which Torn says "Gone."

In 1999, years after the accident, Mike Gray, author of The China Syndrome screenplay and observer of the unfolding events in spring 1979, describes the horror he felt at the idea of a complete meltdown: "[W]e would now no longer be able to drive through the City of Harrisburg. The Pennsylvania Turnpike would have to go north through Scranton. And...within a hundred-mile radius of the plant you have Philadelphia, Baltimore, Washington, DC....[We] were that close to a disaster of almost unimaginable proportions."

In an interview for PBS' American Experience, he described "the china syndrome." He explained that, "The core could have turned into a molten white-hot mass, could have gone through the concrete base of the plant and into ground water which is immediately below the foundation of the plant, could have fractured the earth instantly in all directions and geysers of radioactive steam would have spouted, into the air, through the parking lots and a cloud of death would have wafted north over the City of Harrisburg."

Roger Mattson, NRC Senior Engineer at the time, said of the accident, "We had a meltdown at Three Mile Island. It was not the China Syndrome, but we melted the core down. Fifty percent of the core was destroyed or molten and something on the order of 20 tons of uranium found its way, by flowing in a molten state, to the bottom head of the pressure vessel. That's a core melt-down. No question about it."

That same year TMI-1 came under the control of a new company: AmerGen which at the time was a joint venture of Exelon Corporation based in Chicago, Illinois and British Energy. In December 2003, Exelon purchased AmerGen outright. TMI-2 is still owned by GPU.

Accidents still prevail at the island. On July 2, 2003, around 11 AM, a fire broke out in the transformer yard near TMI-2. Pennsylvania Emergency Management Agency said an "unusual event" was declared, which is standard operating procedure. Dave Simon, company spokesman, said that TMI firefighters began fighting the fire, but when they realized it was not being extinguished, they called local fire departments to help. There was no threat to public safety, and no need for an evacuation because the fire was not near the nuclear area.

Three Mile Island now sits as a reminder of the strengths and weaknesses of nuclear power. What happened here is barely talked about now and more relegated to a part of history or local folklore. The cooling towers stand over the southern Pennsylvania countryside, one set belching steam that looks as pure white as cotton and seems to dance

playfully above them. The other set of towers to the south sit as empty, idle reminders of what happened here in late March/early April 1979.

Was Flight 93 TMI Bound?

Could TMI have been the target of United Airlines Flight 93? All evidence points to yes. Security officials revealed within a week of the attacks in September 2001, that the Federal Bureau of Investigations sent a report to MI5, which are their British counterparts, that a "credible source" had said that terrorists might have been planning to attack a nuclear power plant on the 11th. Had the Boeing 757 crashed into the reactor, an incident on the scale of Chernobyl disaster in 1986 would occur.

Sources within the government say that the island was the subject of surveillance by some of the hijackers and their associates in the months before the terrorists attacks. One security official said that a report from the FBI that the plane may have been heading for a nuclear power station, because Pittsburgh is near several. Expert flight path analysis shows that the plane appears to be hijacked while passing over West Virginia, made a series of sharp turns before going into a steep descent, and eventually crashing in Shanksville. Aviation experts point out that there were three power plants between the plane and Washington and directly in the flight path: Peach Bottom, Hope Creek, and Three Mile Island.

A little over a month after the attacks in New York and Washington, the Nuclear Regulatory Commission received a "potential terrorist threat" against the plant between 6 and 7 PM on October 17, 2001. The plant activated its emergency response facilities as a precaution, while F-16s patrolled a 20-mile radius around the plant. The Federal Aviation Administration ordered Harrisburg International Airport to cancel flights somewhere between 9:30 PM and 9:40 PM, and Lancaster County Airport was also closed. The restrictions began at 9 PM on October 17, and ended near 1 AM on October 18. No specific details about the threat or how it was received were released. The plant had been shut down on October 9 for a scheduled refueling and maintenance; however, work continued overnight and none of the approximately 800 workers were evacuated.

What is more chilling is that stolen equipment from the plant turned up on Monday, September 9, only two days before the first anniversary of the 9/11 terrorist attacks at the crash site. AmerGen said the items found in a cooler at the site were taken from a monitoring station near the visitors center. Specialists sent to the Somerset County borough did not discover any radioactive material. Want even more chilling? Then check out this account of what might have occurred if Flight 93 crashed into Three Mile Island: <http://www.nirs.org/mononline/monitorcover1201.htm>.

Ironically, the plant is one of the few where the containment buildings of each of the two reactors was designed to withstand the impact of a medium to large aircraft. This was due to the fact that the island lies in or close to the flight path to Harrisburg International Airport.

Years before September 11, terrorism seemed to be at the forefront of TMI officials' minds. On February 7, 1993, 31-year-old Pierce Nye drove his mother's 1984 Plymouth station wagon into the guarded entrance to the island, crashed through the protected area fence and then into a roll-up door. The vehicle came to a stop 63 feet inside the turbine building. Once inside, he left the car, descended a ladder, and hid in a dark area of the condenser pit. It was so dark that guard held off performing a search until brighter flashlights could be found. The plant continued to operate at full power, while workers monitored gauges and alarms for any signs of sabotage. Guards took defensive positions to protect vulnerable equipment and hid where they could see strategic portions of the turbine building. All access doors were locked by computer. Four hours later, the man was found curled up in a fetal position, unaware of his surroundings. He was arrested and charged with four felonies including risking a catastrophe. He was hospitalized for psychiatric observation, and the plant did not receive any damage that would threaten public safety.

How about a terrorist training camp only 30 miles from the infamous island? Not only that, but the same terrorists who bombed the World Trade Center in 1993 trained there. The FBI had been aware that the "Liberation Army Fifth Battalion" had been at the camp in Perry County, near New Bloomfield, one month prior to the attack on February 26. Some reports have said they knew as early as November 1992. Kelvin Smith, a self-described Sunni Muslim, taught martial arts and survival skills to people who rented his campgrounds. On the same weekend of February 7, terrorists were observed by law officers performing a nighttime mock assault on a local substation. The FBI raided the campground on June 27, just two days after the plot to bomb targets such as tunnels and bridges in New York City was foiled.