

Three Mile Island Alert

AmerGen Might Face Federal Enforcement over Siren at Three Mile Island

from a March 5, 2002, York Daily Record article
by Sean Adkins

The Nuclear Regulatory Commission will evaluate an incident which led to one Three Mile Island emergency siren in Newberry Township to sound for nearly 45 minutes Sunday, March 3. Typically, all of York County's 34 emergency sirens are set to sound for about three to five minutes in order to notify residents in the event of natural or nuclear disaster. But the siren that sounded at about 1:45 a.m. Sunday alerted NRC officials to what might become an ongoing problem with public notification.

"Although this appears to be an isolated incident, we will follow up with the company's evaluation of what happened," said Neil Sheehan, spokesman for the NRC. "If we see a pattern evolving, it could be possible that we take action."

The NRC will begin to investigate the problem once AmerGen, the company that operates Unit 1 at TMI, evaluates the cause of the malfunction. On Jan. 11, all 34 York County sirens fell silent during an annual test after a serial port on a computer at the 911 Communications Center in Pleasant Acres malfunctioned.

Actions taken by the NRC for a persistent faulty siren system could include a letter of enforcement to AmerGen or a fine, Sheehan said. "From what it looks like, they seem to be on top of the problem," he said.

On Monday, March 4, a team of AmerGen contractors worked to replace an electronic unit inside the siren box that dates to about 1980,

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Are Lancaster County Emergency Plans Adequate?

from a November 16, 2001, Lancaster New Era (Lancaster, PA.) article
by Ad Crable

The calls started coming into Lancaster County 911 dispatchers after supper on Oct. 17: "Fighter jets are flying over my house in Mount Joy. What's going on?"

County emergency management officials placed a hurried call to the Pennsylvania Emergency Management Agency's command center in Harrisburg. "Is there an unusual event at Three Mile Island?" they asked. No, nothing is going on, they were told.

In fact, F-16 fighter jets were circling TMI in attack mode. Airports in Lancaster and Harrisburg were being shut down. The U.S. Nuclear Regulatory Commission had alerted

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Three Mile Island Alert

Three Mile Island Alert (TMIA) is a non-profit citizens' organization dedicated to the promotion of safe-energy alternatives to nuclear power, especially to the Three Mile Island nuclear plant.

Formed in 1977 after the construction and licensing of TMI Unit-1 and the construction of the infamous Unit-2, TMIA is the largest and oldest safe-energy group in central Pennsylvania.

TMIA members interested in specific aspects of nuclear power are encouraged to join one of TMIA's committees. These committees include:

- Radiation Monitoring
- Low-level Radioactive Waste
- Health Effects of TMI
- Nuclear Plant Security

TMIA Planning Council

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Glossary of Terms

AmerGen - corporation comprised of British Energy and PECO Energy. This corporate entity owns and operates TMI-1 and Oyster Creek, and is contracted by GPU Nuclear to monitor TMI-2 during PDMS.

B&W - Babcock & Wilcox, the company that supplied the TMI 1 & 2 reactors. B&W is now known as Framatome.

BRP refers to the Bureau of Radiation Protection, Pennsylvania Department of Environmental Protection.

BWR – Boiling Water Reactor

CPM refers to “counts per minute” or the number of radioactive disintegrations per minute.

DEP – Pennsylvania Department of Environmental Protection

EPA – United States Environmental Protection Agency

Exelon - Corporate entity created by the merger of PECO Energy and Commonwealth Edison. This company is licensed to operate nuclear generating stations in Illinois and Pennsylvania .

FirstEnergy - Electric company based in Ohio. FE and General Public Utilities merged in 2001. The newly formed company is licensed to operate nuclear power plants in Ohio and Pennsylvania. FE is responsible for decommissioning Saxton and TMI-2.

General Public Utilities - General Public Utilities Nuclear sold TMI-1 and Oyster Creek to AmerGen in 1999. GPUN maintains a POL at TMI-2. General Public Utilities, GPUN's par-

ent, merged with FirstEnergy in 2001

MOX - Reactor fuel in which plutonium-239 is mixed with natural or re-processed uranium.

MWe – Megawatts

NRC – United States Nuclear Regulatory Commission

NCV – Non-Cited Violation issued by the NRC in place of a more severe penalty (see Risk-Informed Approach).

pCi/m3 refers to picoCurries of radiation per cubic meter of air.

PDMS – post-defueled monitored storage, which is the state in which TMI-2 is currently being kept.

POL – Possession Only License, issued by the NRC for a non-operating nuclear reactor.

PUC – Pennsylvania Public Utility Commission

PWR – Pressurized Water Reactor

Revised Reactor Oversight Process (ROP) - see Risk-Informed Approach

Risk-Informed Approach - The NRC's “revised” oversight program for nuclear generating stations. This new protocol was implemented on April 2, 2000, and was designed to “reduce unnecessary regulatory burden” on the nuclear industry. (see NCV).

Federal Report Criticizes Three Mile Island Workers' Performance

from a March 8, 2002, York Daily Record article
by Sean Adkins

A fourth-quarter Nuclear Regulatory Commission inspection report lists 17 minor violations pertaining to work-performance issues conducted at Three Mile Island Nuclear Power Plant. The report released Wednesday identifies "green" violations, or those of low safety significance, which were discovered between April 1 and Dec. 31 for Three Mile Island Unit 1 and Peach Bottom Atomic Power Station. AmerGen operates TMI Unit 1 while Exelon Generation Co. oversees energy production for Peach Bottom Atomic Power Station's Unit 2 and Unit 3 reactors.

The inspections fall under the NRC Reactor Oversight Program which began in April 2000. Under the program, the agency uses several tools including a color grading system ranging from green to red to rate the severity of a violation. Green is the least severe, with violations meeting parameters set by the NRC, while a grade of white, yellow or red signifies that an incident will require further commission inspections.

Observed by teams of NRC inspectors, the TMI violations stemmed from lapses in work performance including procedures pertaining to the controlling of the reactor coolant system temperature to the untimely initiation of corrective actions taken to evaluate a breaker failure.

On Feb. 12, NRC inspectors determined that the bearing oiler on one of the plant's three emergency feed-water pumps was empty, said Neil Sheehan, commission spokesperson. Reviews by plant staff found that loose bolts on the pump bearing housing had allowed oil to leak for 39 days rendering the equipment inoperable, he said.

The violation received a "white" rating and was inspected and repaired during the fourth quarter, Sheehan said. "This was a crucial part of the safety measures at the plant," he said. "It goes back to their lapse in worker performance. A violation of this sort requires a higher level of scrutiny." Despite the violations, the NRC's overall assessment of both TMI and Peach Bottom Atomic Power Station found that the plants operated in a manner that preserved public health and safety while meeting all commission guidelines, according to the assessment reports.

While TMI received violations for poor worker performance, Peach Bottom Atomic Power Station was cited for a faulty alarm system that is in place to notify employees in the case of an emergency. Between June 21 and July 10, NRC inspectors found a white violation pertaining to the alarm system used to notify on-site personnel of protective actions and site evacuations. ¶

(Continued from "Federal Enforcement," page 1)
said David Carl, spokesman for the company. The company expects the siren box to be operational by the end of the week, he said. The electronic components to be replaced were installed in 1996, said Patrick McFadden, York County's director of emergency services.

While the cause of the siren sounding has not been confirmed by AmerGen, McFadden said he believes moisture that leaked through a seal on the siren box caused the electronic system to malfunction. The electronic control board works to relay signals between the siren box and the main computer, he said.

Nearly 300 residents from Newberry and Fairview townships flooded the 911 Communications Center early Sunday morning with calls concerning the faulty siren. As a result of the false alarm, AmerGen contractors will begin this week to check all the York County siren boxes for similar problems, McFadden said.

"My concern is that they are working properly," he said. "If they are not, I want to know why and when they will be repaired." Despite the current single siren malfunction, William Myers said he believes the system remains reliable enough to warn citizens. The Newberry Township police chief said AmerGen must maintain a close watch over the sirens. "It's a good system," he said. "They just have to keep up with the maintenance." ¶

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state and TMI officials about a "credible threat" against the plant, apparently involving a possible attack by air.

But Lancaster County officials were deliberately kept from knowing about the threat and from warning the public for several hours, a PEMA official acknowledged. If terrorists indeed had flown a kamikaze plane into TMI's working reactor, touching off a radiation release, county residents would have had no advance warning.

The threat came and went without incident. But the scary moments and the speculation that nuclear plants here might be targets for terrorists have focused new attention -- and some new concerns -- on emergency plans that are supposed to address a radiation release at TMI or Peach Bottom.

Should countians have been made aware of the terrorist-threat report several weeks ago? The county's top emergency planning official certainly thinks so. "If there is a security concern, then I feel we should be able to tell the public," says Randy Gockley, the Lancaster County Emergency Management Agency coordinator. State Rep. Tom Armstrong of Marietta believes so. "I think the people should know so that they can be prepared to make whatever decisions they need to make," he says.

The several-hour delay before Lancaster and some other municipalities near the plant were told of the

threat, says U.S. Rep. George Gekas, represents "an intolerable gap of time for the first line of defense." Gekas has called TMI's owner, the NRC and state and county emergency planning officials to the table in Harrisburg on Monday to thrash out the issue. But PEMA officials say a new protocol already has been set up to deal with terroristic threats. They refused to detail how decisions would be made, citing national security issues.

One problem with respect to the Oct. 17 incident is it did not fit into established "on-site emergencies" that would have required counties to be notified, according to John Comey, executive assistant to the director of PEMA. He says federal officials notified state officials of the threat and specifically asked them to stay mum. "We were told to maintain security on the information," he says. Though a new risk-assessment procedure has been set up, there is no guarantee that local officials will be alerted if the same threat happens again.

"This is a national security issue," Comey says. "I think (local officials) are going to have to depend on those assessing those decisions to make the judgment calls." He says the highest-level state officials would decide whether to notify the surrounding counties.

Lancaster County is within the 50-mile radiation "ingestion zone" of four nuclear plants: TMI, Peach Bottom, the Limerick plant in Montgomery County and the Salem plant in New Jersey. Yet despite

that danger of radiation exposure, only a small number of Lancaster Countians would be evacuated if there were a serious release at any of the plants.

The evacuation zone -- where it is believed most radiation would settle -- extends for 10 miles around both TMI and Peach Bottom. Before 1979, it was 2 miles. The affected Lancaster County municipalities include five in the northwestern corner around TMI and seven Solanco municipalities near Peach Bottom.

Residents in the two zones would be advised to evacuate during a radiation threat, or, if there were not enough time, to stay in their homes and batten down the hatches. Farmers and emergency workers would be allowed to stay and would be given potassium iodide tablets as protection against radiation.

Emergency planners estimate it would take 7 hours for the 34,000 Lancaster County residents living within 10 miles of TMI to evacuate. Add three hours for snow-covered roads. Officials estimate that 80 percent would find shelter with family or friends. Mass-care centers at three high schools could handle the other 20 percent.

Evacuation would not be advised for the rest of Lancaster County, including Lancaster City, since the NRC feels residents outside the 10-mile zone would be out of harm's way. "The only situation when most or all of the county would need to

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evacuate would be in a nuclear attack or general war," Gockley says. However, local emergency planners fully expect that many residents would flee anyway if there were an accident at TMI, just as they did during the accident in 1979.

County officials say they might urge residents throughout the county to take shelter in their homes in the case of a serious radiation threat, regardless of the state's advice. A mass exodus, they say, could cause gridlock and result in more people close to the plant being exposed to harmful radiation.

The danger of radiation from a nuclear accident or an attack by terrorists -- and how far the radiation would spread among the populace -- have been debated since 1979 and since the more serious nuclear accident in 1986 in Chernobyl, in the former Soviet Union.

Any TMI or Peach Bottom radiation spreading beyond 10 miles would be "minuscule" and would pose a threat not to humans directly but to the food chain through dairy cows, Comey says.

That low-risk projection is rejected by Eric Epstein, of the Three Mile Island Alert anti-nuclear group. Certain accident scenarios could spread "potentially catastrophic" radiation well beyond the 10-mile zone, Epstein says. "It's negligent not to have an evacuation plan for Lancaster, York and Harrisburg," Epstein says. "We need to start erring on the side of caution."

People living in areas downwind of TMI, such as Lancaster City, could receive dangerous doses of radiation in a severe accident, argues Paul Leventhal, a Franklin & Marshall College graduate who directed the U.S. Senate's special investigation of the TMI accident. He is the founder of the Nuclear Control Institute, a group that opposes additional nuclear plants and thinks existing ones lack proper security.

A 1982 government study projected extensive fatalities and injuries in worst-case accidents at each of the country's 103 nuclear plants. The projections were released by the NRC to a U.S. House subcommittee in 1982 and made public Thursday by the environmental group Greenpeace. The estimates assume a complete core meltdown, failure of a plant's safety systems and direct release of radiation into the atmosphere. For TMI, there could be 42,000 early deaths, 50,000 injuries and 26,000 later cancer deaths, according to the report. Fatalities could occur up to 20 miles away and injuries up to 55 miles away.

At Peach Bottom, an accident could kill 72,000 people soon after the accident, cause 45,000 injuries and result in 37,000 cancer deaths in the future, according to the study. Peak fatalities would occur up to 20 miles away and injuries up to 55 miles from the plant.

The NRC and state and county emergency officials take nuclear emergency plans seriously. Ever since the TMI accident, detailed plans have been in place, with mock

drills at each nuclear plant and in surrounding communities every other year. The exercises at TMI usually involve 2,000 emergency personnel from the plant, the state and municipalities. The accident scenario is kept secret until drill day. Emergency workers must demonstrate even the most minute details of an emergency, ranging from the response of volunteer bus drivers who would evacuate nursing homes to the street cop's ability to direct traffic. Local fire officials and police have to know where the physically disabled live in their communities and how to use a bullhorn to evacuate an entire town within 45 minutes if emergency sirens fail.

During the last drill at TMI in May, the county and local municipalities aced the exercise, as graded by the Federal Emergency Management Agency. A similar drill at Peach Bottom last year resulted in similar good grades by local emergency crews. TMI's performance in the simulated emergency, which is graded separately by the NRC, was satisfactory.

In 1997, however, then-TMI-owner GPU Nuclear failed the accident preparedness drill and was strongly scolded for four major mistakes.

Among the most serious: Operators did not recognize conditions inside the plant that were bad enough to declare an emergency, and operators did not take steps to protect the public near the plant when conditions became dangerous.

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The ominous events of the last two months have residents and local legislators poring over local emergency plans, some perhaps for the first time.

After a read, Rep. Armstrong worries that one aspect of the county's evacuation plan for TMI is "faulty."

County residents in the 10-mile evacuation zone are instructed to go to a "reception center" at Park City mall, where they would be assigned to shelters. Armstrong thinks a mass evacuation could create serious congestion problems when the evacuees hit Route 30, the designated route. He wants emergency planners to come up with alternate routes to Park City and additional reception centers. "God forbid that this ever happens," he says, "but if it does, we don't need chaos on top of chaos." ¶

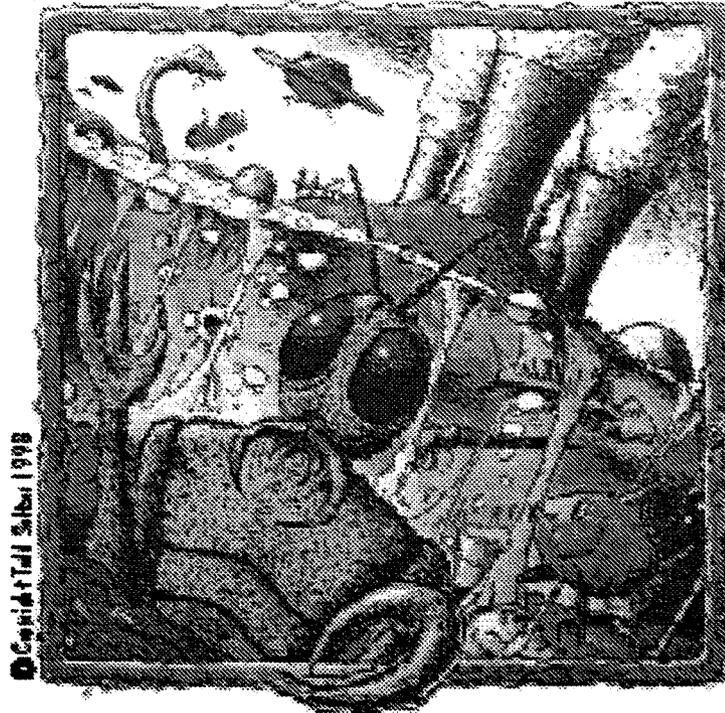
Peach Bottom Plant Documents Accessible at Quarryville Library

from a December 12, 2001, Intelligencer Journal (Lancaster, Pa.) article

Quarryville Public Library now keeps public documents on file for the Peach Bottom Atomic Power Station.

Two Lancaster County residents, William Coble, principal of Bart-Colerain Elementary School, and Ernest Guyll, a former congressional candidate, were instrumental in having the NRC provide the documents to the library. ¶

TMI Commemorative T-Shirts



**THREE MILE ISLAND
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To help mark TMIA's 25th anniversary, we are offering the "Mutants" t-shirt that we first offered in 1999, when we commemorated the 20th anniversary of the partial meltdown of Three Mile Island, Unit 2.

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Bush OKs Nuclear Yucca Mountain Waste Site

*from a February 16, 2002, Newsday (New York, NY) article
by Earl Lane*

President George W. Bush Friday approved Yucca Mountain in Nevada as a disposal site for thousands of tons of highly radioactive nuclear waste, setting up a confrontation with the state that is expected to end up in Congress and the courts. In a letter to congressional leaders, Bush said a long-term repository at the site about 90 miles northwest of Las Vegas "is necessary to protect public safety, health and this nation's security."

The disposal site eventually would receive up to 77,000 tons of waste from commercial power reactors, research reactors and the nation's nuclear weapons program. The waste would be placed about 1,000 feet below the surface of the mountain.

The wastes are in temporary storage at 131 sites in 39 states. They include more than 40,000 tons of spent commercial fuel being held at reactor sites in water pools and dry casks.

Proponents of the repository say it will allow consolidation of nuclear wastes, providing better security in the wake of the Sept. 11 terror attacks. Foes say the central site, if approved and built, will require thousands of shipments of nuclear waste by truck and rail from across the nation. They question the safety of such shipments, which they also say would be vulnerable to attack.

But Energy Secretary Spencer Abraham, who formally recommended the site to Bush on Thursday, said Friday that it makes sense to move the waste "to a single site which we believe can be much more safely secured" than the scattered temporary locations.

Now that Bush has acted, Nevada has 60 days under the federal Nuclear Waste Policy Act to veto the project. Congress would have 90 days to override the Nevada objection. The project also must be approved and licensed by the federal Nuclear Regulatory Commission, a process that could take three years or more.

A Nevada veto of Bush's decision is a foregone conclusion, according to Robert Loux, executive director of the Nevada Agency for Nuclear Projects, a state agency. Loux said the state, which already has filed two suits against the project, is considering another suit challenging the administration's decision.

Sen. Harry Reid (D-Nev.) and other Nevada politicians say they will urge their House and Senate colleagues not to approve the Yucca Mountain site. They face a battle. Congress passed a law in 1987 ordering the federal government to study only the Nevada site and disregard others being considered in Texas and Washington state.

"After two decades of study, we

know this remote location beneath the Nevada desert is a safe, secure and viable site and should be completed without further delay," House Speaker Dennis Hastert (R-Ill.) said.

Bush promised during his election campaign to base any decision about Yucca Mountain on "sound science." The Department of Energy said the studies of Yucca Mountain have been "thoroughly reviewed" by specialists at the Nuclear Regulatory Commission, the U.S. Geological Survey and the Nuclear Waste Technical Review Board, among others. Proponents say the disposal site will meet requirements that it contain any radioactive materials leak for at least 10,000 years.

Debate on its technical suitability continues, however. Critics say some evidence suggests that rain water, which can corrode disposal casks, can migrate through the volcanic rock much quicker than computer models predict. They also cite concerns about future volcanic and earthquake activity and worries about the sufficiency of the metal alloy waste containers and a planned titanium drip shield. ¶

PA Gov. Schweiker Extends PA National Guard Presence At Nuclear Power Plants

from a February 27, 2002, PR Newswire press release

Pennsylvania Emergency Management Agency (PEMA) Director David Smith today announced that Gov. Mark Schweiker has extended the Sept. 11 disaster emergency proclamation for a second time, enabling the Pennsylvania National Guard to continue its joint security mission with State Police at the Commonwealth's five nuclear facilities.

"As our nation continues to prepare for unknown threats of terror, we need to ensure that Pennsylvania's most sensitive facilities receive the highest level of protection we can provide," Smith said. "By extending the Sept. 11 disaster proclamation, Gov. Schweiker is making sure that Pennsylvania continues to do all it can to protect the safety and security of our citizens, and that funding is available to respond if we need to."

The proclamation will expire on June 7.

Gov. Schweiker first extended the original proclamation in December to provide additional security throughout the holiday season. That extension would have expired on March 9.

"Even before Sept. 11, this Administration was working with the operators of the state's nuclear facilities to ensure they are fully prepared to handle long-term security con-

cerns," Smith said. "Pennsylvanians can rest assured that we'll continue to work with plant operators to ensure these facilities remain secure today and in the future." In the proclamation, Gov. Schweiker made an additional \$500,000 in emergency funds available to the PEMA to cover security costs.

In November 2001, Gov. Schweiker directed the National Guard to join State Police in a joint security mission at the state's nuclear facilities.

The State Police had been providing security since Sept. 11.

In his 2002-03 budget, Gov. Schweiker has proposed an unprecedented \$200 million in state and federal funding for security and emergency-response efforts across the Commonwealth. It includes funding to deploy a second Urban Search and Rescue team for use strictly within Pennsylvania; upgrading security at Commonwealth-owned buildings throughout the state; completing the Statewide Public Safety Radio Network; and forming and training Community Emergency Response Teams (CERTs).

For more information, visit the PA PowerPort at www.state.pa.us, PA Keyword: "Homeland Security." ¶

U.S. May Upgrade Background Checks of Nuclear Power Plant Workers

from a January 15, 2002, York Daily Record article

Chances are the Nuclear Regulatory Commission has subjected your name to a background check if you have visited Three Mile Island Generating Station or Peach Bottom Atomic Power Station within the last few years. Research on employee and visitor background checks is part of the NRC's top-to-bottom review of security measures at all plants. Results from the review will be released later this year, said Neil Sheehan, NRC spokesman.

Visitors to the plants must present photographic identification and their Social Security card before walking through the doors. (Since the terrorist attacks, all of Exelon's nuclear power plants, including TMI and Peach Bottom, have been closed to the public.)

In a Nov. 29 letter to the NRC, David A. Lochbaum of the Union of Concerned Scientists in Washington, D.C., requested that some security measures pertaining to visitors be upgraded. Lochbaum said the practice of nuclear plant employees escorting visitors through the facility should be upgraded to include a security guard. (Nuclear power plants owned and operated by Exelon only use trained employees to escort visitors.) "The present escorts provide no protection to the plant if the visitors plan to do the plant harm. We need to make it hard for terrorists to be successful." ¶

PPL Susquehanna Plans to Apply for Nuclear Power Plant License Renewal

from a January 23, 2002, PR Newswire press release

PPL Susquehanna has notified the Nuclear Regulatory Commission that it intends to seek renewal of its operating license for the Susquehanna nuclear plant in Berwick, Pa., company officials announced today. If the NRC approves PPL's application, the plant's operating license would be extended by 20 years.

"The Susquehanna plant has established a safe and reliable operation through a highly qualified workforce and comprehensive programs to ensure the long-term reliability of the plant's equipment," said Herbert D. Woodeshick, special assistant to the president. "Not only does the Susquehanna plant help ensure efficient, reliable electric service with minimal impact on the environment, but also it is an integral part of the community."

The Susquehanna plant employs about 1,100 people full time and is the largest taxpayer in Luzerne County. Plant workers participate in civic and business organizations, serve in public offices, contribute thousands of dollars to charitable campaigns, and volunteer in public services.

The plant has two boiling water reactors, each with more than 1,100 megawatts of generating capacity. The current operating licenses will expire in July 2022 and March 2024 for Units 1 and 2, respectively, but those terms would be extended to 2042 and 2044 if the NRC approves

PPL's application.

Because the review process takes about two years, the NRC has requested that plant owners file early notification of their plans to apply. PPL's letter of intent to the federal agency states that the company plans to file a license renewal application in 2005.

License renewal requires proof that the plant can operate safely. The plant must also demonstrate that it can manage any maintenance issues related to aging equipment. A nuclear plant that has its license renewed can get a maximum 20-year extension on its operating license, during which time it will continue to be monitored by the NRC.

"All nuclear power plants applying for license renewal must pass a comprehensive and thorough safety review by the NRC," Woodeshick said. "Licensing establishes safety standards and only allows a plant to operate as long as it can meet those standards."

Nuclear energy provides more than 30 percent of the electricity produced in Pennsylvania and about 20 percent nationwide.

U.S. nuclear power plants initially were given a 40-year operating license. To date, 50 of the nation's 103 operating commercial nuclear reactors are committed to license renewal. Since April 1998, 22 units

have submitted applications for license renewal, 14 of which are in the review process and eight of which have been approved. Another 28 units have notified the NRC of their intent to submit applications.

Nuclear power accounts for roughly 20 percent of PPL's nearly 10,000-megawatt generation business. The Susquehanna plant is operated and 90 percent owned by PPL Susquehanna LLC, a subsidiary of PPL Corporation. Allegheny Electric Cooperative Inc. owns the remaining 10 percent. Unit 1 began commercial operations in June 1983, and Unit 2 joined it in February 1985. ¶

At Least 13 Nukes, Including TMI, Have to Fix Cracked Reactor Nozzles

from a December 10, 2001, Reuters article

The U.S. Nuclear Regulatory Commission has identified 13 atomic reactors that are developing tiny cracks that could seriously damage plant equipment and cause lengthy shutdowns for repairs. The NRC, which licenses and oversees the nation's fleet of 103 nuclear plants, doesn't believe the cracks in gear that controls the rate of atomic fission in the reactors could release poisonous radiation into the atmosphere, said Victor Dricks, a spokesman for the NRC. Instead, the chief headache is an economic one for the plant owners because complex inspections and repairs could idle a reactor -- and shut off sales of electricity -- for weeks, according to utility officials. Nuclear plants produce about one-fifth of the nation's electricity.

The hairline cracks in the reactor heads are believed to be caused by stress and corrosion triggered by high temperatures and pressure inside the reactors combined with years of producing electricity, according to the NRC.

The NRC investigation focused on metal alloy nozzles on 69 pressurized water reactors. Equipment known as control rods pass through the nozzles atop the "head" of the reactor. By raising or lowering rods of neatly stacked cylindrical uranium pellets, the control rods regulate the intensity of the atomic reaction taking place inside the reactor core.

Pressurized water reactors typically have from 50 to 100 nozzles atop each reactor head.

Cracks have appeared in the past along the length of the nozzles, but the NRC did not consider they needed immediate attention. Inspections and repairs usually were made during routine maintenance outages.

Earlier this year, however, circular cracks around the nozzle width began to show up, raising a potentially significant safety concern, the NRC said in a bulletin sent to plant operators in August.

Circular cracks are difficult to find, and plants may need to do inspections with the help of fiber optic cameras to pinpoint all of them, according to the NRC. The regulators' main worry is that a nozzle with circular cracks could separate from the reactor head, causing debris to fall into the fuel core and rupture cooling tubes and damage other power equipment, in turn allowing water to escape from the main plant cooling system.

Exelon Nuclear's 786-megawatt Three Mile Island 1 unit in Pennsylvania, one of the 13 plants, had to extend a refueling outage expected to be finished in mid-November by about three weeks for more work, inspection and tests on the nozzles and two steam generators. ¶

TMI Back in Service

from a December 17, 2001, Lancaster New Era (Lancaster, Pa.) article

Workers at TMI fired up Unit 1 on Dec. 6, after a scheduled refueling and maintenance outage that lasted more than two months. During the outage, plant workers fixed cracked reactor heads and performed other maintenance on the plant.

"We did extensive work to upgrade the equipment and material condition of TMI during the outage," said Mark Warner, TMI site vice president. "We are committed to keeping the plant in excellent working condition and to safely generate electricity for our region."

Topping the list was the repair of hairline cracks in the reactor heads, caused by stress and corrosion inside the reactor. High temperatures and pressure trigger this common problem, explained Dave Carl, spokesman for AmerGen Energy Company, which owns TMI.

Neatly stacked control rods pass through the nozzles on top of the reactor. The rods regulate the intensity of the nuclear reaction taking place inside the reactor core. Cracks in the nozzle head could become a "potential significant" safety concern, said the NRC bulletin.

In addition to the reactor head repairs, workers inspected the inside of the reactor core, installed a new turbine, replace the main and auxiliary transformers and made repairs to both steam generators. The new turbine will increase the plant's production by 5 percent, said Carl, from 880 megawatts to 925 megawatts per hour. That's enough energy to power 900,000 homes. ¶

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from which the only emission is water vapor. They do not contribute to the formation of smog and acid rain, nor do they contribute to global warming.

LIPA Chairman Richard Kessel called fuel cells "an environmentally friendly electric generating technology." The information and experience gained through this program will help fuel cells evolve as a technology that can be utilized by electric utilities as a source of power and eventually by residential and commercial customers for their own on-site power needs, he said.

LIPA has previously worked with Plug Power to help advance the development of fuel cell technology.

Under a LIPA financed program, six of the company's fuel cells were field tested at locations around Long Island last year to gain operational experience that was integral to the development of the next generation of fuel cell power systems.

The agreement between LIPA and Plug Power provides for additional training, engineering services, and technical support to operate and maintain the fuel cell units. The company and the power authority will jointly develop software for remote operation, dispatch, and monitoring of the fuel cells.

Plug Power is based in Latham, NY, with offices in Washington, DC, and the Netherlands. The company says its fuel cell systems may have a fu-

ture in Michigan, Illinois, Ohio, and Indiana through a joint venture with General Electric.

The entire LIPA fuel cell project is geared towards the future distributed use of fuel cells to support the Long Island electric grid and contribute to its overall reliability and performance.

The Long Island fuel cell installation is part of the state's Clean Energy Initiative, a program first proposed by New York Gov. George Pataki as a way to promote new energy technologies and energy-conservation projects such as fuel cells, solar, wind generation, and geothermal systems. ¶



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Checks of \$50 or more can be made payable to the TMI Legal Fund for tax deduction purposes.

RETURN TO: TMIA, 315 Peffer Street, Harrisburg, PA 17102

The official registration and financial information for Three Mile Island Alert may be obtained from the PA Department of State by calling toll free, within PA, 1-800-732-0999. Registration does not imply endorsement.

Fuel Cell-Generated Electricity Goes Online in New York

from a November 7, 2001, Environmental News Network article

Under a \$7 million, first-of-its-kind program to show how fuel cell technology can generate electricity for Long Islanders, the Long Island Power Authority (LIPA) has installed 55 fuel cells at its West Babylon substation. This application of fuel cell technology is the first large-scale use of fuel cells for this purpose in New York state. The fuel cells could produce as much as 1 million kilowatt hours of electricity over the duration of the program, which is enough electricity to power about 100 average-sized homes.

Installation is now underway and

should be completed before winter sets in. By connecting the fuel cells directly to the transmission grid at the substation, the electricity they generate will be distributed to customers through LIPA's electric transmission and distribution system.

The authority is seeking clean energy technologies that will help meet Long Island's growing demand for electricity, increasing at a rate of approximately 100 megawatts a year. In this initial LIPA fuel cell program, a total of 75 fuel cells, all manufactured by Plug Power, will be installed at the West Babylon

substation. Presently, 18 of the 55 fuel cells are fully installed and generating electricity for LIPA's grid. Plug Power is a designer and developer of on-site electricity generation systems using fuel cells for stationary, rather than mobile, applications.

A fuel cell is a device that converts the energy of a fuel -- which could be hydrogen, natural gas, methanol, or gasoline -- and an oxidant -- air or oxygen -- into useable electricity. Unlike traditional fossil power plants that burn fuels to produce power, fuel cells generate electricity through an electrochemical process

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