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# EFMR Monitor

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Monitoring the Three Mile Island & Peach Bottom nuclear reactors

December 2002

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## EFMR Launches Internet News Site

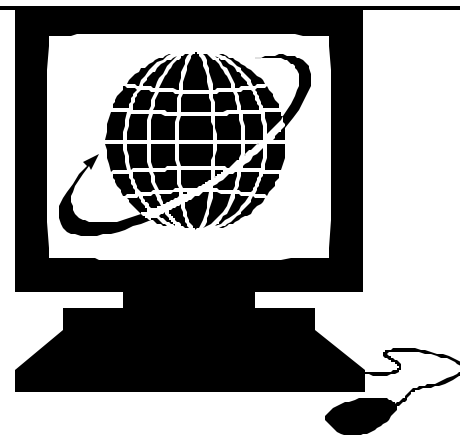
by David Raeker-Jordan, Editor

As you may have noticed, it has been a while since we published *EFMR Monitor*. Why has the newsletter production been so slow? Well, the newsletter is produced primarily by one person (me), and he has been busier than usual since the summer and unable to get a newsletter out any earlier than now. Even if EFMR could publish more frequently, however, it's time to take a fresh look at how EFMR communicates with you -- our readers and friends. We think that an internet news site makes sense for several reasons:

First, the cost of producing the news-

letter, especially postage costs, prevents us from being able to publish a newsletter that could ever be considered "timely." As a clipping service, EFMR does a pretty good job of exposing you to a wide variety of news sources and stories that you probably do not regularly see. But, let's face it, by the time you get *EFMR Monitor*, the news isn't really "new" anymore. Given the budgetary resources of EFMR, an online publication makes a lot of sense and allows us to publish more frequently.

Second, given the technical and business sophistication of most of our



readers, it is likely that the vast majority of you have a computer, and that most of you regularly use the Internet. Although EFMR does have a website,

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## The EFMR Monitoring Group

The EFMR Monitoring Network is a non-profit, non-partisan organization that monitors Three Mile Island Unit 1 (TMI) and Peach Bottom Atomic Power Stations 2 & 3. The Group was formed out of a Settlement with GPU Nuclear in 1992 relating to Post-Defueling Monitored Storage at TMI-2. In January 1999, the new owners of TMI-1, AmerGen, (PECO Energy & British Energy) agreed to terms with EFMR through 2005. EFMR expanded its monitoring and research activities to include Peach Bottom 2 & 3 as a result of Universal Settlement relating to the merger of PECO Energy with Commonwealth Edison. In addition, in 2001, FirstEnergy, TMI-2's new owners, agreed to provide a grant to EFMR to enhance radiation monitoring around Three Mile Island.

EFMR has distributed 60 Radalert radiation monitors at 50 stations in an eight county area around Three Mile Island. Several additional monitors are deployed in northern Maryland close to the York County border. In addition, EFMR will deploy 30 Radalerts in close proximity to Peach Bottom as a result of its Agreement with PECO Energy.

EFMR has worked with AmerGen, Dickinson College, the Environmental Protection Agency, Los Alamos National Laboratories, GPU Nuclear, the NRC, Peach Bottom REMP Program, PECO Energy, the Pennsylvania Bureau of Radiation Protection, the Susquehanna Valley Alliance, Three Mile Island Alert, and the University of Tennessee.

EFMR maintained five low-volume air samplers on the east and west shores of the Susquehanna River opposite of

TMI from 1993-1999. Dickinson College Physics Department collected the filters and cartridges of these monitors on a weekly basis. Analyses performed included, but were not limited to, weekly gross beta and alpha measurements, monthly gamma isotopic analysis, weekly Iodine-131 analysis, and semi-annual Strontium-90 analysis. The last collection occurred in December 1999. In November 2000, EFMR deployed a low-volume air sampling station at Peach Bottom.

PECO and AmerGen have agreed not to store spent fuel or radioactive waste from any other nuclear reactor at Peach Bottom or Three Mile Island during the terms of their Agreements with EFMR. PECO has also agreed not to use Mixed Uranium Oxide (MOX) fuel at Peach Bottom 2 & 3, Limerick Nuclear Station Units 1 & 2, and Salem Nuclear Station 1 & 2.

AmerGen has ensured that its work force meets or exceeds NRC staffing requirements and has agreed to pay excess decommissioning costs for TMI-1. EFMR has on-line access to AmerGen's Reuter-Stokes, gamma monitoring system. This sensitive system collects samples, analyzes them, and prints out data on an hourly basis from 16 separate collecting stations located within a four mile radius of Three Mile Island.

EFMR continues to attend NRC meetings, and receive regular briefings and updates from AmerGen, Exelon, and PECO Energy.

As part of a Negotiated Settlement with FirstEnergy (FE), EFMR will receive correspondence and reports re-

lating to TMI-2, including quarterly updates from the Remote Temperature Detector that was placed at the base of the reactor vessel as a result of EFMR's Agreement with GPU Nuclear (1992). FE has committed to maintain "corporate investment and involvement in the local community" at current levels for three years. FirstEnergy will not store spent fuel from any FE plant at TMI-2 during the term of this Agreement. The Company will not trade TMI-2's high-level radioactive waste rights to any other nuclear utility that would delay the decommissioning of TMI-2.

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## Three Sirens Fail in Three Mile Island Control System Test; York County To Discuss Evacuation Plans for Day Care Centers

from a September 5, 2002, York Daily Record article

by Sean Adkins

After failing to sound all 79 sirens situated within a 10-mile radius of Three Mile Island on September 4, AmerGen officials responded with a second test of its new siren control system. At 9:30 a.m., AmerGen officials stationed at the 911 Communications Center at Pleasant Acres sounded 34 York County sirens that are near Three Mile Island. Emergency centers in Cumberland, Dauphin, Lancaster and Lebanon counties sounded the remaining 45 sirens.

The 10-second checks are designed to test \$250,000 siren upgrades that AmerGen installed earlier this year in an effort to better alert residents in the event of a nuclear, chemical or weather-related emergency. A faulty antenna caused three of the sirens to fail and a second test was conducted five minutes later, said Dave Simon, spokesman for Exelon Generation. The second test sounded all 79 sirens, including the 34 York County siren boxes, he said.

"Both tests were a success," Simon said. "The first siren test was a 96 percent efficiency. That is well within the 90-percent range that we need to be in."

Simon said the company is not aware which sirens failed but the antenna has undergone repairs.

Regardless of the problems that

plagued the first test, the new system will help York County Emergency Services guard against failed sirens, said Patrick McFadden, director of York County emergency services. For example, if both computers stationed at the 911 Communications Center should fail to sound York County sirens, a computer in Dauphin County can complete the task, he said. "It's a good system that is all push-button and user friendly," McFadden said.

At 1 p.m. Wednesday, Exelon Generation sounded all 27 of its York County sirens that surround Peach Bottom Atomic Power Station, Simon said. The successful test was part of a monthly plan to sound all York County sirens near the plant, he said.

### Day Care Evacuation Plans

While schools and most businesses are prepared to act in the event that sirens around both plants should sound, no federal mandate exists for the evacuation of day care centers or nursery schools.

With the help of Three Mile Island Alert, Lawrence Christian of Fairview Township has authored a petition addressing the lack of day care centers and nursery school evacuation plans.

TMI Alert is a group of activists concerned about the state and national regulation of the nuclear-power indus-

try.

The petition, along with roughly 700 signatures, will be sent to the Nuclear Regulatory Commission for review, Christian said.

Outlined in the petition, Christian suggests that the NRC require day care centers to establish designated relocation centers, stock potassium iodide pills and provide parents with information detailing the plan.

"This is a weak point that needs to be addressed," he said. "Each day care center and nursery school needs a standardized checklist."

In an effort to address the growing concern for day care center evacuation plans, the York County Emergency Services will hold a series of meetings with the owners of the centers, McFadden said.

The agency is contacting all day care centers and nursery schools in York County concerning the meetings that will occur within the next month.

Officials need to determine the dates and locations of the meetings. The meetings will address how each school and center can create an evacuation plan and make that information known to parents, McFadden said. ¶

## 20-Year Follow-Up Shows No Significant Increase in Cancer Deaths Among Three Mile Island Residents, Report University of Pittsburgh Researchers

*from a November 1, 2002, PR Newswire press release*

In a 20-year follow-up study of mortality data on residents living within a five-mile radius of Three Mile Island (TMI), researchers at the University of Pittsburgh's Graduate School of Public Health (GSPH) found no significant increase overall in deaths from cancer. The findings were published Friday, Nov. 1, on the Web site of Environmental Health Perspectives, <http://ehp.niehs.nih.gov>, a journal of the National Institutes of Health's National Institute of Environmental Health Sciences. The paper will appear in the March 2003 issue of the journal.

"This survey of data, which covers the normal latency period for most cancers, confirms our earlier analysis that radioactivity released during the nuclear accident at TMI does not appear to have caused an overall increase in cancer deaths among residents of that area over the follow-up period, 1979 to 1998," said Evelyn Talbot, Dr.P.H., professor of epidemiology at GSPH and principal investigator on the study. Dr. Talbot's previous study, published in the June 2000 issue of Environmental Health Perspectives, analyzed 13 years of mortality data. The TMI incident occurred at a nuclear power plant near Harrisburg, Pa., on March 29, 1979, when a reactor leaked small amounts of radioactive gases. Scientists have calculated that the average person present in the area during the 10 days following the incident was exposed to considerably less radiation than the annual dose an individual re-

ceives from the everyday environment in the United States. However, little is known about the long-term health effects of low-level radiation.

The current University of Pittsburgh study examined causes of death that included heart disease and malignancies as well as specific cancers known to be sensitive to radioactivity: bronchus, trachea and lung; breast (women only); lymphatic and hematopoietic tissue (blood-forming organs), excluding chronic lymphocytic leukemia and Hodgkin's disease; and the central nervous system. Thyroid cancer was considered, but only one death was reported during the study period. Researchers used information collected by the Pennsylvania Department of Health in interviews conducted with 32,135 TMI residents within two months of the accident. Information included education, occupation, smoking status, residential history, medical history, previous radiation exposure and daily travel into and out of the area during the 10 days following the accident. This exposure data was combined with mortality data from the Pennsylvania Department of Health.

The ratio of the number of observed deaths in the TMI "exposed" population was compared with the expected number of deaths in the general population. The overall number of cancer deaths among men and women in the TMI population was not significantly

different from the general population, but there was a slight increase in the number of deaths from lymphatic and hematopoietic cancers in women in the TMI population.

Comparisons of mortality risks also were performed to assess the impact of the radiation-related exposures on the cancer rates in the cohort. After adjusting for background radiation, educational level and smoking, no significant differences were noted. There was however, a slight increase in the risk of lymphatic and hematopoietic cancers among males, which was related to radiation exposure from the accident, and an increased risk of mortality from lymphatic and hematopoietic cancers in women, which was related to everyday background radiation exposure.

"While these findings overall convey good news for TMI residents, the slight increased risk of death from lymphatic and hematopoietic cancers may warrant further investigation. Also, while our 13-year follow-up indicated a significant upward trend in breast cancer risk related to radiation exposure the day of the accident, this relationship was no longer significant in our current study."

This research was supported by a grant from the Three Mile Island Public Health Fund. ¶

## Science for Sale: TMI and the University of Pittsburgh

by Eric Joseph Epstein, EFMR Coordinator

The University of Pittsburgh's most recent health study, released on Halloween 2002, is essentially a recitation of discredited protocol and disputed data. The Study actually acknowledged an increase in lymphatic and blood cancers among men. However, as in previous of University Pittsburgh Studies conducted by the same group of researchers (Evelynn Talbott et al; 2000),<sup>1</sup> this survey relied on government and nuclear industry sponsored health studies that were completed in the early 1980s. These studies were based on inaccurate dose projections, did not factor data only available in 1985 regarding the severity and conditions of the partial-core meltdown at Three Mile Island Unit-2,<sup>2</sup> and did not factor the prevailing weather conditions and wind patterns in March-April, 1979.

Nor did any of these studies evaluate the health impact to members of our community who defueled Three Mile Island. In fact, General Public Utilities choose not to maintain a health or cancer registry, despite the fact that from 1979-1989, 5,000 clean-up workers received 'measurable doses' of radiation exposure.<sup>3</sup>

Moreover, the University of Pittsburgh's Study relied heavily on the much maligned Pennsylvania Department of Health's seventeen year-old survey released in September 1985. That Study's protocol was criticized by epidemiologists at Harvard (Dr. George Hutchison), and Penn State

(Dr. Robert A. Hultquist) for "diluting" increases in cancer by "expanding" the population base to include people living outside of ten-mile study-zone. (October; 1985).<sup>4</sup>

A great deal of radiation was indeed released by the partial core melt at TMI. The President's Commission estimated about 15 million curies of radiation were released into the atmosphere. A review of dose assessments, conducted by Dr. Jan Beyea, (National Audubon Society; 1984)<sup>5</sup> estimated that from 276 to 63,000 person-rem were delivered to the general population within 50 miles of TMI. More recently, David Lochbaum of the Union of Concern Scientists, estimated between 40 million curies and 100 million curies escaped during the accident.

For 11 days in June-July, 1980, Met Ed illegally vented 43,000 curies of radioactive Krypton-85 (beta and gamma; 10 year half life) and other radioactive gasses into the environment without having scrubbers in place.<sup>6</sup> And by 1993, TMI-2 evaporated 2.3 million gallons of accident-generated radioactive water, including tritium, a radioactive form of hydrogen (half life; 12.5 years) into the atmosphere despite legal objections from community-based organizations.<sup>7</sup>

The plant's owners, co-defendants, and insurers have paid over \$80 million in health, economic, and evacuation claims, including a \$1.1 million

settlement for a baby born with Down Syndrome.<sup>8</sup> In June 2000, the United States Supreme Court remanded 1,990 unsettled health suits from the TMI-accident back to Federal Court. (*GPU v. Abrams, Dolan v. GPU.*)<sup>9</sup>

In August 1996, a study by the University of North Carolina-Chapel Hill, authored by Dr. Steven Wing, reviewed the Susser-Hatch study (Columbia University; 1991). Dr. Wing reported that "there were reports of erythema, hair loss, vomiting, and pet death near TMI at the time of the accident . . . Accident doses were positively associated with cancer incidence. Associations were largest for leukemia, intermediate for lung cancer, and smallest for all cancers combined . . . Inhaled radionuclide contamination could differentially impact lung cancers, which show a clear dose-related increase."<sup>10</sup>

Today, TMI-2 remains a high level radioactive waste dump in the middle of the Susquehanna River. There was no decommissioning fund established for TMI at the time of the accident. The site of the nation's worst commercial nuclear accident has not been decontaminated or decommissioned. There has not been a human entry in the basement of the reactor building since March 1979.

### End Notes

(Continued on page 6)

(Continued from page 5)

1. Environment Health Perspectives, June 2000.

2. On November 6, 1984, research conducted by the Department of Energy on reactor damage during the accident indicates temperatures may have reached in excess of 4,800 degrees.

3. On April 11, 1984, William Pennsylv settled out-of-court two days before an administrative law judge was scheduled to hear his case relating to GPU's refusal to allow Pennsylv to wear a respirator during cleanup activities.

By 1986, TMI-2 defueling work force peaks at 2,000, but by 1989, after ten years of defueling activities, 5,000 TMI workers have received "measurable doses" of radiation exposure.

4. Frank Lynch, *State's TMI study clouded by survey method doubts*, SUNDAY PATRIOT-NEWS (Harrisburg, PA), October 6, 1985, at 1A.

5. Study available from the TMI Public Health Fund, 16223 Locust Street, Philadelphia, PA 19103, #215-875-3926.

6. In November, 1980, the United States Court of Appeals for the District of Columbia ruled that the krypton venting (June-July, 1980) was illegal.

7. In 1980, the Susquehanna Valley Alliance, based in Lancaster, successfully prevented GPU/Met Ed from dumping 700,000 gallons of radioactive water into the Susquehanna River. Ten years later, in December 1990, despite legal objections by TMI-Alert and the Susquehanna Valley Alliance, GPU began evaporating 2.3 million gallons of

accident-generated radioactive water (AGW). By August 1993, evaporation of 2.3 million gallons of AGW was completed over six months behind schedule. The evaporator was disassembled and removed from the site. According to the Pennsylvania Department of Environmental Resources, the total activity during evaporation was 658 curies of tritium or 1 to 1.3 MR dose to the public.

8. By 1985, TMI had paid at least \$14 million for out-of-court settlements of personal injury lawsuits. Most of the cases were "sealed," and only those cases involving "minors" are published as prescribed by the rules and regulations of Pennsylvania's Orphan's Court.

9. On June 12, 2000, the United States Supreme Court rejected an appeal by GPU to throw out 1,990 health suits. On May 2, 2001, the Third Circuit Court of Appeals ruled that "new theories" to support medical claims against Three Mile Island will not be allowed.

10. Researchers at University of North Carolina at Chapel Hill have published, in the journal Environmental Health Perspectives (February 24, 1997), a reevaluation of the health effects near Three Mile Island. They have found chromosomal damage and higher cancer rates than previously reported, suggesting radiation levels were higher than official estimates. Copies of the study may be requested by calling 919-541-3345. ¶

## Three Mile Island: Once Through Steam Generators (OTSG) Plugging and Sleeving

*from data provided by AmerGen/ Exelon/Peco Energy Companies, the NRC, and Pa. DEP*

As of February 21, 2002, the total number of tubes plugged in OTSG-A is 1,512 (9.74% of the 15,531 tubes), and the total number of plugged tubes in OTSG-B is 552 (3.55% of the 15,531 tubes).

The 80" sleeves installed in the TMI-1 OTSGs affect primary coolant flow and alter the effective plugged percentage of tubes. Per Reference 15, 6.7 tubes with 80" sleeves installed are hydraulically equivalent to 1 plugged tube. Therefore, the effective plugging percentage of OTSG-A, considering the 1R14 Outage tube plugging and the effect of its 248 in-service sleeves is now 9.97% [ $1512 + (248/6.7) / 15531 = 0.0997$ ]

The effective plugging percentage of OTSG-B, considering the 1R14 Outage tube plugging and the effect of its 253 in-service sleeves is now 3.80% [ $552 + (253/6.7) / 15531 = 0.0380$ ]

The NRC previous limit of OTSG was a maximum of 2000 total tubes plugged. In 1998, GPU Nuclear submitted a request, which was approved, to raise the tube plugging limit to 20% per OTSG, or 3,106 per OTSG. [1] The 40% throughwall limit has not been changed and according to DER, "Usually if close to 40% they

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## Nuclear Waste Transportation and Disposal at Yucca Mt.

from a December 22, 2002, *Earth Island Journal* article

by Gar Smith

America's atomic powerplants are burdened with growing stockpiles of spent fuel-rods and other radioactive wastes. "Temporary" fuel storage ponds at most reactors were filled long ago and, as aging reactors face the end of their operating (and revenue-generating) lives, the atomic power industry is running short of space, time and patience.

After years of opposition by antinuclear activists, environmentalists and the governors of all the affected states, the Bush administration is prepared to start shipping 70,000 tons of radioactive wastes from nearly 100 nuclear powerplants nationwide to an "interim" storage site at Yucca Mountain, Nevada.

When the nuclear power business first got its start in the 1960s, the Department of Energy (DOE) promised to assume final responsibility for each and every spent nuclear fuel rod. The DOE was supposed to start picking up and parking these spent rods on January 31, 1998. It didn't happen.

Back in the 1960s, nuclear power advocates believed that they could generate electricity "too cheap to meter." The hope was that, by the time the powerplants needed to be shut down, future scientists would have discovered how to store radioactive waste safely for the next 24,000 years.

Forty years later, science still hasn't

solved the problem.

With storage pools brim-full, US facilities have been forced to start packing used fuel rods above-ground in "dry cask" storage. The operators of the Maine Yankee plant recently invested \$60 million to build a new fuel-rod storage facility. These surface "parking lots" will store uranium-filled rods in two-story-tall casks, stacked in rows. Though fenced in and protected by armed guards, the casks will still be exposed to the open sky. By 2005, there may be as many as 50 such parking lots scattered about the country.

The White House's nuclear waste transport plan send caravans of casks filled with High Level Waste (HLW) rolling down highways and rail lines near major cities in 43 states; fifty-two million Americans live within a mile of the proposed routes.

Upon reaching their destination, the casks will not immediately be buried in the belly of Yucca Mountain, however. The facility is not expected to be open for business until 2010 at the earliest. Instead, the casks would be placed in another temporary above-ground parking lot--a federalized version of the dry-cask scenario.

Nearly 80,000 truck and 13,000 rail shipments would be required to ship used nuclear fuel rods and assorted radioactive waste from decommis-

sioned nuke plants. It is estimated that it will take 30-40 years to transport all of the spent fuel from all of the nation's reactors.

The radiation aboard a single truck would be equal to 40 times the radiation released by the US A-bomb dropped on the Japanese city of Hiroshima. Each atomic cask traveling by rail would contain the radiation equivalent of 240 Hiroshimas.

In 1986, the DOE began examining three potential sites that might be used as nuclear disposal sites. The sites were located in Texas, Nevada and Washington state.

But something strange happened in Congress. Legislation was crafted to eliminate the sites in Texas and Washington. Was it coincidental that the Speaker of the House at that time was Texas Representative Jim Wright and the House Majority Leader was Washington's Tom Foley? Robert Loux, the head of Nevada's Agency for Nuclear Projects, thinks not. "Congress acted on political, not scientific criteria in choosing this site," Loux charges.

Government geologists have since discovered that Yucca Mountain sits between two active earthquake faults, 12 miles from the epicenter of a 5.6 Richter scale quake that struck in 1992. A 4.4 quake rattled the region in June.

*(Continued on page 15)*

**NRC Chief Planning to Leave Position**

*from a December 14, 2002, NJ.com article*

URL= <http://www.nj.com/news/sunbeam/index.ssf?/base/news-0/1039864507170010.xml>

*by Bill Cahir*

Richard A. Meserve, chairman of the Nuclear Regulatory Commission, announced this week that he planned to step down and take a position as head of the Carnegie Institution. Meserve, who first took office in October 1999, guided the nuclear regulatory agency through an extraordinarily turbulent period.

After the terror attacks upon New York City and Washington, D.C., Meserve opposed any attempt to have federal marshals take over security operations at the nation's 103 nuclear power plants. Testifying in Congress, Meserve repeatedly claimed lawmakers and citizens near fission plants could rely on the existing cohort of private-sector security forces.

Meserve additionally supported legislation establishing the Yucca Mountain depository as a possible storage for spent nuclear fuel. President Bush in July signed a measure tapping Yucca Mountain as the likely destination for nuclear waste. In a written news statement, Meserve said on Thursday said the commission on his watch had "responded effectively to the terrorists' challenge to our national security." Meserve additionally noted that the commission had helped "put in place the framework to deal with an application for a license to dispose of high-level waste at Yucca Mountain."

A Harvard-trained lawyer and a Stan-

ford-trained physicist, Meserve will continue working at the commission through March 2003. He plans to leave the panel one year before his term would expire.

Joe F. Colvin, president of the industry-backed Nuclear Energy Institute, praised Meserve as a steady hand who had helped the nation cope with the perceived threat to nuclear power plants. "As the result of the tragic terrorist attacks on our nation, I have had extensive discussion with Dr. Meserve as the industry and the NRC have worked cooperatively to bolster the robust security posture at nuclear power plants," Colvin said.

The Nuclear Control Institute favored a federal takeover of security operations at fission plants. Edwin Lyman, president of the institute, claimed Meserve had failed to address systemic problems with nuclear security operations and had allowed "unacceptable delays in decisive improvements." "I think 9-11 highlighted a lot of deficiencies in the nuclear security program in this country, and it required greater courage from someone to handle that. Instead, we have a top-to-bottom security review going on indefinitely ... It's partly indecision and a lack of stewardship by Chairman Meserve," said Lyman. ¶

**TMI-2 Temperature Monitoring Data for Second Quarter 2002**

*from a July 17, 2002, letter from GPUN to Eric Epstein*

In accordance with your settlement agreement with FirstEnergy, enclosed is the TMI-2 Reactor Vessel temperature data for the second quarter of 2002. During these months, Reactor Vessel temperature ranged from 48.6 °F on April 1, 2002, to 70.7 °F on June 30, 2002. Reactor Building temperature ranged from 45.7 °F on April 1, 2002, to 72.2 °F on June 30, 2002 with a maximum differential temperature of 2.9 °F on April 1, 2002.

With respect to your question on the status of the cork seam, the major concern in this area was water in the cork seam leaking into the environment. To mitigate this possibility, GPU Nuclear installed a series of dams and pumping stations to keep the contaminated portions of the cork seam dewatered. Additionally, since entry into PDMS, we have worked to prevent water from getting into the cork seam due to rainwater inleakage through building joints. In 1994, the first year of PDMS, approximately 570 gallons of water were pumped from the cork seam. Based on the work we did to prevent inleakage, this value declined to about 57 gallons for 2001. During 2001, we undertook an extensive project to repair all the building seams which was very successful in reducing inleakage as evidenced by our pumping of less than one-half gallon from the cork seam thus far for 2002. ¶



# Radalert Summary of Readings

January 1993 - December 2001

by Richard Stober, EFMR Statistician

EFMR Monitoring Group  
 Summary of Readings  
 January 1993 — December 2001 (as of October 25, 2002)

Total of Readings: 302,830  
 Mean of all Readings: 14.073 cpm  
 Total Readings, 2001: 27,716  
 Mean of 2001 Readings: 14.167 cpm  
 St. Dev. of 2001 Readings: 4.384

With nine years' of data now collected, it is apparent that the pattern in the distribution of readings taken as a whole has not (and will not) correspond to a *normal* (bell curve) type distribution. Although previous reports have analyzed the distribution of readings relative to expectations for a normally distributed variable, we have discontinued that method of analysis, because the distribution of readings is

clearly not a normally distributed variable.

Moreover, the *non-normal* distribution pattern appears to prevail both for individual stations and for all stations combined. Additionally, since the number and composition of reading stations is itself variable, albeit around a consistent core of reporting stations, the validity of comparative analysis is further complicated.

With regard to the method of recording 2001 readings from certain stations, the same practice as was used in previous years was continued, more specifically:

1. Only the first five (5) recorded readings from Nottingham Station were entered into the electronic data-

base. 320 additional readings from Nottingham (all of which were 30 cpm or higher and labeled *alert*) have been retained in hard copy, but were not entered into the electronic database.

2. Readings from Camp Hill 3 Station were recorded by the reader as one (1) average reading per day, rather than as five (5) one minute readings. Readings from Camp Hill 3 Station were therefore entered into the electronic database as five (5) individual readings, the average of which equaled the reading actually reported.

Otherwise all readings were entered into the electronic database as reported.

[Ed. Note: Two pages of Radalert charts follow.] ¶

## Postal Workers To Be Offered Radiation Pills

from a December 3, 2002, Washington Post article

The latest equipment for U.S. postal workers: potassium iodide pills to protect against thyroid cancer in the event of a radiological emergency. The U.S. Postal Service said yesterday it was buying nearly 1.6 million pills for distribution to postal workers. "It's a proactive approach regarding the safety, health and well-being of employees nationwide," said USPS spokeswoman Sue Brennan. She would not say how

much the agency paid for the pills. Potassium iodide is the only medication for internal radiation exposure, shielding the thyroid from radioactive iodine. Potassium iodide would be helpful only if a dirty bomb used radioactive iodine instead of other radioactive substances, and then only for people close to the explosion.

The tablets are being offered to

all 750,000 postal workers nationwide. Two potassium iodide tablets will be given to any employee who wants to have the pills in case of an emergency.

"Employees are out there in all of these communities nationwide, and we wanted to err on the side of caution," Brennan said. Just as with any medication, overdoses of potassium iodide can be dangerous. Some people may experience allergic reactions, including nau-

Ave Daily Readings  
through December 2001

Summary of 2001 Readings in Ascending Order of Mean  
Reading, by Location

## Chicago, British Co-Owners Consider Selling Three Mile Island Nuclear Plant

from a September 10, 2002, Lancaster New Era (Lancaster, PA) article by Ad Crable

The British co-owner of the Three Mile Island nuclear plant is teetering on the edge of bankruptcy and says it is considering selling its share of the plant. Last week, Chicago-based Exelon Energy, the plant's co-owner and its operator, announced it also is considering selling its 50-percent ownership.

An Exelon official at the plant said today the financial problems of British Energy currently pose no threat to continued operation of TMI. "There has been no financial impact to the current operation," said Ralph DeSantis, an Exelon spokesman.

However, British Energy's money troubles have prompted the Canadian Nuclear Safety Commission to ask the utility for a guarantee that it has the finances to continue operating an Ontario nuclear plant. If British Energy ceases operations, the CNSC wants assurances that there is enough money to ensure a safe shutdown over six months, according to Reuters, the British news agency.

British Energy, whose 1999 purchase of TMI made it the first partially foreign-owned nuclear plant in the United States, is seeking a financial bailout from the British government to stay afloat. "The board has concluded that we had no alternative other than to seek government support," Robin Jeffrey, BE executive chairman, is quoted

as saying in Restructuring Today, a Washington, D.C.-based daily publication covering utility and communications markets.

Scotland-based British Energy, the United Kingdom's largest nuclear generator, on Monday received a \$637 million loan from the British government to keep its reactors going until later this month. However, the long-term future of the utility remains in doubt, British newspapers reported.

The crisis took another twist Monday when it was revealed that Enron, the collapsed U.S. energy trader, was a creditor of British Energy. British Energy is seeking various reliefs from the U.K. government. If they are not granted, the company said, it may be unable to meet financial obligations.

The sale of TMI may be appealing to British Energy because it is expected to bring a handsome profit for the utility and for Exelon. The plant was purchased for \$100 million in 1999 when nuclear plants were far from hot investments. Industry analysts have estimated the plant could bring \$340 million to \$600 million now. Analysts have named several American utilities as possible buyers, including Dominion Virginia Power, Entergy of New Orleans and Florida Power & Light. ¶

## Entergy Looking at Three Mile Island Unit 1

from an October 1, 2002, The Times-Picayune (New Orleans) article by Keith Darce

Entergy Corp. is bidding to buy a 50 percent share of Three Mile Island Unit 1 and two other reactors from a British utility, according to a report by a British newspaper. Dianne Park, a spokeswoman for the nuclear power plant subsidiary of the New Orleans-based utility, would not confirm or deny the report, but said, "Generally, if there is a nuclear plant for sale in the United States, we certainly are interested in talking to the sellers."

Three Mile Island Unit 1, a 790-megawatt generator in Harrisburg, Pa., is the sister reactor of the notorious Three Mile Island Unit 2, which overheated March 28, 1979, causing the nation's worst nuclear power accident. No one was killed, but the disaster was a devastating blow to the industry, and the unit never reopened.

The other two plants are the Clinton power station, a 930-megawatt generator in Clinton, Ill., and the Oyster Creek power station, a 620-megawatt generator in Forked River, N.J. The three plants are part of AmerGen, a 50-50 joint venture of British Energy PLC and Exelon, the largest operator of nuclear power plants in the United States and the parent of PECO Energy in Pennsylvania and Commonwealth Edison in Illinois. ¶

## Dream House or Radon Remediation Project?

by Mario Szegedy

Only a few days after we signed a contract on our dream house in Piscataway, and just when we furnished it in our imagination, the news came: the home inspector's radon reading was 31.2 pCi/l, roughly eight times the legal limit, and more than twenty times the US average.

Although radon can be remediated, I wondered what was the underlying cause of the unusually high reading? Are we purchasing a house that was built on top of a radioactive fountain? Is the foundation or the impressing brick facade made of material taken from an uranium mine (in the sixties some building materials were tainted with uranium)? Whatever the reason, we felt very uncomfortable, and decided to do some measurements on our own. Our extensive research on the web has lead to find Eric Epstein's environmental watch group, and Eric generously agreed to lend us a Radalert 50, which can measure alpha, beta, gamma, and x-rays.

When the Radalert arrived I made some warm-up measurements in our own basement: 851 counts in an hour, or roughly 14 counts in a minute, exactly the US average. In my office at Rutgers University near the computer where I work, the measurements ranged from 12 and 18 counts/min.

I walked over to the astronomy building. While holding my Radalert next to the international sign for radiation, my next door neighbor, who works as a

post-doctoral astronomy student, patted my shoulder and said: "There is nothing here. I will take you to a door with a neutron source behind it." Standing in front of the door down the corridor the Radalert burst into action — 74 cpm.

In the cafeteria we bumped into a more seasoned astronomer. When he learned about my concern about the radon test result in the house I planned to buy, he gave a scornful laugh. First - he said - the entire radon scare is not based on facts; secondly your device is not going to measure anything. "Let us see how it reacts to my alpha source."

He lead us to a room (also with a radiation sign), and took out a small disk from a copper container. He did it with his bare hand, and put it in front of the sensor of my Radalert (just do not touch my Radalert, please). Indeed, we did not see any increased activity, perhaps because we waited for less than a minute.

Our friend then grabbed a gamma source, again with his bare hand. Seeing that I was somewhat surprised, he explained: "You can hold them, but I do not suggest you eat them. Especially the alpha source is not going to make a good breakfast." No increased activity with the gamma source was visible, and the measurement in the entire room was also normal. "We in Germany," said the astronomer professor, "could carry 10

millicurie pieces in our pocket or mail them without special permission. This piece here is less than one millicurie. I have been working with these materials for the past thirty years, and you see, I am still here. The EPA limits on the whole body yearly dose is way too low" (he remembered the numbers wrongly, as it turned out). "When you make a full mouth x-ray, you get several times of it, but it is limited only to your jaw; this is why it is legal."

After he expressed his skepticism that my device measures anything but cosmic rays when used in an open area (it seems astronomers believe everything comes from the sky), he let me go with the feeling that the Radalert I was holding was an inferior piece of junk compared to his spectroscopic device, which he said was the right equipment to measure radiation.

Nevertheless I went to the dream house with the Radalert. There was no smoking gun; the data turned out to be normal. Only the fireplace consistently showed higher than averages counts (25 instead of 14). The basement had slightly higher numbers (18) than the first floor and outdoors (12). Whether it was due to the radon, I do not know. My back of the envelope calculation did not exclude it, but I am more familiar with my field of computer science than with physics. Even though we had the sellers' permission to do the readings, they were rather frustrated. "You worry too much,"

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they said. Interestingly, the second radon measurement on the house came out to be 0.2 pCi/l, close to the average American outdoor data.

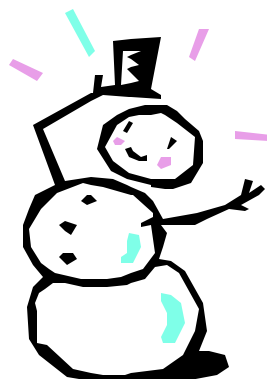
Eventually we lost the deal, partly because of our focus on radon and radioactivity. Was the hassle worth it -- I asked myself -- when current scientific data about the dangers of radon is annoyingly superficial? The often quoted bad health records of uranium miners provide a very weak case against radon, since miners are exposed to so many other health hazards. The well known Iowa study (<http://www.cheec.uiowa.edu/misc/radon.html>) is more convincing, but it does not give clear evidence that among the numerous environmental hazards radon stands out in significance. I would expect a better understanding of a problem that is claimed to be the second major cause of lung cancer after smoking. All I learned is that even as high a reading as 30 pCi/l does not imply presence of radioactive materials in the immediate environment (other than the radon itself), and that even that high quantity can be remediated for a couple of thousand dollars. Although the usual canister based measurement is very easy to tamper with, there is another one called Continuous Radon Monitoring for about \$160, which has fewer flaws. Next time I will certainly use that one.

My son got one of those glowing necklaces in the county fair. Are they radioactive? Nope. They work on a chemical principle unlike the fluorescent spots on your grandfather's

clocks that are radium based. Yet the necklace added about two counts to the background radiation on average (17 vs 15), perhaps just accidentally. How about my fire alarm? How much radiation do I get when I open it to change the battery? Holding the Radalert very close to the box of the firealarm I collected 52 zips in 3 minutes. In the same room at a neutral place the average count was only 11.5 counts per minutes. I concluded that I won't wear a fire alarm in my hat for a more extensive period than a decade. But wait! Was not I fooled by the cosmic rays when I held the device towards the fire alarm? On my desk the counts still averaged 11 even when I kept the Radalert pointing upwards to the sky.

The Radalert device soon goes back to Eric, but I envision a future where various smart devices will help ordinary citizens to "smell" the danger in food, soil, water, and air. Additionally, the wide availability of such radiation monitors would help keep companies, the government, and individuals honest. Until then, however, the best source of information about radiation hazards is data posted on the web, scientific articles, and common sense.

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## 'Extraterrestrial Alien' Invades Nuclear Plant

from a December 10, 2002, *The Daily Journal* article  
URL= <http://www.daily-journal.com/content/?id=17886>

A crazed Chicagoan, swearing to be an extraterrestrial alien, crashed his car through the gates of the Braidwood nuclear facility late Monday before speeding away only to be arrested for reckless driving in Wilmington minutes later.

Khalil I. Ghandor, 29, was arrested by Wilmington officer Don Thomas at 11:37 p.m. after Ghandor allegedly ran a motorist off the road then barreled across the bridge on Baltimore Street with his lights off. Wilmington police Chief James Metta said Ghandor did not appear drunk and gave no indication of being connected to a terror cell. He was also cited by Braidwood police. Will County sheriff's police cited him for trespass. No injuries resulted.

Metta said the intruder is alleged to have penetrated the parking area by crashing through closed gates, flashing past a plant checkpoint and then doing "donuts" in the parking lot.

[Ed. note: This man drove through the gates, past a check point, did "donuts" in the parking lot, and then drove out of the facility. Where was the plant's security? ]

*(Continued from page 7)*

Another drawback: Yucca Mountain is located atop a major Western aquifer. Millions of tiny fissures in the volcanic rock would allow water to drip onto the stored casks. The canisters will have to be retrofitted with titanium drip shields. Government engineers claim these casks can last 270,000 years, but Loux's studies show the casks could corrode within as few as 500 years.

If any of the casks were to crack, the wastes would move inexorably toward the aquifer.

Does any of this concern the White House? Apparently not. On February 14, Bush agreed with his advisors' recommendation: "We've found nothing so far that would disqualify the site.... There are no show stoppers."

The government admits there could be as many as 900 accidents involving these nuclear shipments over 30 years. Department of Energy officials confide radioactive shipping accidents are "inevitable." If a single truck were to spill its radioactive load, federal studies estimate, it would contaminate 42 square miles. Decontaminating a single square mile would take four years.

If the accident happened in a rural location, federal studies estimate cleanup costs could reach \$620 million. If the accident occurred in an urban location, the entire city would be rendered uninhabitable. The decontamination costs would top \$9.5 billion.

Truck accidents and train derailments are in the news nearly every day. The DOE, however, says there is little danger, as its casks are crash- and fire-proof. The US Conference of Mayors, however, is not reassured. On June 18, the mayors called on the DOE to halt its plans to ship waste to Yucca Mountain, noting that the casks "have never undergone full-scale physical testing to determine if they can withstand likely transportation accident and terrorism scenarios."

If the shipments are to go ahead, the mayors stated, Congress must first pass legislation requiring "adequate funds, training and equipment to protect the public health and safety in the event of an accident."

On July 18, 2001, a CSX railroad train caught fire in the Howard Street tunnel beneath the streets of downtown Baltimore. It was an hour before the fire departments were notified, and nearly three before the public was warned. The inferno raged for five days and reached temperatures of 1,500 degrees F--hot enough to have melted the DOE's "impregnable" casks within a few hours.

According to studies conducted by the New York-based Radioactive Waste Management Associates, had that train been hauling High-Level-Waste, 390,388 residents would have been exposed to the radioactive cloud. Tens of thousands additional cancer deaths would probably result. The cleanup costs would have approached \$14 billion.

Despite calls for heightened security in the wake of 9/11, the Department of Transportation (DOT) and the Nuclear Regulatory Commission (NRC) are planning to relax safety regulations governing these nuclear shipments. The NRC concedes that the new rules will result in a slight decrease in public health and safety.

Under the joint DOT/NRC plan, hundreds of radioactive isotopes would be exempted from regulatory controls. The plan would allow the industry to ship the wastes in cheaper, single-shell casks instead of the sturdier double-shell models currently required.

Agency officials explain the scheme to deregulate nuclear waste shipments was written before September 11. Nonetheless, NRC officials have refused to abandon plans to loosen security in the post 9/11 world. Their response is that these unforeseen new threats will be addressed "later."

The agency entrusted with safeguarding the transportation of nuclear waste is the DOE's Transportation Security Division (TSD). In simulations run to assess the TSD's readiness to protect the cargo against terrorist attack, the Project On Government Oversight [[www.pogo.org](http://www.pogo.org)] reports, TSD defenders "were annihilated in ten seconds after an attack was started."

An internal DOE memo dated December 12, 1998, reported on the results of a computerized Joint Tactical Simulation of TSD's readiness. The

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results of the first test: three losses and no wins. The results of the second simulation: three losses and one win. At that point, all further simulations were cancelled.

The shipping casks could be equally vulnerable. According to the Nuclear Information and Resource Service [www.nirs.org] the White House has been informed "rocket launchers that are for retail sale ... around the world are capable of penetrating a shipping cask, releasing deadly amounts of radioactivity." As NIRS spokesperson Kevin Kamps observes: "Providing security over a 30-year period for tens of thousands of moving targets is not realistic."

In July, the US Senate voted 60-39 to override Nevada's veto of the Yucca Mountain nuclear waste dump. This does not mean Yucca Mountain will ever open; instead, it sets the stage for years of courtroom activity. In papers filed in early December with the U.S. Court of Appeals in Washington, Nevada argues that the Bush administration was "essentially abandoning" the 1982 law's "mandate that the site's geology form the primary isolation barrier" in selecting the Yucca Mountain site for waste burial. ¶

## Inadvertent Computer Keystroke Sets Off Three Mile Island Sirens

*from a December 13, 2002, NEPA News article*

URL =

[http://www.zwire.com/site/news.cfm?newsid=6383831&BRD=2212&PA G=461&dept\\_id=465812&rfi=6](http://www.zwire.com/site/news.cfm?newsid=6383831&BRD=2212&PA G=461&dept_id=465812&rfi=6)

The sirens sounded for three minutes Thursday morning after the worker in the Cumberland County emergency management center "hit the spacebar on a computer keyboard while the siren activation window screen for Dauphin County was open," according to a statement from AmerGen Energy Co., the joint venture between Exelon and British Energy that owns the plant.

The workers were installing another computer next to the computer used to activate the sirens and, in the process, inadvertently hit the spacebar, said Ralph DeSantis, an Exelon spokesman.

As a result, 28 sirens sounded, all of them in neighboring Dauphin County, officials said.

The computer's software was supposed to activate the sirens only under commands made by the computer's mouse. AmerGen has notified the software company of the glitch, and advised emergency management centers in five surrounding counties to remove keyboards from the computers that allow each of the counties to sound the sirens.

*(Continued from page 1)*

we have not made aggressive use of the World-Wide-Web and its ability to reach a wider readership than can be reached via our print newsletter. An online news and commentary publication will give EFMR a new way to reach more readers.

Third, in the current climate of mounting federal deficits and increased pressure on utilities to show a profit for shareholders, credible independent groups with standing, like EFMR, need to ask hard questions about the safety and operation of nuclear plants. An online news and commentary publication would allow us to publish commentary and critique as events occurred, thus encouraging discussion of and action regarding nuclear and radiation safety.

Given these reasons, EFMR is redesigning our website to provide a web-based news and commentary forum. EFMR plans to use our website to notify you of news, commentary, and events. You can email us and let us know about news and events that you want publicized, and we can post them. It is our hope that by moving to a web-based publication, we can save money, publish articles in a more timely manner, and stay in closer and more frequent contact with our readers.

To reach the new and improved EFMR website, go to <http://efmr.enviroweb.org/> and follow the link to EFMR News. After your visit, let us know what you think.

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## Seabrook Accident Plan in the Mail

*from a December 12, 2002, Portsmouth Herald (Portsmouth, NH) article  
by Susan Morse*

An application form for obtaining potassium iodide pills from the state is included in the emergency-plan information contained in a calendar to be mailed next week to residents in towns neighboring the Seabrook Station nuclear power plant. When taken, the pills flood the thyroid with potassium iodine to protect it from the effects of radiation.

The state announced its plan to distribute the potassium iodide pills, or KI, in September, according to Jim Van Dongen of the state Office of Emergency Management. Van Dongen was one of three spokesmen at a briefing on the power plant's emergency plan held at Newington Station on Wednesday. Van Dongen said the state Office of Emergency Management this year was absorbed into the Department of Safety. Although the state takes no stand on recommending the nonprescription pill, he said, the state does maintain a stockpile of 350,000 pills, which is estimated to cover three months of usage.

To date, said Van Dongen, 6,156 pills have been distributed to the general public as well as to nursing homes and others in Rockingham County. One pill is expected to counter the effects of radiation for one day.

To obtain a free pill, a resident must fill out the form and mail it to the Bureau of Radiological Health, Office of Community and Public Health, in

Concord.

The pill is not to be considered a magic antidote to radiation, Van Dongen said - or an alternative to evacuation.

The state's potassium iodide plan came out just before a mock emergency was staged at Seabrook Station this October. The graded exercise, held every other year, tests the emergency plans of the power plant, the state, and the emergency operation centers inside the 10-mile Emergency Planning Zone surrounding Seabrook Station. This year the plant received overall good marks, except in the category of ingestion of potassium iodide. Workers were confused about when to take it and who the proper person was to authorize ingestion, according to preliminary results from the exercise. Since the plan was so new, this was not unexpected, according to Van Dongen.

Evacuation plans are updated every year. The biggest change over recent years has been the population increase in Rockingham County, Van Dongen said. This has been partially addressed by the widening of Route 101 to four lanes to Manchester, where one of the emergency evacuation centers is located. Van Dongen had no numbers on the amount of traffic expected to fill the roads in the event of an evacuation, but said evacuation time from the Seacoast is estimated at nine to ten

hours. Alan Griffith, a spokesman for Florida Power & Light, the new owner of Seabrook Station, said he feels any emergency at the plant would take place over a long period of time and wouldn't involve a sudden explosion.

The 2003 Emergency Public Information Calendar is expected to be mailed next week to residents in the 17 New Hampshire towns and the six towns in Massachusetts that lie within a 10-mile radius of the Seabrook plant. Griffith stressed the importance now, in the post-9/11 era, of keeping the emergency calendar handy.

At the briefing, Griffith talked about the four escalating levels of an emergency, which are: an unusual event; an alert; a site area emergency; and a general emergency. In its 12 years of operation, Seabrook Station has had an estimated seven unusual events, Griffith said. Most of the events have been weather-related. This fall there was an unusual event declared because of an electrical malfunction that caused a spark and smoke in a circulating water pump. Seabrook has never gone beyond the first, nonradioactive-matter release category, Griffith said. The only general emergency in this country - that is, a wide-ranging release of radioactive matter - occurred in 1979 at the Three Mile Island nuclear plant in Pennsylvania. ¶

## Plan to Distribute Anti-Radiation Pills to Students Called 'Ridiculous'

from a November 16, 2002, *The Mercury* (Pottstown, PA) article  
by Evan Brandt

Perhaps this week's FBI announcement that nuclear facilities are among the potential targets of suspected terrorist plots has you running for the potassium iodide pills Pennsylvania distributed in August. But the Pottstown School District may not be in any rush to dig them out.

That's because, as they explore the guidelines for distributing the pills to school children, some school officials are finding the idea impractical. Pointing in the direction of the cooling towers of Exelon Nuclear's Limerick Generating Station, Director of Pupil Services David Krem said: "When that thing goes, for us to be lining up and handing out pills to kindergartners is ridiculous."

He said, "our plan calls for us to totally evacuate the district out to Emmaus within 30 to 40 minutes if there is an incident at Limerick. I'm not sure that's enough time to evacuate the district, let alone stand there and tear open foil packets and try to get kindergartners who may not be able to swallow pills to take something that tastes like eight tablespoons of salt," said Krem.

"We're still waiting for word from the district's doctor," Krem said this week. "But the district nurse agrees with me. If that thing goes, we should just grab the kids and get the heck out of Pottstown."

Krem said because the pills take two hours to become effective in temporarily protecting the body's thyroid gland from radiation, he favors evacuating the children first, and then distributing the pills in Emmaus. Of course the irony of that plan, said Krem, is "if you're more than 10 miles away, you don't need to take the pills in the first place."

All this sounds fine to Richard McGarvey, a spokesperson for the Pennsylvania Department of Health. "We just decided to make the pills available to the school districts," said McGarvey. "We didn't say they had to do it in a particular way. They should decide what's right for their district. We never said they had to do it. It's only an extra layer of protection if they want it." McGarvey was unable to say if any other school districts in Pennsylvania have made similar complaints.

Krem represented Pottstown schools at the information session conducted by the state several weeks ago in which the pill distribution was explained. "I thought they were going to use the schools as distribution points to the general public, but

then it turns out they were talking about us giving pills out to the students," said Krem.

While the schools can distribute the pills however they wish, there are requirements governing who gets them. "We are supposed to keep a card on each student, with the parents' permission and any special information about having the student take the pill - that's a lot of work," said Krem. In some cases, that might mean giving a half dose to a younger child.

The problem is, a half dose doesn't actually exist. "Can you imagine us trying to cut these tiny pills in half while they're evacuating a school, and then taking the time to mix it into some apple sauce? It's ludicrous," he said. "This whole thing really just puts us behind the eight-ball," said Krem. ¶



**Pottstown Adopts Policy for Evacuating Students**

*from a December 12, 2002, The Mercury (Pottstown, PA) article by Evan Brandt*

If there is any kind of major radiation release from Exelon Nuclear's Limerick Nuclear Generating Station, students in the Pottstown School District will be bused out of town long before the district gets around to distributing potassium iodide pills. "Basically, the state's distribution plan was not well thought out," Schools Superintendent Anthony Georeno told the school board Wednesday night in recommending the district's policy.

The policy, which was unanimously adopted by the board, rejects the state health department's suggestion that the district consider distributing the pills to students before they are evacuated. The pills, commonly called KI pills, are meant to protect the body from absorbing too much radiation through the thyroid gland, but they do not protect the rest of the body from suffering the effects of radiation exposure. Further, they have a strong, unpleasantly salty taste and come in doses considered too strong to give to elementary school-age children.

The pills were distributed free by the state to residents at-large as well as to school districts after the Sept. 11 attacks that

heightened concern that nuclear power plants would be the target of terrorist attacks. But the state also imposed cumbersome rules that require the school district to keep records on each child's dosage requirements along with parental permission slips. Further, the state suggested school officials might have to cut the tiny pills in half for younger children and perhaps mix them with applesauce to make them more palatable to the children.

All this was supposed to be done during the 20-or-so-minutes the district's evacuation plan gives officials to get Pottstown's entire student body on buses and headed for the evacuation destination in Emmaus. After hearing from the district's nurse and doctor, the district decided "our primary goal is to get the students on the buses and get out of town" in the event of a nuclear emergency, said Georeno. The board agreed and approved the recommendation without comment. ¶



**Summary of Robotic Research at Three Mile Island & Peach Bottom (as of February 21, 2002)**

*from data provided by AmerGen/Exelon/Peco Energy Companies, The United States Nuclear Regulatory Commission, and the Pa. Department of Environmental Protection*

The following monies were expended for 2001 robotics research as determined by the EFMR & Exelon/PECO Energy Company Nuclear Decommissioning and Waste Monitoring Agreement:

\$1,131,600.00 (Services)  
 \$160,000.00 (Parts and Materials)  
 + \$350,000.00 (R & D)  
 -----  
 \$ 1,641,600.00 (Total)

The Mid Atlantic Region Operator Group (MAROG), which includes Peach Bottom, Three Mile Island, Limerick, and Oyster Creek benefited from the following advances in robotics: underwater robotic core verification; mini-sub surveillance; robotic crawler used for surveillance and steam leak examination; remote camera deployment for reactor head inspection and fuel floor diving; robotic vacuuming; fiber optic scoping and remote monitoring.

The estimated Person-Rem savings for MAROG was 40 as opposed to 108 Person Rem savings for Midwest Reactor Group employees. ¶

## Peach Bottom Low Volume Air Sampler Second Quarter 2002 Report

by Dr. John Luetzelschwab, Dickinson College

The following is a summary of monitoring results from one air sampling monitor installed at the Peach Bottom Atomic Power Station. The samples are collected every other week by a sub-contractor. The filters are then sent to Dickinson College for analysis. Periodic maintenance is provided by Normandeau Associates.

We received six samples this quarter and we analyzed each for four hours on the calibrated HpGe system. The results of each are listed below.

Period	Activity
4/3/02- 4/18/02	$5.5 \times 10^{-5} \mu\text{Ci Be-7}$
4/18/02- 5/2/02	$9.8 \times 10^{-5} \mu\text{Ci Be-7}$
5/2/02- 5/16/02	$9.8 \times 10^{-5} \mu\text{Ci Be-7}$
5/16/02- 5/30/02	$9.2 \times 10^{-5} \mu\text{Ci Be-7}$
5/30/02- 6/13/02	$1.3 \times 10^{-4} \mu\text{Ci Be-7}$
6/13/02- 6/27/02	$1.2 \times 10^{-4} \mu\text{Ci Be-7}$

The only activities detected were from beryllium-7 and radon progeny. Be-7 comes from cosmic bombardment of the upper atmosphere and only Be-7 had sufficient activity to be measured above the MDA (Minimum Detectable Activity).

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## Peach Bottom Low Volume Air Sampler Third Quarter 2002 Report

We received seven samples this quarter and we analyzed each for four hours on the calibrated HpGe system. The results of each are listed below.

Period	Activity
6/27/02- 7/11/02	$7.0 \times 10^{-5} \mu\text{Ci Be-7}$
7/11/02- 7/25/02	$1.2 \times 10^{-4} \mu\text{Ci Be-7}$
7/25/02- 8/8/02	$1.0 \times 10^{-4} \mu\text{Ci Be-7}$
8/8/02- 8/22/02	$1.0 \times 10^{-4} \mu\text{Ci Be-7}$
8/22/02- 9/5/02	$5.7 \times 10^{-5} \mu\text{Ci Be-7}$
9/5/02- 9/19/02	$1.2 \times 10^{-4} \mu\text{Ci Be-7}$
9/19/02- 10/3/02	$7.2 \times 10^{-5} \mu\text{Ci Be-7}$

The only activities detected were from beryllium and radon progeny. In the 9/19- 10/3 sample, we did measure  $3.2\text{E-}05 \mu\text{Ci}$  of lead-212; a progeny of Thorium-232 and radon-220. Be-7 comes from cosmic bombardment of the upper atmosphere and only Be-7 had sufficient activity to be measured above the MDA (Minimum Detectable Activity). ¶

## Glossary of Terms

**ALARA** (acronym for "as low as is reasonably achievable") means making every reasonable effort to maintain exposures to radiation as far below Federal dose limits as is practical

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

**Alpha, beta and gamma radiation** – Alpha radiation is the least penetrating of the three types. Beta radiation may cause skin burns; beta-emitters are harmful if they enter the body. Beta particles are easily stopped by a thin sheet of metal. Gamma radiation (gamma rays) is very penetrating and is best stopped or shielded against with dense material, such as lead

**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, 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 parent, merged with FirstEnergy

**Mean** is the average

**MOX** - Reactor fuel in which plutonium-239 is mixed with natural or reprocessed 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/m<sup>3</sup>** refers to picoCurries of radiation per cubic meter of air

**PDMS** – post-defueled monitored storage

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

**PUC** – Pennsylvania Public Utility

Commission

**PWR** – Pressurized Water Reactor

**Radalert** is a hand-held radiation monitor that measures alpha, beta, gamma, and x-radiation

**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)

**Standard deviation** refers to the expected number of readings which fall above or below the mean. In a normal distribution, these numbers are equal

**THERMO Eberline** is a real-time gamma, radiation monitoring system used around all nuclear power plants in Germany. TMI will be the first reactor community in North America to deploy the monitors. The system offers real-time, hourly monitoring of TMI from stations located around the plant based on site-specific wind rose and population data. The system will be deployed over a two-year period beginning in January, 2003. ¶

(Continued from page 6)  
[GPU] plug the tube.”

The limit for sleeved tubes is 5,000 according to the NRC.

TMI's original Tech Specs (TMI = PATCO; Pacific Tube Company, Los Angeles) restricted steam tube plugging and sleeving to RCS flow rate, e.g., plugging precludes flow whereas sleeving reduces flow. (2)

**Notes:**

1. GPU sent a letter to the NRC on December 3, 1998, asking to relax the plugging standards up to 20%. TMI "anticipated a need to plug more tubes during the outage...

Nothing to do with kinetic expansion." The NRC filed a No Significant Hazards Finding on December 30, 1998 (US 63 Fed Reg; Supplemented on February 12, 1999.) Comment period expired. NRC has yet to approve and post a Notice of Issuance in the Federal Register.

2 For example, at Point Beach, Wisconsin (485; Westinghouse), 2,000 out of 3,000 steam tubes plugged. (Not OTSG, Westinghouse U-Bend). Damage caused by: 1) sulfate intrusions; 2) Westinghouse mandated licensees utilize phosphate chemistry control which caused corrosion. The flow rate ratio at Point beach for sleeved tubes is 20 to 1; or one plugged tube = 20 sleeved

tubes. ¶

# EFMR Monitor

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