



Three Mile Island Alert

Island Updates

News Watch on the Harrisburg Area

VOL. 6 NO. 1

JAN - MAR 1986

The Patriot, Harrisburg, Pa., Tuesday, Dec. 10, 1985

TMI: N-agency probes discovery of valve test results in trash can

By Mick Rood
Washington Bureau

WASHINGTON — Two technicians failed to test a power-operated relief valve properly at Three Mile Island in October, and a Nuclear Regulatory Commission inspector later found the printed results in a wastebasket.

The NRC is trying to determine how the so-called "exception" and "deficiency" sheets detailing the incident turned up in the trash, according to documents obtained yesterday.

"Although we have no immediate safety concern at this point, we are concerned with the actions that took place," said NRC Restart Director William F.

Inside

• State Supreme Court rules utilities do not have right to rates high enough to ensure profitability—A11

Kane in a Nov. 29 letter to GPU Nuclear Corp., which operates the plant.

While the matter remains "unresolved" pending a report from GPU Nuclear, Kane said there was no attempt to cover up the incident, because the reports were found "in an obvious place."

The inspector's discovery prompted TMI personnel to retest the valve on the next shift Oct. 25. They

found it safe, investigated the matter and promised better procedures, officials said.

The incident was disclosed for the first time in Kane's letter, which explained "generally favorable" results of an Oct. 18-25 NRC inspection of the utility's restart actions.

According to the letter, chief inspector Richard Conte "concluded there was no apparent motive to cover up the event. The E&D [exception and deficiency] forms were in an obvious place — the trash can in the I&C shop [GPU's Instrument and Control Department] — which is not a place one would discard a record if one were trying to cover up the event."

Calling it "a documentation control problem," Conte said GPU personnel were "careless by either discarding the forms or not providing enough atten-

tion to detail to assure the completed package was retained."

Conte suggested it would have been a violation of plant technical specifications not to "maintain original plant records." Or, if the test reports had been lost, Conte said it would have been a violation to "reproduce a reconstructed record."

Conte concluded, "It is merely speculative" as to whether specifications were violated, since it was likely GPU Nuclear's safety review process would have caught the incomplete test results.

Conte reported that neither the NRC nor GPU Nuclear could determine how the E&D sheets made it

into the wastebasket.

The NRC inspection report was critical of the GPU Nuclear shift supervisor for failing to question the two technicians closely enough about what they did, and for determining, based on inadequate evidence, that the valve was operable.

Utility spokesman Douglas Bedell said yesterday the incomplete test and missing sheets were noted in a shift turnover report that day. In a completed procedure report and on control room logs. The problem was corrected immediately, he said.

"There was no overall significance to the safety of the plant. There was no effort to hide it," Bedell said.

However, Bedell said three lessons were learned from the incident:

— Technicians should have "strong, thoroughly worked out reasons for challenging a procedure."

— Shift supervisors need to question technicians closely about the reasons for a change before agreeing to a change.

— All paper work should be kept with legally required reports.

In what Bedell described as a "tough memo" to management staff on Nov. 6, TMI Unit 1 Director Henry D. Hukill said that "discarding the E&D sheets was not a result of malice or intent to deceive."

However, Hukill added, "The very fact that the sheets ended up in the trash can is a most significant

matter and which I view as extremely serious."

Hukill said that keeping required safety documentation "was one of the primary factors that surfaced in the leak-rate investigations," referring to the systematic disposal of leak-rate tests at TMI Unit 2 before the 1979 accident that ruined Unit 2.

GPU Nuclear's predecessor, Metropolitan Edison Co., was convicted of criminal misconduct in that case.

As a Unit 1 restart requirement, GPU Nuclear has been forced to segregate from sensitive Unit 1 jobs any employee with a conceivable tie to the Unit 2 leak-rate incidents. The NRC is still investigating individual employees in that case.

Hukill said the company had not succeeded in convincing employees of the "absolute necessity for accurate documentation." He ordered that managers review the requirement with each employee.

Unaware of Hukill's internal memo of a month ago, anti-nuclear attorney Joanne Doroshov was quick to draw the leak-rate comparison.

"This is just outrageous," she said yesterday. "This is what they were indicted for. There are a lot of questions to be answered."

Doroshov represented Three Mile Island Alert in the Unit 1 restart proceedings.

GPU spokesman Bedell rejected the comparison between this Unit 1 incident and the Unit 2 leak-rate scandal.

The Patriot, Harrisburg, Pa., Friday, Dec. 13, 1985



The Patriot-News Co.

Raymond L. Gover PUBLISHER	Edwin F. Russell PRESIDENT
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A Free Press — Armor of the Republic

GPU 'newspeak'

GEORGE ORWELL'S classic and perceptive study of tyranny, "Nineteen Eighty-Four," offered the world a new name — Newspeak — for an old language — double-talk. He defined Newspeak as a language "designed to diminish the range of thought," so that war became peace, hate became love and lies became truth. And it is not at all surprising to find that Newspeak, in effect, has become the language of the nuclear industry where one of the most frightening industrial accidents ever experienced is presented as a testament to the safety of nuclear technology.

We were reminded of the industry's diminished range of thought by a recent incident at Three Mile Island, that monument to safe, clean and low-cost nuclear energy. When the operators of Unit 1 aren't opera-

ting the control panel with their belt buckles they seem to be filing their reports in the trash can.

It seems that's where a Nuclear Regulatory Commission inspector found the results of a test. Though the test — of a power-operated relief valve — was conducted improperly, NRC Restart Director William F. Kane saw nothing odd about the location of the reports. They were found "in an obvious place" he wrote in a letter to TMI-operator GPU Nuclear Corp. A trash can, he added, "is not a place one would discard a record if one were trying to cover up the event."

None of this should arouse any concern, however. These are the norms of operation at our friendly neighborhood mound of radioactivity. It may be a bit weird at TMI, but everything is under control, or so they keep telling us.

The Patriot, Harrisburg, Pa., Tuesday, Dec. 31, 1985

9 workers exposed to radiation at TMI Unit 1

By Connie McNamara
Patriot-News

Nine workers at Three Mile Island were exposed to low-level radiation yesterday when a pump seal in the Unit 1 auxiliary building sprang a leak.

The leak lasted 10 minutes and allowed 300 gallons of radioactive water to spill, according to Doug Bedell, a spokesman for plant operator GPU Nuclear Corp. The wa-

ter was contained in the building, he said.

An "unusual event" was declared at 1:50 a.m., GPU Nuclear spokeswoman Lisa Robinson said. Unusual event is the lowest of four emergency categories used in the nuclear power industry.

Bedell said the hair of three workers was contaminated. The clothing of two of those three, and that of six others, was contaminated, he said.

The contaminant decayed quickly, and only two of the nine underwent decontamination procedures, Bedell said.

The nine workers were contaminated by radioactive gas released from the water, and not by contact with the water, Bedell said. He identified the contaminant as xenon 138, a "noble" gas. Noble gas is used in the water that cools the reactor.

The nine employees were able

to return to work after the incident.

Bedell said the highest dose of exposure to a worker was 15 millirems. He termed that "very negligible" and not of medical consequence. Federal limits allow exposure to 3,000 millirems every three months, he said.

The faulty pump was isolated and replaced with a backup pump while the plant continued to operate at 88 percent of capacity, Rob-

inson said. The unusual event was declared over at 4:20 a.m.

Robinson said the pump supplies water to the reactor coolant system.

From about 1:30 a.m. to 2:30 a.m., radiation monitors along the shore of the island in Londonderry Twp. "showed slightly higher than normal background levels" of radiation, Bedell said. Usual levels are 6 to 7 microrems, but the levels during that hour ranged from 7.1 to 7.7 microrems, he said.

The overall dose of radiation released was calculated at less than .005 millirem or .1 percent of the quarterly limit of noble gas release allowed by federal regulations, Bedell said.

Radiation monitors in the building indicated a low-level release of noble gases from the plant's vent stack as a result of the leaking radioactive water, Robinson said.

Plant personnel began pump repairs immediately, and U.S. Nuclear Regulatory Commission inspectors were briefed during the day on the situation, Bedell said. Technicians were still trying to determine what caused the leak he said.

A spokeswoman for the NRC in Bethesda, Md., said that while problems with pump seals do not occur on an everyday basis, "it's not all that unusual, either."

The Patriot, Harrisburg, Pa., Tuesday, Dec. 24, 1985

NRC limits issues for investigation

United Press International

WASHINGTON — The Nuclear Regulatory Commission said yesterday it will hold a hearing to investigate document falsification at the Three Mile Island nuclear plant.

The NRC, though, barred any discussion of whether top plant managers knew about it.

Over the objections of two NRC commissioners, the commission set ground rules that sharply limit what issues can be addressed in a "legislative format" hearing into improprieties at TMI's Unit 2 reactor in Londonderry Twp., which was badly damaged in the nation's worst commercial nuclear accident on March 28, 1979.

In particular, the commission listed 24 current or former top officials of plant owner General Public Utilities Corp. that it said would be "outside the scope" of its hearing.

Those exempted from scrutiny include GPU Chairman William Kuhns, GPU President Herman Dieckman, former GPU Nuclear Corp. President Robert Arnold and current GPU Nuclear President Phillip Clark.

"The [hearing's] presiding board shall not address any issue regarding any alleged knowledge or involvement of these individuals in the falsifications that occurred at the TMI-2 reactor from Feb. 2, 1978, until March 28, 1979," the NRC said in a Federal Register notice.

The commission said those top officials already had been "cleared" by the federal prosecutor who handled the document falsification case, David Queen, then U.S. attorney for Central Pennsylvania.

The NRC hearing concerns allegations by Harold Hartman, a former control room operator at Three Mile Island's Unit 2 reactor, that test data on water leak rates from the reactor's cooling system was falsified by plant operators to ensure NRC requirements were met.

Hartman's allegations prompted a federal grand jury investigation that resulted in GPU pleading guilty or no contest to seven criminal charges of document falsification on Feb. 29, 1984.

GPU's guilty plea occurred at a time when the utility was trying to get NRC per-

mission to restart TMI's undamaged Unit 1 reactor, which had been shut down since the accident at the twin Unit 2 reactor.

The NRC decided in February 1985 to separate the document falsification charges from its proceedings on the Unit 1 restart, despite protests from anti-nuclear activists and some Central Pennsylvania elected officials that the allegations directly touched on GPU's competence and integrity.

The commission said it would institute a separate hearing to determine which TMI personnel were implicated in the falsification.

The hearing ground rules announced by the NRC yesterday excluded top GPU officials on the basis of statements by the federal prosecutor, Queen, at the time of GPU's guilty plea, which was part of a plea bargain agreement.

"Queen stated the evidence developed in the grand jury inquiry did not indicate that any of the [GPU officials]... participated in, directed, condoned or was aware of the acts or admissions that are the subject of the indictment," the NRC said.

The spokeswoman, Shu Gagner, said she would not classify it as a serious problem. "We are concerned and are following it," Gagner said. "We have people there, and we're getting reports."

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Ex-TMI operator cheated on test, court agrees

The U.S. 3rd Circuit Court of Appeals in Philadelphia has affirmed the conviction of James R. Floyd for cheating on an exam to requalify as a nuclear operator at Three Mile Island, the U.S. attorney's office said yesterday.

A jury convicted Floyd in November 1984 on two counts of submitting false statements to the Nuclear Regulatory Commission. Floyd was found guilty of using another person's work to complete 1979 take-home examinations in July and August.

Floyd, who admitted using the answers because he was pressed for time on the eve of his vacation, was the first person nationwide to be prosecuted for criminal offenses at a nuclear plant.

A former supervisor at TMI Unit 2, Floyd was the only employee indicted on criminal

charges involving conduct at the Londonderry Twp. nuclear plant, then operated by Metropolitan Edison Co.

Prosecutors said the cheating caused Met-Ed to falsely certify Floyd's requalification as a senior reactor operator with the NRC.

After the conviction, Floyd's attorney, William J. Fulton, claimed his client had been singled out for selective prosecution and noted other incidents of cheating. Fulton was unavailable for comment last night.

Days after his Nov. 16 conviction, Fulton appealed the verdict and moved for a new trial on 14 grounds, many of which dealt with rulings made by federal Judge Sylvia Rambo before and after the trial.

Fulton asked Rambo to set aside the verdict because the prosecution failed to show that Floyd had cheated with intent to deceive any-

one and pointed to the fact that Floyd did not submit the material to the NRC.

In March, Rambo refused to overturn Floyd's conviction and rejected 11 of Fulton's acquittal and new trial arguments. Most of the points dealt with court rulings on pre-trial motions, including a request that Floyd be tried elsewhere because of extensive publicity.

Rambo said it was the "jury's function" to determine the credibility of Floyd and other witnesses on the issue of intent. The judge said setting aside the verdict would have invaded "the province of the jury to resolve credibility."

Rambo placed Floyd on probation for 2 years and ordered that he pay a \$2,000 fine and provide 400 hours of community service work for those whose lives were affected by the 1979 accident at TMI Unit 2.

Xenon gas taints 8 at Unit 1

Eight people, including a Nuclear Regulatory Commission inspector, were contaminated by a small amount of radioactive gas at Three Mile Island's Unit 1 nuclear reactor, a plant spokeswoman said.

Seven plant employees and the inspector washed with soap and water to remove the contamination and then returned to work, according to Lisa Robinson, spokeswoman for GPU Nuclear Corp., plant operator.

The contamination was in the form of xenon gas, and the dose involved was .0000363 millirem, she said.

According to Robinson, the workers were performing maintenance work on a waste gas compressor in the auxiliary building shortly before 8 p.m. Tuesday when they opened a seal on a gas chamber they thought was depressurized and the xenon gas escaped. Pressure in the chamber was less than a half-pound per square inch, she said.

The workers were not wearing protective clothing, Robinson said.

During the incident, normal radiation releases from the nuclear plant's stack rose slightly, she said. The release was .00726 percent of the quarterly, 5-millirem limit for noble gases allowed by the Nuclear Regulatory Commission, she said.

Details of a small fire also were disclosed in the NRC's weekly report on the cleanup of Three Mile Island's Unit 2 reactor, which was damaged in the 1979 accident.

The fire occurred inside the reactor building when a light bulb ignited paper towels that wrapped it, according to the report. The light was located at the railing of a defueling platform where workers operate tools to clean up debris in the reactor.

According to the NRC report, the fire was extinguished in less than a minute and no workers were contaminated.

Container at Unit 2 slips to floor

Cleanup work delayed for about 15 hours

By Michael Sullivan
Patriot-News

A container used to store debris from the damaged Three Mile Island Unit 2 nuclear reactor slipped to the reactor floor and delayed the cleanup process for about 15 hours during the weekend.

The 12½-foot by 14-inch canister was partially loaded with radioactive debris from the floor of the reactor about 7:45 p.m. Saturday when it fell about a foot into a rubble pile in the bottom of the reactor, according to Gordon Tomb, a spokesman for GPU Nuclear Corp.

One end of a long-handled tool that workers used to load the debris snapped off inside the canister when it fell, Tomb said yesterday.

A service crane was used to return the canister and sleeve to a carousel device which suspends up to five canisters above the reactor floor, by 11:45 a.m. Sunday.

There was no damage to the canister or sleeve and no emergency conditions resulted from the accident, Tomb said.

Officials believe the canister fell because a locking device on the canister sleeve was not engaged. Tomb said the incident is under review and steps will be taken to prevent a similar occurrence.

Since the loading process began in mid-November, operators so far have filled two canisters with debris, which is made up of radioactive fuel, fuel rods and pieces of fuel assembly that were damaged in the 1979 accident at Unit 2.

Debris in the reactor's core is covered with water. Operators work from a platform suspended above the reactor vessel and use long-handled tools to load the canisters.

Filled canisters are stored under water and eventually will be transported by the U.S. Department of Energy to the Idaho National Engineering Laboratory in Idaho Falls.

Also during the weekend, operators began installation of vacuum equipment that will be used to pick up loose debris and move it into canisters. The loading of canisters using long-handled tools was scheduled to resume yesterday after completion of the vacuum equipment installation.

The safety of the cleanup process at Unit 2 was touted Thursday at a meeting of the Advisory Panel for the Decontamination of Three Mile Island Unit 2, at Holiday Inn Center City.



"If you're still trying to sell that house out near the nuclear plant may I make a suggestion?"

TMI Unit 1 shut down for repairs to leaky line

By Frank Lynch
Patriot-News

The Unit 1 reactor at Three Mile Island will be out of service for at least a week as plant workers repair a leaky steam line.

Spokeswoman Lisa Robinson said the reactor was shut down yesterday and workers began inspecting the steam line today.

Operators began shutting down the unit Monday night because of "change" in the pressure of a line that heats non-nuclear water before it is converted to steam by one of two steam generators.

Operators have been monitoring the leak for the last two weeks. GPU Nuclear Corp., plant operator, announced 10 days ago it was shutting down the reactor then to complete the repairs.

But three days later, spokes-

men said the leak was contained and officials planned to continue operations with the leaky line until March, the next planned plant outage.

"Because we've seen a change, we've decided the best thing to do is shut down and do repairs," Robinson said.

The leak cuts the plant's efficiency by reducing the amount of steam, she said. The leak caused the reactor to lose a "relatively small" 25 megawatts of its 860-megawatt output, Robinson said.

She said the leak is in the secondary or non-nuclear side of reactor operations and is not considered a safety hazard.

Unit 1 has been operating at 100 percent of capacity since Jan. 6.

In a related development, a portion of the Londonderry Twp. plant's integrated control system, which controls and coordinates

the major plant systems, lost power Friday while technicians were replacing a repaired transmitter, spokesman Gordon Tomb said.

The system's functions include controlling the flow of water going into the steam generators and adjusting control rods in the reactor to maintain power at an even level, Tomb said.

Power was lost when technicians applied power to the transmitter and the automatic control function of the system shut down, Tomb said.

The plant was controlled manually for about 1½ hours and operated at 95 percent to 97 percent of capacity during that time, GPU Nuclear said.

The U.S. Nuclear Regulatory Commission was notified, but Tomb said he didn't know whether notification was required or was done as a courtesy.

Electrician gets TMI radiation dose

An electrician at Three Mile Island's Unit 2 reactor was contaminated yesterday with a "slight" radiation dose when a fellow worker touched the back of his head with a gloved hand.

The 54-year-old unidentified employee received a dose "less than 1 millirem" to skin on the back of his head, said Lisa Robinson, spokeswoman for plant operator GPU Nuclear.

The man was decontaminated at Hershey Medical Center and released in satisfactory condition, according to a medical center spokeswoman. Doctors attributed the man's dizziness to dehydration and low blood pressure and said the incident was unrelated to any radiation exposure.

GPU standards limit workers to a skin dose of 5,000 millirems every three months, according to spokesman Douglas Bedell. The Nuclear Regulatory Commission's limit is 7,500 millirems in three

months. The incident began shortly before 7 a.m. when one of a five-man crew working in the reactor containment building in Londonderry Twp. began feeling faint and dizzy and signaled for help.

While the man was lying on the floor, a fellow worker removed the man's respirator and supported his head with a gloved hand, the source of the contamination, Robinson said.

GPU Nuclear declared an unusual event, the lowest of four emergency classifications, because the man was taken off the site by an ambulance.

It was unclear if the worker, employed by Catalytic Inc., a Philadelphia-based TMI contracting firm, suffered internal contamination.

Robinson said radiation levels in the containment building were about 10 millirems an hour, a "very low" level.

Scientists oppose weakening N-plant safety rules

Associated Press

WASHINGTON — Critics of atomic power are opposing any effort by the Nuclear Regulatory Commission to reduce its estimates on the amount of radioactivity that could escape in a severe power plant accident.

Research over the past five years costing \$300 million has shown that estimates in use since 1975 on the "source term" — or radioactivity that could escape — are too high in most kinds of accident possibilities.

The Union of Concerned Scientists, a group traditionally opposed to nuclear power, expressed fears in a report to be filed with the commission today that the new codes developed from the research results might be used prematurely to begin weakening safety rules.

"Given the climate in which the source term reassessment is being carried out, re-evaluating regulations in

NRC parlance will undoubtedly mean relaxing the regulations," the group's statement said.

Joseph Fouchard, an NRC spokesman, said agency officials still are gathering scientific data for evaluating the issue.

"It's premature to speculate what changes might be made in the regula-

NRC would ease TMI generator tube rules

United Press International

WASHINGTON — The Nuclear Regulatory Commission has proposed license changes for Three Mile Island's undamaged reactor that would relax restrictions on defects in the unit's steam generator tubes.

The NRC has proposed the changes in response to a November 1985 petition by General Public Utilities Nuclear

Corp. The license changes for the operating Unit No. 1 reactor relate to steam generator tubes that carry heated, highly pressurized, radioactive water from the reactor core. Defects in the tubes can lead to radiation leaks.

Under present rules, a tube must be repaired or removed from service when a defect exceeds 40 percent of the tube wall's thickness, the NRC said.

The new proposals would maintain

the 40 percent limit on one side of the tube, but replaces that limit on the other side of that tube with a sliding scale that goes from 40 percent to 70 percent of the tube wall's thickness, depending on the size of the defect.

The tubes in the undamaged Unit No. 1 reactor have been plagued with corrosion, partly because the unit was shut down for six years after the accident at its twin unit.

of accidents. Overall, the data and experiments so far were "not adequate" to reach a broad conclusion that the nation's 97 licensed reactors are less dangerous than previously assumed, the physicists concluded.

The NRC has agreed that the data so far are insufficient for a broad easing of

regulations in the near future, as advocated by utilities and industry officials.

But in July, the commission proposed using the new codes to look at the current regulatory practices and "revise them as needed" on a case-by-case basis.

"Notwithstanding the limitations and uncertainties that have been expressed, the new methods are so much better than the [1975] Reactor Safety Study methods that their utilization is warranted," the commission said.

The research was spawned by the little radioactivity that escaped in the March 1979 partial core melt at the Three Mile Island plant in central Pennsylvania — the worst accident in the industry's history.

That led government and industry officials to speculate that previous assumptions about the health and safety risks of atomic power accidents were much too pessimistic and that less stringent rules might be called for.

GPU penalizes 17 in leak-rate falsification

By Mick Rood
Washington Bureau

WASHINGTON — GPU Nuclear Corp. has disciplined 17 of 24 employees who were involved in or should have known about falsification of leak rates at Three Mile Island seven years ago, company officials said yesterday.

Punishment ranged from a reprimand to combinations of a reprimand, docking of one or two weeks' pay and removal from consideration for licensed operating jobs at TMI. Seven employees were exonerated of wrongdoing.

None of the utility employees was fired. Only two of them were found to have falsified the leak rate tests, and another two were strongly suspected.

The 17 were singled out for punishment in a report issued by a five-member "assessment panel" chaired by Phillip R. Clark, president of GPU Nuclear. Employees who were investigated were identified, but letters identifying them and their particular punishments were not released in order to protect their privacy, GPU Nuclear said in a press release.

Chief company spokesman Doug Bedell refused to say when the letters went out to employees or answer other questions.

TMI Alert Inc., an anti-nuclear group, criticized the report as incomplete and the disciplinary penalties as "nothing more than a slap on the wrist."

TMI Alert spokeswoman Joanne Doroshov said the penalties levied against the workers were less severe than warranted and criticized the report for not disclosing the names of those disciplined.

The company's disciplinary actions follow Metropolitan Edison Co.'s guilty plea in February 1984 to one criminal-misconduct count that it knowingly used "inaccurate and meaningless" procedures to test coolant water leakage at TMI Unit 2, prior to the March 1979 accident there. In federal district court, Met-Ed also pleaded no contest to six counts that included charges that employees manipulated test results in reports to the Nuclear Regulatory Commission.

Met-Ed, and not its employees, was indicted by a federal grand jury.

Only current GPU Nuclear employees who worked at TMI Unit 2 for Met-Ed were considered for discipline. About 20 former employees have been investigated in the past by the government. Other utility officials cleared of wrongdoing in the leak rate case by a U.S. attorney, including former GPU Nuclear President Robert Arnold, were not scrutinized.

Those punished were six control room operators, five shift foremen, three shift supervisors, a unit superintendent of technical report, a station superintendent for Units 1 and 2 and a Met-Ed vice president for generation.

The various punishments, although not tied to names, are linked with job classifications in the report. Thus, some specific identifications can be made.

For example, getting the lightest penalty of a reprimand was John G. Herbein, who was the vice president of generation — the highest-ranking utility official to be investigated.

As with most of the others, the panel said Herbein neither knew of the leak rate rigging, nor could he have "reasonably been expected" to have known. The panel

concluded:

"As the responsible officer, this employee failed to provide for adequate management and supervision at TMI-2."

Herbein works for Pennsylvania Electric Co., a sister utility of GPU Nuclear. None of the 17 employees punished holds a licensed job now at the newly restarted TMI Unit 1 or at the accident-damaged Unit 2.

TMI Alert's Doroshov said the report is a "whitewash" because it ignored evidence that Herbein knew of the falsification and because it failed to investigate the roles of management above his level.

The panel did single out for special comment and punishment several of the 17 employees.

It said one of the shift supervisors had not shown "he can be relied upon to repeat his past improper behavior." That supervisor will be under special supervisory review this year in his current job, plus being docked two weeks' pay, formally reprimanded and being prohibited from licensed operating jobs.

The panel said there was "testimony, as well as strong circumstantial evidence"

that one of the five shift foremen at TMI Unit 2 participated in, or knowingly tolerated, manipulation of tests. The foreman was subjected to the other penalties and told, in addition, "that if the test manipulation or toleration of manipulation had occurred at the present time, he would have been discharged."

Two of the lowest-level employees investigated, the control room operators, were found to have manipulated leak rate tests. One operator was suspected of it.

Many of the panel's findings were based on a 14-month probe finished in September by Edwin H. Stier, a former director of the New Jersey Division of Criminal Justice.

The NRC plans to investigate individual employees' involvement in the leak rate test falsifications this year. The GPU Nuclear panel made some of the punishments contingent on what an NRC licensing board finds.

United Press International and The Associated Press contributed to this report.

Aamodts renew criticism of TMI study

By Christopher Quinn
Patriot-News

Marjorie and Norman Aamodt, whose independent Three Mile Island cancer study prompted a similar state study, attacked the credibility of state results last night.

The Aamodts and local residents interviewed people living on three hilltop streets around TMI and found cancer rates from 1980 through 1984 were seven times higher than expected in neighboring communities.

The state Health Department's study, which critiqued the Aamodt study, found no connection between cancer rates and a 1979 accident that crippled TMI Unit 2's reactor.

The state report was released in September and soon was criticized after a Sunday Patriot-News story reported the state may have

included 28,610 people too many in its study of residents within five miles of the plant.

The Aamodts renewed that criticism last night, saying half the people included in the state study should not have been. They made their remarks at a meeting of the Advisory Panel for the Decontamination of Three Mile Island Unit 2 in the Holiday Inn Center City.

Mrs. Aamodt said half of the people living near TMI at the time of the accident have since moved, and the state failed to interview them for its report. Instead, Health Department workers interviewed the people who moved in, thus diluting the state results even more, Mrs. Aamodt said.

The Aamodts, statisticians now living in Lake Placid, N.Y., challenged the state's review of its study.

"I think that the state's claim

that their study received peer review is a very hollow claim," said Norman Aamodt.

His wife said one of the reviewers admitted to her that his knowledge of epidemiology is limited. Another said he was unaware of the dilution of the sample, and another was given only half a day to review the state document before it was released, she claimed.

The Aamodts took offense at state criticism of their independent study.

The state report said the Aamodts skipped around the Middletown area, interviewing residents they knew to have cancer. The Aamodts claimed they chose their study area because people living high up in the TMI area claimed symptoms of radiation sickness in days after the accident. "We did an intelligent study," said Mrs. Aamodt.



Marjorie Aamodt

Pair taking appeal for TMI data to state Supreme Court

By Frank Lynch
Patriot-News

Two researchers into the health effects of the Three Mile Island accident are taking their quest for state records to a higher court.

A Commonwealth Court panel last month denied Norman and Marjorie Aamodt access to pregnancy data that the state Department of Health gathered from 1976 through 1981.

Mrs. Aamodt was in Harrisburg yesterday to announce she and her husband were appealing the ruling to the state Supreme Court. She contended that the lower court's decision "appears to be a conspiracy" with the health department to keep information from them.

She said Commonwealth Court misunderstood what data they were seeking, and that the decision represents a "dark hour for the people of Pennsylvania since this ruling can serve to cut off any independent research and review of important health questions."

The Aamodts, who live in New York but maintain a residence in Parkersburg, Chester County, had been intervenors in the TMI Unit 1 restart process. They are seeking the health department data because they believe there is a relationship between radiation releases during the March 28, 1979, nuclear power plant accident and adverse pregnancy outcomes in the area.

The Aamodts said they questioned a number of area families in 1984, and 11 of

19 women interviewed who were pregnant at the time of the accident had birthing "abnormalities."

Last year, the Aamodts said, they asked Dr. George Tokuhata, director of epidemiology research for the health department, for "raw data" on pregnancy outcomes during and after the accident. Tokuhata refused, saying studies were ongoing and that the information was confidential.

The Aamodts filed suit a year ago, re-

questing the data under the state's Right to Know Act and under the department's own policy of making data available to researchers. They said any information would remain confidential because they did not want data that contained names of individuals or hospitals.

The court upheld the state's decision to withhold the information, saying it is not on public record and that the Aamodts cannot be considered "collaborating researchers" with the health department.

TMI fungus: It's not expected to mushroom into a monster

By Michael Sullivan
Patriot-News

One-celled organisms have been discovered living in water covering the highly radioactive core rubble at Three Mile Island's damaged Unit 2 reactor.

The organisms, believed to be several varieties of fungus, bacteria and algae-like creatures, are clouding the 20 feet of water that covers the reactor core. The cloudiness has hampered GPU Nuclear Corp.'s efforts to remove the fuel, fuel rods and other parts.

"The microorganisms are living in it and thriving," said Gordon Tomb, spokesman for GPU. The warmth of the water and photosynthesis near underwater lights apparently have encouraged growth, he said. "It's something-like getting a sample of pond water."

Workers stand on a platform above the water and use long-handled tools to load debris into canisters for removal.

Because of the water's cloudiness, workers must use underwater cameras to see the ends of the tools. The organisms also clog a filtration system used to remove small particles, Tomb said.

Radioactivity near the core where microscopic life has been discovered measures in the hundreds of rems an hour, Tomb said. That level of radioactivity is hundreds of thousands of times higher than the workers on the platform are exposed to, Tomb said.

He said that because the core is under water, exact levels of radioactivity around it are difficult to determine.

Ann Overton, public affairs officer for the U.S. Nuclear Regulatory Commission in King of Prussia,

said microorganisms have not been discovered inside any working reactors, where heat can reach hundreds of degrees. However, she said, simple life forms have been found in a few "radioactive environments," including experimental reactors that are regularly shut down.

"What the core is like is a swimming pool that hasn't been cleaned," Overton said.

John Leutzelschwab, professor of physics at Dickinson College in Carlisle, said some microorganisms can withstand very high levels of radioactivity before dying.

"To kill an amoeba takes about 150,000 rems, a paramecium 300,000 rems," he said, citing two common microscopic animals. "That way they could survive several hours before receiving a fatal dose, and meanwhile they may have reproduced several times."

A fatal dose for humans is about 500 rems, and sickness would be induced with about 100 rems, Tomb said.

Meanwhile, GPU has hired microbiologists and chemists to take a look at ways to kill the organisms.

"We are checking it out for compatibility of our chemical processing system," Tomb said.

Both Leutzelschwab and Overton said there is little chance of some new radiation-immune mutation arising from the radiated microorganisms.

"It might be possible, but I wouldn't expect it," Leutzelschwab said, adding that any genetic change in such simple species probably would be fatal.

"No, we will not have any monster," Overton said.

2 feet of water made difference at TMI, scientist says

By Mick Rood
Washington Bureau

WASHINGTON — Two feet of water in the bottom of the Three Mile Island Unit 2 reactor core vessel prevented containment from being breached during the March 1979 accident, a government scientist said yesterday.

G.D. McPherson, who is overseeing the cleanup of the crippled reactor for the U.S. Department of Energy, told the U.S. Nuclear Regulatory Commission evidence now suggests that three hours into the Unit 2 accident only two feet of water remained.

As much as 70 percent of the material in the core melted down, McPherson estimated.

The material included fuel, parts of the core structure and the tubes in which the fuel is contained, McPherson said.

He said 5 percent to 10 percent of the fuel itself melted, after reaching 5,100 degrees. Much more — perhaps 60 percent — began to liquify after reaching 3,050 degrees.

McPherson said the 70 percent estimate, the highest figure yet on damage inside the core, is subject to further research at TMI.

McPherson's estimate came 13 months after the first public disclosure that uranium fuel had melted during the accident. Previous studies had indicated only that some metal parts in the core had melted.

Industry critics and opponents of the nuclear in-

dustry said the finding last year meant the accident was more severe than had been believed.

Officials of GPU Nuclear Corp., which operates the plant, contest the 70 percent estimate, at least as it applies to the uranium fuel. Executive Vice President Ed Kintner said the estimate more likely applies to "core material," such as the fuel rods in the reactor.

While much of the molten mass of material was settling to the bottom of the vessel, the two feet of water helped keep the stainless steel liner of the containment at below melting temperatures.

McPherson said that although the bottom of the vessel has yet to be fully examined, there is no evidence of serious damage to the structure.

NRC member Frederick Bernthal summarized that the two feet of water cooled the liner enough "to

prevent breach."

"It is remarkable the core kept its integrity with no added water for such a long period of time," said Commissioner James Asselstine.

McPherson said the water likely would have stayed for some time, since pressure inside the vessel kept it from boiling off. It was three hours and 47 minutes into the accident before the core again was covered with coolant by the reactivated High Pressure Injection System.

U.S. Energy Department officials also told the NRC the government would fund TMI research at \$12 million next year and another \$8 million in 1988, enough to help complete the cleanup.

Associated Press accounts are contained in this story.

TMI cleanup

Feds may back down from responsibility

THE federal government's role in the 1979 accident at Three Mile Island and its aftermath is remarkable only as an example of bureaucratic sloth and inertia at its worst. It soon became clear after the accident that though the feds had been the primary force behind the expansion of nuclear power in the country, they were not at all inclined to assist in cleaning up the mess they helped create.

Eventually, and with great reluctance, the government responded to the pleas of Governor Thornburgh and agreed to allot some funds toward the cleanup of the damaged Unit-2 reactor. A commitment was made to provide \$150 million over four years toward the \$1 billion decontamination effort. Now there are indications that the federal funding will be reduced for 1986 and eliminated in 1987.

According to executives at TMI-owner General Public Utilities, the Department of Energy has advised them that it expects the \$18 million originally promised for 1985 to be reduced by \$5.5 million. The federal Office of Management and Budget, according to GPU Chairman William G. Kuhns, wants to eliminate next year's subsidy.

FEDERAL financial support for cleanup finally was provided under the guise of obtaining information about the accident that possibly could be used to make nuclear plants safer. In our view, the federal govern-

ment had a much larger responsibility. It should have taken control of the cleanup effort at the very beginning instead of allowing it to flounder in a vacuum that continued for years while the search for funds was underway. Now it is about to wretch on its commitment as a participant in the decontamination of the worst nuclear power plant accident in the nation's history.

This appears to be another manifestation of the Gramm-Rudman deficit-reduction plan at work. And it has the potential to unravel the funding arrangement put together with great difficulty to complete the enormous task of removing the radioactive rubble and other contamination from Unit 2. This is not a task that can be put off until Washington gets its financial house in order. The job must go on with all deliberate speed until the threat to the public is removed.

IF THE CUTS in funds for cleanup are carried out, it will put a shameful end to an inept performance by the federal government. It will be very interesting to see, when the dust finally settles, how much money the Reagan administration continues to spend on nuclear power development while axing nuclear power cleanup.

Instead of shipping Unit 2's radioactive gunk to Washington state for burial, maybe it should be rerouted to Washington, D.C., to aid the administration in reconsidering its ill-advised decision.

Unit 1 started to take shape in 1968

Here is a chronology of events at Three Mile Island Unit 1.

✓ 1968 — Ground is broken for construction of 850-megawatt reactor. The cost of the reactor is \$400 million.

✓ Feb. 17, 1979 — Unit 1 is shut down for its fourth refueling after 232 days of continuous operation. The Unit 2 accident in March 1979 occurs as the refueling ends, and Unit 1 is returned to cold shutdown.

✓ Oct. 3, 1985 — Unit 1 is restarted.

✓ Oct. 9, 1985 — Unit 1 increases power to 15 percent, goes on line and produces electricity for the first time since restart.

✓ Oct. 12-19, 1985 — Three leaks are detected in lines that drain steam from the turbine system. Steam with minute traces of radioactivity is released into the atmosphere. Power is cut to 6 percent from 40 percent while repairs are completed.

✓ Oct. 24, 1985 — Unit 1 increases power to 48 percent of output.

✓ Oct. 25, 1985 — A Nuclear Regulatory Commission inspector finds the results of a test of a power-operated relief valve in a waste-basket after two technicians failed to test the valve properly. The inspector's discovery prompted Unit 1 personnel to retest the valve on the next shift. The plant personnel found the valve to be safe and determined that the disposal of records was not an attempted cover-up.

✓ Oct. 28, 1985 — Nine employees working on a pump are slightly contaminated by xenon, krypton and argon when 150 gallons of radioactive water spill from a pressurized system into floor drains in the basement of the Unit 1 auxiliary building. Radioactive gases also are released into the atmosphere.

✓ Nov. 22, 1985 — A worker leans over a control panel in the Unit 1 control room and his belt buckle catches on a toggle switch in the Unit 1 control room, temporarily increasing reactor power from the federal limit of 48 percent to 53 percent. The incident is

one of 11 disclosed by Three Mile Island Alert.

✓ Nov. 23, 1985 — TMI-1 increases power to 75 percent.

✓ Dec. 1, 1985 — Breakdown in an electrical generator at Unit 1 forces an unplanned automatic shutdown of the reactor. Slightly radioactive steam is released into the air when the plant shuts down. The reactor restarts after about 12 hours.

✓ Dec. 2, 1985 — In restarting after the unplanned shutdown, Unit 1 achieves only 71 percent of total output, although officials had planned to reach 75 percent. GPU Nuclear officials blame deposits inside two steam generators for the decreased output. Unit 1 finally reaches 75 percent output on Dec. 5 after operators raise the water level in the steam generators.

✓ Dec. 2, 1985 — Nuclear Regulatory Commission officials say Unit 1 will not achieve 100 percent power output because of the deposits inside two steam generators. State officials say that unless the plant operates frequently enough to compensate for the reduced efficiency, Metropolitan Edison Co. customers may see rates increase.

✓ Dec. 17, 1985 — Seven plant employees and an NRC inspector are contaminated by a small amount of radioactive xenon gas when they open the seal on a gas chamber they thought had been depressurized.

✓ Dec. 30, 1985 — Nine workers are contaminated by radioactive gases when a seal on a pump leaks for 10 minutes and spills 300 gallons of filtered water from the radioactive side of the plant.

TMI-1 radiation monitor left off 7 hours

Associated Press

A radiation monitor at the undamaged Three Mile Island Unit 1 reactor was out of service for more than seven hours because an operator didn't reopen a valve, the plant's operator said yesterday.

The radiation monitor was out of service from 6:05 p.m. Thursday to 1:29 a.m., said Doug Bedell, spokesman for GPU Nuclear Corp., the plant's operator.

The monitor at the plant's condenser, used to detect radiation leaks, was "inadvertently" put out of service after an auxiliary operator checked and drained it but didn't reopen a valve, he said.

Another monitor nearby showed no increase in radiation during the time the monitor was out of service, Bedell said.

Unit 1, restarted last October, operated at full power for 23 of 27 days in February, Bedell said.

Unit 2 still contains 140 tons of debris

More than 13 tons of molten nuclear fuel and core components have been removed from Three Mile Island's Unit 2 reactor.

Spokesmen for TMI plant operator GPU Nuclear Corp. say an additional 140 tons of debris caused by the March 28, 1979, accident must be removed before the \$1 billion cleanup operation is finished in 1988.

Unit 2 has been idle since the accident, during which the reactor lost vital cooling water after a combination of human and machine failure. Unit 1, which was shut down for scheduled refueling and maintenance at the time of the accident, was restarted last Oct. 3.

GORDON TOMB, a GPU Nuclear spokesman, said \$615 million of the cleanup

fund had been spent by the end of last year, and \$124 million is budgeted for this year.

The \$1 billion cost is being paid with contributions from insurance companies, other nuclear power plants, research groups, the federal government, the states of Pennsylvania and New Jersey, and plant owner General Public Utilities Corp.

Tomb said removal of the debris is "a critical part" of the cleanup effort. The highly radioactive material is being stored underwater in concrete canisters in a building adjacent to the reactor building. In late May or early June, the canisters will be loaded into shipping casks and sent to the Idaho Nuclear Engineering Laboratory, a federal facility in Idaho Falls.

WHILE TOMB said cleanup operations

are going well, workers continue to have problems with microscopic growth in the reactor water. The growths — algae, fungi and bacteria — have hampered cleanup operations for two months.

In a weekly report on the cleanup, the U.S. Nuclear Regulatory Commission said, "The organic growth in the [reactor coolant system] has progressed to the point where a self-sustaining community exists."

Workers, who stand on a platform high above the reactor core, are having trouble seeing their work through remote television cameras.

GPU Nuclear is continuing to study the problem with the assistance of outside experts, and a long-term treatment plan is not expected for several weeks.

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Leak-rate tests violated rules, NRC tells GPU

By Frank Lynch
Patriot-News

The Nuclear Regulatory Commission has issued the operator of Three Mile Island a notice of violation for events that took place at Unit 1 more than seven years ago.

The violation, which concerns improper leak-rate tests on Unit 1 between April 1978 and March 1979, was issued Jan. 29 but made public only in a routine NRC weekly update of activities at Unit 1.

An NRC spokesman said commissioners informally reviewed and approved the notice before it was issued.

The notice does not impose a civil penalty on TMI operator GPU Nuclear Corp., nor does it require the utility to respond to the violation notice.

Jane Axelrad, director of enforcement for the Office of Inspection and Enforcement which issued the violation notice, said NRC Region 1 officials began looking into leak-rate allegations at Unit 1 in July 1983 after similar charges were leveled against former TMI operator Metropolitan Edison Co. concerning Unit 2.

A federal grand jury in 1983 handed up an 11-count indictment against Met-Ed in connection with leak-rate falsifications at Unit 2 of the Londonderry Twp. nuclear facility.

Met-Ed pleaded guilty to one count and no contest to several others, and paid a \$40,000 fine and contributed \$1 million to help communities prepare for a potential nuclear emergency.

Axelrad said the Office of Inspection and Enforcement began investigating the allegations several years ago but found there was no pattern of willful violation of NRC rules.

But the matter was not brought to a conclusion — the is-

suance of the notice — until last month because, "it was folded up in a lot of TMI stuff" the office was working on.

She said the timing of the notice had nothing to do with restart of TMI-1 four months ago. The unit was restarted Oct. 3 after sitting idle in the 6 1/2 years since the March 28, 1979, accident at TMI-2.

TMI spokeswoman Lisa Robinson noted investigations of Unit 1 practices did "not support contentions that they [improper testings] were done intentionally." She said the company several years ago took corrective measures that were endorsed by the NRC.

"I don't know why it [the notice] is coming out seven years hence, but the matter has been thoroughly investigated by the NRC and by a special investigator that we retained. We were just as anxious to correct this."

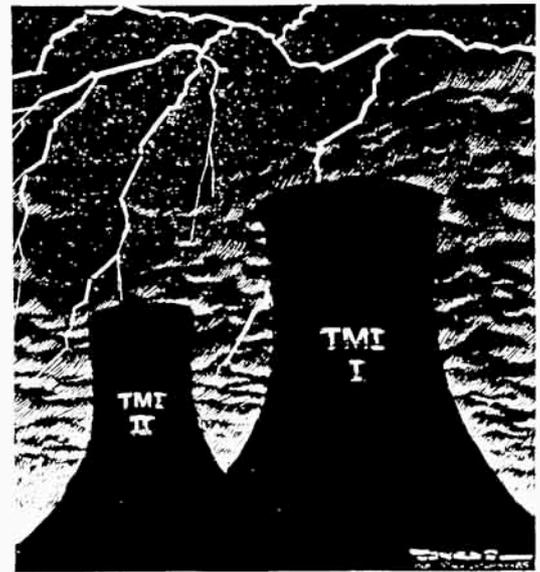
She also said the NRC incorrectly cited GPU Nuclear: "The action was against Met-Ed. GPU did not exist at that time."

Axelrad said, "It probably should have been issued to Met-Ed." GPU Nuclear, a subsidiary of General Public Utilities, succeeded Met-Ed in operating the plant in 1982 — four years after the alleged violations.

Axelrad said NRC investigators reviewed 645 tests run at Unit 1 in 1978-79, and only about "5 percent of them were questionable."

The notice of violation cited the company for lacking adequate testing procedures, failing to maintain proper records, and failing to correct deficiencies once identified.

Axelrad said the notice was evaluated as being a "severity level three" problem, with one being the most severe and five being the least severe.



Lightning never strikes twice...