

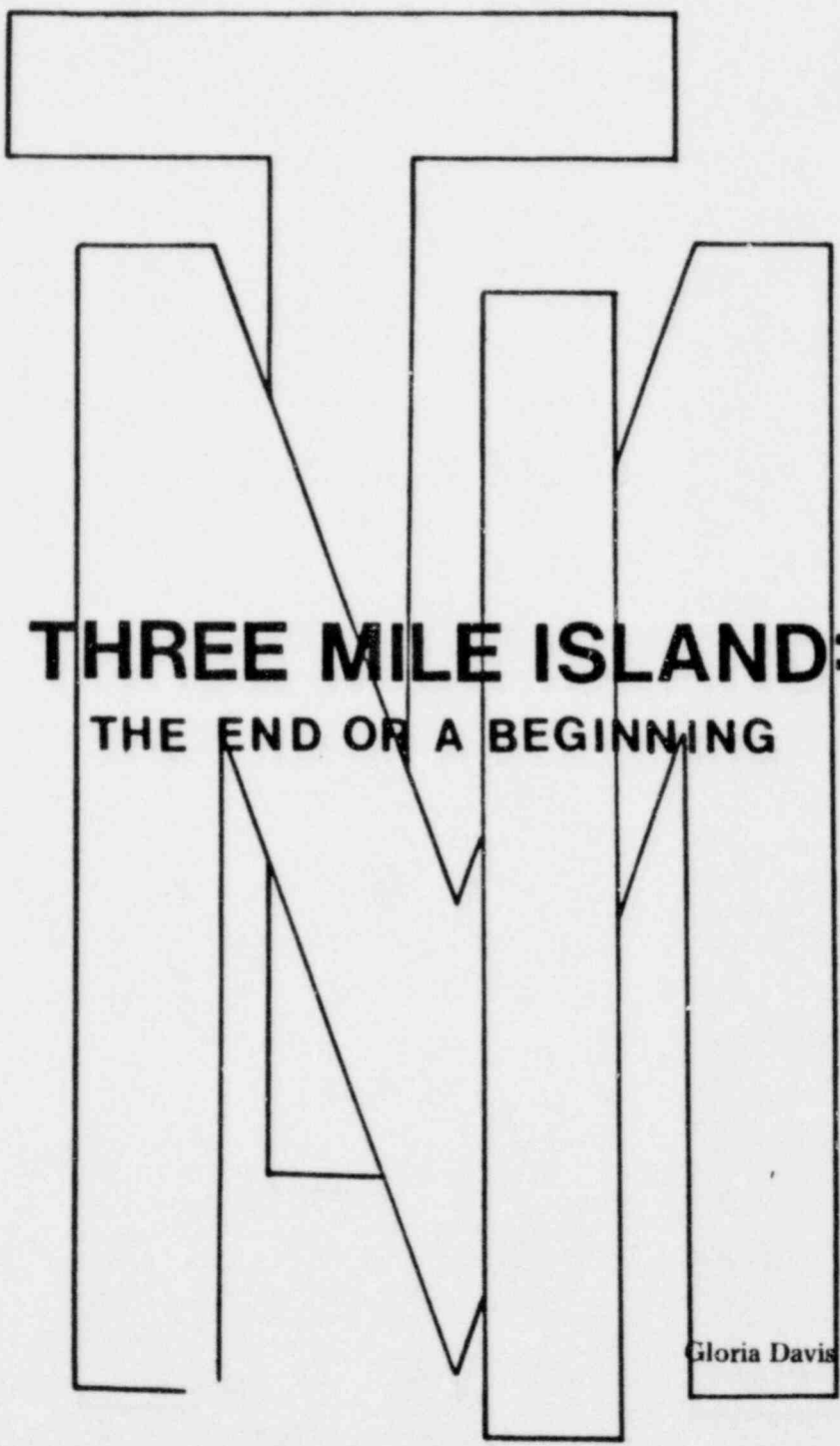
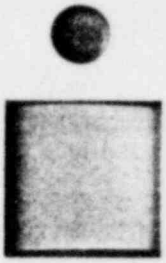
Received by Stan West, ANL
from TMI Alert during his
visit with them on 2/12/80

1. Three Mile Island: The End or a Beginning by Gloria Davis
2. List of Pennsylvania State officials
3. Article entitled: 'Three Mile': The Accident Isn't Over by Lynne Shivers from Christianity and Crisis
4. Harrisburg Teach-In Directory of Anti-Nuclear Organizations
5. Three Mile Island - One Year Later, A Call to Action by the March 28 Coalition and the Coalition for a Non-Nuclear World
6. TMI is not over by the March 28 Coalition
7. TMI Unit No. 1 Proceedings Before Atomic Safety and Licensing Board by the Three Mile Island Alert
8. Why Not Engage in Preventive Medicine? Why Wait for the Catastrophe? (Abstract of a Lecture Given by Ralph Nader, 7/19/79)
9. TMI Who Will Pay? by the Pennsylvania Alliance and Three Mile Island Alert
10. The Three Mile Island Incident: What To Do About It
11. TMI Fact Sheet - A review of the Health Effects of Radiation
12. New Cumberland Energy Alliance - Nuclear Fact Sheet
13. Article from the Philadelphia Inquirer entitled Nader report doubts figures on radiation, GPU tied to analyst at 3 Mile
14. Danger in Pennsylvania, Exxon Moves to Mine Uranium in State by the Three Mile Island Alert
15. Nuclear Power: Uninsurable, reprinted from the Progressive by the Three Mile Island Alert
16. Three Mile Island Turning Point by Bill Keisling
17. Cobalt & Turkeys Collide by Mile Klinger of the Three Mile Island Alert

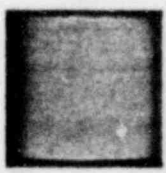
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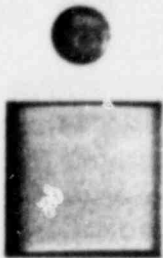
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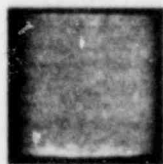
**THREE MILE ISLAND:
THE END OR A BEGINNING**

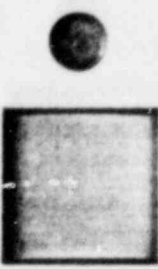


Gloria Davis



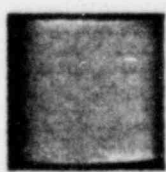


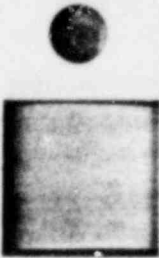
THREE MILE ISLAND:
The End or a Beginning





This book is dedicated to the cast of thousands who unwittingly became players in a unique game. What happened here has not happened before but that is not to say that it can't or won't happen again.





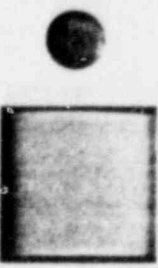


Acknowledgement

I would like to thank publicly the media, particularly the printed media, who followed meticulously what may go down in history as the first official nuclear accident. There were some who said the media overplayed the accident, that the relentless follow-up was contrived to sell newspapers.

We who live here where it happened can only be grateful that the attention of the world was caught and held, that the plight of the human rights of almost a million people was held aloft for all to see, that our press is still free enough to have accomplished this.





*"How do you tell a child:
You can't go outside to play today.
There's something out there that
will hurt you . . . ?"*

Of all the testimony, the remarks, the jibes, complaints and questions I have heard since the accident at Three Mile Island, this was the one that gnawed at me.

How indeed do you tell your children "you can't go out to play today"?

Or tomorrow. Or ever?

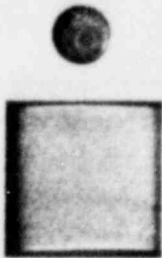
The woman mounting the steps of the speaker's stand at a Public Utility Commission hearing had to have been Number 27 for the evening and I was getting restless as were most people. I thought to myself: What a pleasant looking lady . . . Miss Typical Housewife and Mother. She'll mumble a few cliches and sit down and we'll applaud because she applauded for us and that's the nice thing to do.

She was obviously nervous, probably had never made such a public appearance before. There was one bad moment when I thought she would cry, whether from the strangeness of what she was doing, or from the importance to herself of what she had to say.

What indeed do you tell your children?

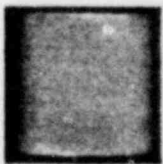
Thank you, Dear Lady, whoever you were. For summing it all up.

. . .



Part I — The End

A strange story indeed, where the end precedes the beginning, for with the calamitous accident at Three Mile Island the end of an era was noted.



Wednesday, March 28, 1979

Still snug in my bed at somewhere around 4 a.m., I did not hear the whoosh of steam described by those who lived near the Three Mile Island nuclear power plant. Later characterized by someone as a "bump in the night", it was, at that moment, just that. Another bump, groan or hiss that to local inhabitants had become commonplace.

I vaguely recall hearing something about a "nuclear incident" on the early morning news but, like everyone else, went on about my day's business.

The first concrete evidence of something unusual about the hiss of steam came out in the evening paper when The York Dispatch reported: "A-PLANT EMERGENCY NOW 'UNDER CONTROL'".

Minor headlines reported a release of radiated steam into the air following malfunction in a reactor cooling pump, adding that York County emergency teams were alerted three hours after the incident. This last pronouncement opened a whole new can of worms to be dealt with later.

• • •

We have two daily newspapers in York. The York Daily Record is the morning paper and it had distinguished itself in preceding weeks by doing an in-depth rundown on the nuclear industry and its relevant impact on the community in general, and the Three Mile Island and Peach Bottom installations in particular. Both plants are located in York County.

The consensus of opinion based on what I believe to be fact was that neither of the plants was considered "safe".

The morning paper had attacked a number of sacred cows - the local utility company, the Nuclear Regulatory Commission, the Public Utilities Commission. All were fair game to their reports and while all of this was extremely popular with the common folk of the County, I could see to what extent the corporate

and public apple-carts had been shaken.

The morning paper should be read front to back. I do this most often in the nearby doughnut shop. If my husband, Peter, is in town, I join him for breakfast and he gets stuck with the check. This saves cooking energy, it saves brewing a pot of coffee and it saves my drinking the pot of coffee. It also gets me a free look at someone else's newspaper. Then if I find something of particular interest, I spend my own 20¢ to take one home.

Since March 28th, I have spent a literal fortune on newspapers, some from as far away as the West Coast.

The evening paper is The York Dispatch. When we came to York many years ago, it was the bane of my existence. I have since learned not only to live with it but to look forward to it. The front page, pictureless regardless of the import of the news, is set up to look like the average inside page four of any large-city paper.

But the news is there, the national and a smattering of what goes on in Pennsylvania, and the publisher probably figured out long ago that radio and television would preempt the big stuff, which is good thinking, so it offers a good recap of what went on the day before.

I read the Dispatch back to front, starting with the upper left-hand column, progressing eastwardly over the page, down through the obits and, turning inside, skip temporarily the classifieds and wants, and head for the "continued" stories some four or five pages in.

Therefore, the story of the nuclear incident, which certainly was front page news in my estimation was the big story on the back of the paper.

Had I read this particular edition in a more conventional way, i.e., front to back, I would have seen on page 36 buried among the Wednesday food ads the neat little article entitled "Nuclear Industry Safety".

Obviously some kind of a news release, perhaps from Metropolitan Edison Company, (and news releases are my business of sorts and I know that one must point up all the favorable aspects of that which one is publicizing while carefully playing down or omitting the negative) it went on to say that the nuclear industry

in the United States has one of the best industrial safety records, adding that no accidents involving radiation release posing even a minor threat to the public had occurred at insured nuclear plants, including TMI units one and two. It said some other things.

What wonders me, as they say locally, is when was that insertion made? The day of the accident as a piece of calming public relations? Or had it been submitted before March 28 and relegated by the Dispatch for use on a less newsy day? More than likely, it was Met-Ed's reply to the morning paper's scathing attack on the nuclear industry.

Advancing, or should I say retreating, to the front page, I found the Union of Concerned Scientists calling the Nuclear Regulatory Commission "inconsistent and technically suspect" for its constant changing of earthquake standards for new plants without rechecking the safety of the existing ones. So much for the news.

• • •

Thursday, March 29

What can I say? It was Thursday!

There was the shopping, the coming-up weekend housecleaning. Our fifteen year-old went off to her tenth grade day; my husband would be coming in from his business trip.

I had coffee with a friend. We talked about the accident and what it could mean. But we weren't too worried.

Neither were most other people.

The State of Pennsylvania was "investigating" Met-Ed's three hour delay in letting anybody know about the accident, a "no-no" at the very least.

State environmental officials had to rely on Met-Ed for readings on radioactive leakage. According to William Dornsife, a nuclear engineer with the state Department of Environmental Resources, the DER does not have the mobile equipment to rush to

a nuclear plant when an accident happens.

To this day, we have never been told by Met-Ed just how much of a dose we got. Now the NRC tells us we will never know because the eight radiation monitors in the stack and in pathways to the stack went off-scale. In other words, the instruments measured only to 1,000 rems per hour and radiation levels exceeded the ability of the plant instruments to measure them.

Met-Ed told the DER that the "radiation was small and harmless".

Radiation. Small and harmless. Of no possible consequence to the children who stood waiting for buses to take them to school.

Radiation leaks continued through most of Wednesday and Thursday. Radiation levels were relatively small. Vapor from a sump pump going into the atmosphere was considered only mildly radioactive, within accepted limits. We weren't sure we needed any but still nobody panicked.

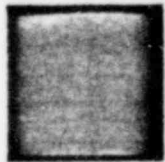

One resident of Goldsboro, the small community directly across the river from the plant, said the accident didn't worry him a bit even though he never believed the assurances that it couldn't happen. Adrian Snare said, "You can print this - - I don't believe a thing the government tells me."

A farmer two miles from Goldsboro lamented the fact that every time it rains "the stuff" - - meaning radiation - - settles down on his watering trough and if the cattle get to the water before he cleans it out, they get "physicked".

At another farm there were complaints of more abortions than usual and more calves dying. Goats either aborted or did not breed. One family, having debated for some time, finally led its cows away and has not returned. Neighbors say the farm is up for sale.

This morning, May 21st, we heard of the demise of twelve head of cattle belonging to Clair Hoover, who lives at Bainbridge, about five miles south of Three Mile Island. Seven cows and five calves had died since the accident but the state agriculture officials said it was unlikely the deaths were related to radiation. Mebbe, mebbe not. By Friday, May 25th, the toll on this farm rose to nineteen.

Back in the fifties, a western sheep farmer lost half his herd



following a flash of light and a mushroom cloud from a test site in Nevada. Army personnel told the awe-struck owner he was "too dumb" to understand why they died.

Some twenty-six years later, Dr. Harold Knapp, a former Atomic Energy Commission scientist who worked at the test site in 1953 credits the deaths of 17,000 sheep in southern Utah and Nevada to fallout from the nuclear tests. His researched study was just released by Rep. Gunn McKay, D-Utah. The report states that the primary cause of death was irradiation of the gastrointestinal tract from the ingestion of fissionable materials on the grazing range.

The National Cancer Institute funded a study of a colony of rhesus monkeys exposed to various amounts of radiation some twenty years ago. The incidence of radiation related cancer is just now reaching its peak with a high death rate from cancerous tumors.

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Fourteen years after two underground nuclear tests were made, a southern Mississippi man and his son were told to leave their home near Purvis. Officials told James Saul that wildlife in the area show high levels of radioactivity above the Tatum Salt Dome where the tests were made, a site within two miles of Saul's home of 54 years.

• • •

Friday, March 30

The early morning news was confusing. Yes, there was radiation. No, it wasn't going to hurt anything.

About 9:30 I got into my car to run an errand and a man I talked to said:

Lady, you'd better go home. They're telling people to stay in the house.

"They" were also telling pregnant women and preschool children within five miles of the reactor to get out. Governor Thornburgh said that under the circumstances "an excess of caution is best".

Some schools closed early (leaving the kids once more to stand in the gentle rain of radiation).

Evacuation centers were set up and many families from the immediate vicinity moved in for the "duration". The American Red Cross opened two shelters and prepared to open 400 more, some as far away as Philadelphia.

Thornburgh had considered the evacuation of 950,000 people in the four county area surrounding the plant because of "uncontrolled bursts" of radiation from about 6:40 on Friday morning until around 9 a.m.

The National Guard and local Civil Defense authorities were on special alert. State officials said the release of radiation was UNEXPECTED. Later the NRC officials said the release was NOT UNEXPECTED but had occurred as an automatic part of the recirculation of reactor cooling water. But, not to worry, (my words, not theirs), radiation levels were decreasing rapidly.

Decreasing to what?

Now the anti-nuke groups got into the act. The Three Mile Island Alert planned a mass rally for Sunday, April 1st, on the steps of the capitol at Harrisburg. The School of Living was busy with petitions to the York County Commissioners to shut down the installation permanently or make sure it was safe when it did operate. Again, that awesome word "safe".

A touch of irony? Dr. Judith Johnsrud, Co-Director of the Pennsylvania based Environmental Coalition on Nuclear Energy, said that a suit brought by the Coalition in the U. S. Circuit Court of Appeals at Washington in September 1978 had resulted in a preliminary injunction to revoke the license of the Three Mile Island plant. However, the order was not made permanent and expired while the reactor core was being loaded with uranium oxide fuel.

The York Committee for a Safe Environment protested the lack of useful protective information coming from Met-Ed. Cynthia Blouse, of the Council, announced an "energy fast" day for April 17, urging York area people to cut back on their consumption of electricity.

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Jan Strasma, public relations officer for the Nuclear Regulatory Commission, explained what radioactive emissions are. There are inert gases, xenon and krypton, which are dispersed by the air. Then there is radioactive iodine, which falls to the ground as a solid and stays there. Strasma said, "It lands on the grass, cows eat the grass, people drink the milk from cows, etc."

Radioactive krypton has a half-life of ten years, the xenon only five days but, once more, not to worry. The two gases will move on to another area taking their radioactivity with them. Iodine, on the other hand, has a radiation half-life of eight days, so all of the radiation would be expended within 80 days. We were told not to worry about milk products coming from the area since cows were still feeding on stored silage.

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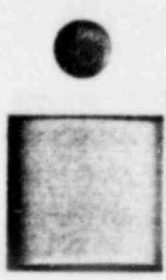
Saturday, March 31

Time to tell the children.

Our highschooler knew that she had to stay in or around the house, that a planned trip to the movies (The China Syndrome yet) was off, to pack a light bag and pretend nothing was wrong.

Our older children were away at school. We were able to reach our son first with tentative plans. He has been actively anti-nuke for years and we tolerated his ideas but, after all, what do kids know? He said, "Mom, get out of there" and "to call his sister right away," that she was terribly upset by what they were hearing.

... we finally got through to her, she said, "Mom, get out of there" and to call her brother right away. He was crying on the phone.



It was a foggy, rainy, miserable Saturday. Peter needed to go to Reading on an errand and asked me to ride along. The usual bustling-about of a Saturday afternoon was gone. Traffic was abnormally light. Shopping centers were subdued.

When we returned home, Pete said, "Maybe you'd better pack a few things". Half-heartedly I agreed. I wasn't frightened but I was concerned. Like everybody else who had thus far chosen not to leave town.

I remember standing in our bedroom looking around and thinking WHAT DO YOU TAKE? Twenty-five years of marriage, a lifetime of accumulated treasures. How do you pack a lifetime in the trunk of a car? I pulled out my travel bag and packed two changes of underwear, a toothbrush, a small can of Johnson's baby powder and our personal papers and bank books. I didn't even cry.

I did drive over to Route 83 to check it out. Traffic was light, no great getting-out-of-town, no urgency. If we had to leave, it would be my husband, my kid, two dogs and the clothes on our backs. And the travel bag.

And we would leave knowing we might never be able to go home.

A flood you can eventually clean up. A fire? You can rebuild. Earthquakes, twisters? Horrible catastrophes. But at least you can go home again, clean up the wreckage and if you were diligent about things like insurance, you could make a new start.

But what do you do with an irradiated house? And if you didn't leave quickly enough, you'd take the radiation with you.

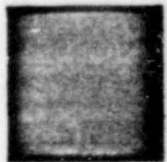

How do you insinuate yourselves into another's home, dragging your children, your pets and your radioactivity with you? We might have been 950,000 unwanted, ionized nomads.

• • •

In any crisis, Thank God!, there are always those who can find something to ease the tension. The clowns of the world. Those who can laugh at adversity and at themselves.

Newspaper editors became fair game to local wits who poured out their poems, one-liners and other trivia. A TMI t-shirt made

1



the rounds and others quickly jumped on that bandwagon. Over Goldsboro way, at the Hillside Cafe, Eldred and Anne Shumaker served up their version of "Radiation Cocktails" and something called a "Nuclear Fizz", (now copyrighted), drinks with small tubes of green-glowing phosphorescence stuck in them.

One local wag suited himself up in what looked to be sheets of aluminum foil and actually made his way through "tight security" to the visitors' center on Three Mile Island but was stopped before he reached the reactor location.

• • •

There had been a minor bank run on Friday - - people seeking extra money to get themselves or their pregnant wives and daughters out of town. The Federal Reserve Board had to ship in extra cash to meet demands. By Monday, safety deposit boxes were being hit. But, according to all published reports, there was no panic.

Three Mile Island had become the focal point of the world. The area was jammed with reporters, news media and Geiger counters. Telephone lines were tied up and we were asked to limit long-distance calls, to keep lines open in case of an emergency. But no emergency was expected.

The question of the hour was should we evacuate, or should we not?

The little town of Goldsboro did, and with good reason, and Mayor Kenneth Myers proclaimed himself the Mayor of Ghost Town. There were rumors of looting as people left their homes, but state troopers and civil volunteers nipped that in the bud, then went on to feed and water the pets and livestock left behind.

The most sobering announcement of all came when the Catholic Church in Harrisburg said it would give last rites to anyone wishing them in case of all-out disaster.

Meantime, scientists and engineers "tinkered" with the disabled TMI plant, so quoted the Dispatch. Local hospitals geared up, evacuation sites were prepared and people made uncertain plans for a doubtful future.

And, oh yes!

A BULLHORN IN THE NIGHT MEANS CATASTROPHE.

. . .

The bullhorn in the night. Thank God, never sounded, or we might have faced annihilation by atom or catastrophic chaos by car.

We were not prepared. We were not warned.

I can think of no more chilling a comment on the situation.

. . .

Met-Ed, in their busyness that terrible morning, failed to notify the NRC of their predicament. They also failed to notify the York County Civil Defense Coordinator, Leslie Jackson, by phone, according to emergency procedures. The accident occurred at 4 a.m. Jackson got the news at 7:20 a.m. by way of a message from the Pennsylvania Emergency Management Agency. I shudder to think what might have happened in between.

There was an evacuation plan in existence but there appeared to be a lack of coordination as to how those responsible would carry it out. The plan was geared for a five mile zone, but during the emergency, ten and twenty mile evacuations were considered.

Assuming Jackson had been told at the outset, he would have activated Phase One of the operation by notifying people in the immediate area to stay indoors and turn off fans. Most of us, by the time radio stations were broadcasting the bad news, were out on the streets, on our way to school or work. If "the stuff" was around, we'd already had some.

One glaring and potentially deadly error in the hastily prepared plans was turning Interstate 83 into four lanes of traffic southbound, funneling people into the southwest segment of York County along unfamiliar back roads. Apparently forgotten were the Pennsylvania Turnpike and U. S. 15 heading west and away from the danger. Those two highways could have taken a tremendous load of traffic from the northern section of the county.

Granted that any media likes to be "exclusive" with the news, we did not at all appreciate the fact that we were advised to listen to one radio station for official updates on the situation at TMI. Most people, fortunately, do know that in a disaster, all programming is stopped and the Emergency Broadcasting System takes over, on all stations.

Members of the York County REACT were told to stand by. These are the CB-ers who help out in emergency situations and they broadcast on FCC approved Red Channel 9. One of their members, Jennie Grove, stressed the importance of keeping that channel clear at all times, citing certain individuals whose broadcasts "bleed" into the emergency channel and will not cease broadcasting when asked.

There was a county-wide meeting on Sunday and through it, evacuation centers were designated. York and Memorial Osteopathic Hospitals prepared their facilities for casualties, plans for the aged and the ill and those without transportation were made, and all emergency units were mobilized.

Some communities later protested that they were not consulted about evacuation plans. Some of those who were to receive evacuees had heard nothing about it. These matters, according to reports, have been corrected and are to be reviewed at least every two years. I do not think that is enough. Neither do a lot of others.

The Newberry Township Steering Committee, working with Jackson, is developing its own "defense" plan. I cannot describe the eerie feeling I had, sitting in on one of their recent meetings, as they calmly announced that no parent will go near the schools to reclaim a child the next time this happens. The children will be evacuated to western Maryland by bus. They are also launching a program to train volunteers to handle radiation detection equipment, obviously dissatisfied with "official" readings.

If indeed hindsight is always better, I would have grabbed my family and run had I known that weekend what I've found out since.

• • •

Sunday, April 1

APRIL FOOL!

Residents of Newberrytown, within sight of the TMI towers, said: USUALLY THERE ARE A LOT OF CHILDREN PLAYING HERE, BUT THEY'VE ALL BEEN SENT AWAY.

The Sunday News, the York-Lancaster Sunday paper, always at a disadvantage when the big stories break mid-week, did a lot of follow-up. It ran a column of unaccustomed (to us) terms like melt-down, core, etc.

The editorial pointed out that government - - at all levels - - had no plans whatsoever to deal with an emergency mass evacuation of citizens from radiation threatened areas.

(This, I can only assume, is because NUCLEAR ACCIDENTS MAY NOT HAPPEN.)

It picked up by way of thick black letters THE PUBLIC MOOD. One citizen said, "The creditability of Metropolitan Edison Company has probably suffered the most and it may be years before the company can overcome the stigma of how they handled the first few days of the accident."

Another added, "Sure, they considered their plant before anything else, but they should have considered the people who would be affected by what they were going to do."

• • •

While authorities at all levels were trying to soothe us with statements that the radiation was small and harmless, there suddenly appeared word to the contrary. Joseph Califano, introducing a recent government report, said that even low-level radiation is now thought to be a peril. Low-level radiation is defined in the report as less than 5 rems or 5,000 millirems. (A rem is a dosage of radiation that produces a certain amount of damage to human tissue.) The radiation study, at a cost of \$76.5 million, was sponsored by the Veteran's Administration, the Nuclear Regulatory Commission, the Environmental Protection Agency and the departments of Defense, Energy, Labor and Welfare. Its purpose was to determine how much radiation is harmful to the public, the effects on humans of so-called background radiation.

(Background: as in nuclear power plants).

Fleets of ambulances took hundreds of the elderly in nursing homes to areas as far as 100 miles away, both to get a jump on a possible evacuation, and because of rampant personnel absenteeism.

There was no lack of news that Sunday, but a lot of it was conflicting. Some reports said the radiation was down. Down from what to what? There was talk of millirems and talk of you-can-get-more-radiation-skiing-in-Aspen. We'd rather.

People talked about the state of their nerves. About what the radiation could do to their kids. If we have to leave, do we take the family pet? Is it all right to drink the milk? To go or not to go? But the major talk on that Sunday, Day of Fools, CENTERED ON THE BUBBLE.

Like an evil genie, the hydrogen bubble had appeared, apparently at the beginning of the accident. No one knew how it got there; no one knew how to make it go away. This was definitely not on the list of prepared contingencies. Or so we were told at the time.

It grew and threatened to explode. We were told if it did explode, it would not be an explosion in the normal sense of the word. Semantics! We shook our heads knowingly.

There were plots to tap it, to contain it, to sap its nastiness with the use of an apparatus called a recombiner. Lead bricks were flown in to build a wall around it. By midnight Sunday, it had begun to shrink.

"They" didn't know why.

We know why - - 950,000 people. All praying.

It turns out now that there had been a problem all along with possible buildup of hydrogen gas, but lacking an answer, the government opted in favor of letting the utility companies come up with one. This they were supposed to do before TMI-2 went into operation. In September 1976, new guidelines were established setting strict standards for emergency core-cooling systems and a new safety evaluation of Three Mile Island was said to be consistent with those guidelines.

It was expected that the concentration of hydrogen gas in a containment building would not reach an explosive level for 25 days after the loss of coolant. TMI-2 managed it in ten and a half hours. Guidelines expected a maximum of 5 percent melting of protective sheathing around the uranium fuel. A possible 30 to 40 percent was burned off at TMI. Roger Mattson, Nuclear Regulatory Commission, said that the plant's emergency system, designed to make the excess hydrogen harmless, was not hooked up. One of the two hydrogen recombiners broke down.

So, it would seem that the evil genie was only doing what he was supposed to do. The problem was that no one in authority thought to take him seriously.

. . .

They came running from everywhere, the politicians, the great and the small, some dragging the womenfolk to demonstrate the "safeness" of things. They made suitable clucking noises, threw up their collective hands and in one voice shrielled: OH, YOU POOR PEOPLE! YOU SHOULDN'T HAVE TO PAY FOR THIS.

Then it was business as usual on Monday.

Typically, what they said had little to do with what they did so far as alleviating our mental and financial situation.

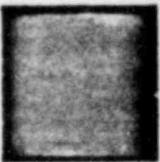
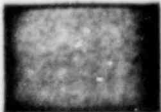
President Carter created a Presidential Commission to investigate the accident almost in the same breath that he advocated speeding up licensing for still more nuclear power plants.

Rep. Morris Udall invited the press to accompany him on a "look and learn" trip to TMI, New York, Idaho and points west, even as he criticized Senator Gary Hart, D-Colorado, who was one of the first to arrive on the scene and try to make some kind of sense of the "what happened", in the process leading a spirited debate over who had done what and to whom. Udall accused Hart of seeking personal publicity.

On a local level, the three York County Commissioners, and this is top level county government, said they would adopt a "wait-and-see" attitude. They waited until about a week before Primary Election Day, then saw to it that Laura Berger's office as consumer advocate at the county level got official backing to go forth and protest the rate hike. Correction, two saw to it; the third is still waiting.

Our local congressman accused us time and again of trying to extract from Met-Ed a "pound of flesh and a quart of blood". Or was it a pint? No matter. We didn't want theirs. We just didn't want them to have ours.

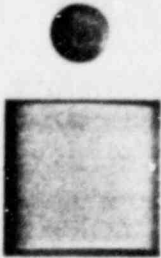
Our group of five York County state legislators quickly sponsored a resolution saying the public should not bear the costs of the accident. But a resolution is not a law, having been described by Charlie Bacas, a consumer activist, as akin to kissing your sister.



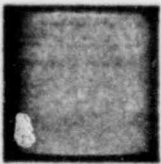
One of the legislators, however, Eugene Geesey, R-92nd District, has given a good account of himself on behalf of his constituents, many of whom live within the five-mile radius of the reactor. Labeling public liability for Met-Ed damages as "blatently unfair because it would establish a new precedent in utility regulation which would reward a utility for its mediocrity, incompetence and complete disregard for one of the rules of human decency", he co-sponsored a bill to close down TMI permanently citing "bad management and poor housekeeping by Met-Ed and failure of the NRC to enforce its regulations." The other sponsor is Stephen R. Reed of Harrisburg.

A second Geesey-sponsored bill amends the Tax Reform Code to eliminate the gross receipts tax from utility bills in certain TMI related cases. This tax is now added to electric rates and paid by the consumers.

Everybody is investigating everything. There's the Presidential Committee, a House Subcommittee, committees from the NRC, committees from the Pennsylvania House, a Governor's Committee, committees on health and mental aggravation, committees to back up the committees. With all the manpower delegated to these endeavors, there is little likelihood of much being done, having to do vaguely with the parable of the Chiefs and the Indians.



Part II
The Mechanics of an Accident



It is necessary in any game
to know the players.

• • •

The Nuclear Regulatory Commission

Joseph M. Hendrie, Chairman

Commissioners

Richard T. Kennedy

Peter A. Bradford

Victor Gilinsky

John A. Ahearn

Harold Denton, Director of Nuclear Reactor Regulation

• • •

Dr. John G. Kemeny, Chairman, President's Commission

• • •

The Public Utilities Commission

W. Wilson Goode, Chairman

Michael Johnson, Commissioner

Louis J. Carter, Commissioner

Mark Widoff, Consumer Advocate

PUC Legal Staff:

David Barasch

Joseph Malatesta

• • •

General Public Utilities Corporation

William G. Kuhns, Chairman

Herman Dieckamp, President

Parent Company of:

Jersey Central Power & Light
Morristown, N. J.

Pennsylvania Electric Co.
Johnstown, Pa.

Metropolitan Edison Co.

Walter M. Creitz, President

John Herbein, Vice President

And what exactly did happen?

Assorted chronologies, all originating from the TMI plant, read basically the same.

But first the background:

Met-Ed was accused of rushing the Number Two reactor into commercial operation, an accusation it denies, to alleviate a depressed financial condition due to the expense of the nuclear plant plus inflation-depressed earnings and higher operating and maintenance costs.

Ralph Nader cited "maneuvers representing a new chapter in utility irresponsibility" and also "Nuclear Regulatory (Commission) laxness."

It was important that Met-Ed have Unit Two on the line by the end of 1978 to save upwards of \$40 million in taxes - - \$20 million in federal tax depreciation and anywhere from \$17 to \$28 million in direct write-off investment tax credits. This, plus the \$49.2 million rate hike to go into effect March 29, 1979 would make 1978, said one company official, a memorable year for Met-Ed.

With a long history of "events" beginning when the chain reaction first started on March 28, 1978, reactor Number Two was a troublemaker. It was "down" for 195 of the 274 days it operated, almost double the malfunction rate normally seen in a new reactor and, during that time, Met-Ed found problems similar to those that caused the final accident.

On December 28, 1978, a crew of NRC inspectors okayed the plant. Then the reactor was shut down again to repair a number of leaks. Between December 13 and December 26, there were four "reportable" incidents during testing. They were not reported to the NRC until January 2, 1979.

• • •

On March 27, 1979, one day before the big one, Met-Ed violated its operating license while preparing the Unit One reactor for operation by failing to open a switch to a steam-powered auxiliary feedwater pump. This could have led to the same type

of accident that occurred one day later. Unit One was shut down.

• • •

The Accident

At 4:01 a.m. on March 28, Unit Two was started up. A pressure relief valve opened but failed to reclose. The operator was unaware of the open valve, but an order for closure was signaled in the control room.

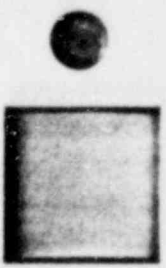
Two minutes into the accident, the high pressure injection safety system automatically initiated. An instrument in the pressurizer indicated the system was full and the operators prematurely reduced the HPI flow. Main coolant pumps were turned off to prevent damage.

An emergency feed system was blocked because of two closed valves. The operator opened the closed valves 8 minutes after the start of the plant transient.

These factors led to "severe undercooling" of the reactor core, fuel became extremely hot and the integrity of the fuel cladding was lost. The reaction of fuel cladding and primary coolant steam caused the formation of the hydrogen bubble.

One of the operators on duty when the accident happened said they were handicapped by a system that was "all goofed up".

Peter Bradford, NRC member, said, "The single most astonishing aspect" of the accident was that Met-Ed failed to recognize that significant fuel damage had occurred as a result of extreme heat cracking fuel rods and permitting a large amount of radioactivity to escape into the atmosphere.



Employees told of long hours, cost corner-cutting, faked tests on safety equipment, maintenance budget cutbacks and ignored inspection reports on faulty equipment. A welder said he was ordered to make improper welds in the reactor core that went undetected for five years. Another employee told of patching a leaking polishing-system tank with liquid rubber, "all kinds of things just to keep the water in".

Following a visit to the TMI site, Rep. Mickey Edwards, R-Oklahoma, labeled the operation and management of TMI as "sloppy and messy . . . I think they're playing with dynamite and have not taken precautions you would ordinarily take with dynamite . . . a severe problem in the lack of training for plant operators . . . forty-two hours before the incident a test was held to see how workers would react to a crisis . . . they had closed the valves at the plant and they were supposed to reopen them after the test . . . but there is no record of whether they actually ever did or not."

. . .

While Ron Williams, senior consultant for GPU Service Corporation told the NRC independent Advisory Committee on Reactor Safeguards that contamination of water occurred WHEN THE REACTOR CORE WAS EXPOSED, the public information coordinator for Met-Ed, Robert Gross, told York Kiwanis Club there never was any danger of either a meltdown or an explosion because THE CORE WAS NOT UNCOVERED. The differing statements were reported on the same day, June 7, one in the morning paper, one in the evening.

The foregoing is typical of the information coming out of the damaged plant. One newspaper called Met-Ed obfuscatory and duplicitous in telling state and federal government and the public the extent of the damage and danger.

Commissioner Richard Kennedy said the NRC found it difficult even to get a phone call through to the plant control room during the first days of the crisis.

Two days after the accident, Harold Denton, Director of the NRC office of Nuclear Reactor Regulation, was sent to the plant. Denton believes that his position as a regulator requires him to maintain neutrality on both the merits and the risks of nuclear power development. His calm voice was a soothing balm to the babble of indecision and misinformation we were getting.

On Saturday morning, Jack Herbein of Met-Ed announced that the treacherous bubble had shrunk in size and that the crisis was over. Denton immediately announced that the bubble had shown no significant shrinkage and the crisis would not be over until the plant achieved cold shut-down.

Denton said he was dealing with "absolute chaos" and that he was getting more needed information from his own staff than from Met-Ed. At one point, the utility threatened to pull out its operators and technical personnel but subsequently changed its mind.

Concerned that Met-Ed was technically thin at the time of the accident, Denton said, since he was the director of the office of nuclear reactors, he could issue, modify or suspend licenses so there was never any doubt in his mind that if he didn't like the way Met-Ed was running it, he could issue an order on the spot.

Because of the growing conflict over authority, Denton was finally given "unequivocal understanding" that Met-Ed must tell him in advance of all actions in the situation.

* * *

In a transcript of a phone conversation taped Friday morning, March 30, between commissioners of the NRC and Harold Denton, who was at the p², Chairman Hendrie said they were "operating almost totally in the blind," that Thornburgh's information was ambiguous, his non-existent . . . "like a couple of blind men staggering around making decisions."

The decision in question was whether or not to evacuate the area. Denton thought the important thing, to get ahead of the plume, was to start evacuation rather than "sitting here waiting to die".

Roger Mattson, Systems Safety Director for the NRC, said he wondered why they were not moving people - - "what we are

protecting at this point." Commissioner Gilinsky mused that if he had a friend in Harrisburg, he would tell him to keep close to a radio; if he had somebody really close in, he'd suggest he oughtn't be there.

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Chairman Hendrie complained to Denton that the communication situation (between the NRC and Met-Ed) was "certainly lousy". He suggested that Dr. Richard Vollmer of the NRC stay close to a senior company officer, then report back to him.

Mattson, on Saturday, March 30, had just been told that on Wednesday, the first day of the accident, some ten hours into the transient, there was a 28 pound pressure spike. He guessed that it was the hydrogen explosion and commented that knowledge of that spike would have given them a clue hours ago, but that Met-Ed, for some reason, didn't report it until that morning.

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By Tuesday morning, April 3, Denton questioned the need, so far as the public was concerned, to show critical progress in the situation. Commissioner John Ahearn responded, "You've got to (inaudible on the tape) explanation to the public in that area. Three quarters of a million people sitting on the edge of their chairs, intense."

Denton said he would have to overcome the resistance of the staff to make any change in the status of the reactor.

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The radiation, small and harmless, wafted all the way to southern Maine. Radiation levels in the Portland area were 100 times greater than normal.

Area schools remained closed Monday and Tuesday. Business places suffered absenteeism. No matter where you went, all people talked about was "The Accident." Everyone asked DID YOU LEAVE. If you could not recount your great escape, then you discussed what the papers and the TV said. When you got tired of that, you turned onto the utility. There was enough energy expended in that endeavor to light up the City of York.

Even Governor Thornburgh, in a televised speech, without naming Met-Ed, slammed the utility for "the hours of tension that innocent people have had to endure". He said government standards had been ignored and loosely enforced.

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Herman the Robot came from Oak Ridge Laboratories to join the crew down at the river, gliding fearlessly in where no one in his right mind would tread. His job was to retrieve water samples from the damaged reactor under extreme radiation levels. With a twenty hour power supply and two bug-eyed television cameras lodged in his forehead, he was the Gofer of the Year.

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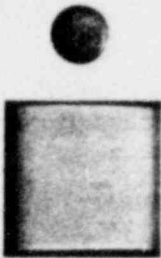
Just as life was becoming pleasantly dull, Met-Ed contemplated starting up the undamaged Unit One. I vowed this time I'd run. Again, Harold Denton stepped in. Noting that the undamaged reactor showed the same problems that caused the accident with Unit Two, Denton said he strongly opposed start-up. He had discovered another licensing violation: "A valve on the steam line essential to Unit I was found in a closed position, which is one more example of a breakdown in procedures".

The NRC indicated it had evidence that plant operators had all three auxiliary feedwater pumps blocked off on the damaged reactor for maintenance constituting a safety violation that "boggles the mind". Only two pumps are allowed to be down at any one time.

On Friday, April 6, along came another small burst of radiation, this time from a leak in a gas-syphoning system line. When the system functioned properly, it was supposed to reduce amounts of radiation reaching the countryside.

• • •

Meantime, various hearings were going on, exploring the causes of the accident. Roger Mattson, one of Denton's deputies, raised the possibility of either willful or capricious negligence on the part of Met-Ed. Federal regulators say the reactor may be so contaminated that it will never operate again, that it will become a billion dollar mausoleum.



Senator Gary Hart, Chairman of the Senate Subcommittee, repeatedly questioned the competence of Met-Ed personnel. Responding to one query, Denton said, "This utility was not prepared to cope with this kind of accident." Hart said later, "At its worst, we have a 19th century industry running a 21st century technology."

It may be as long as four years before the plant is decontaminated, overhauled and placed back into service. One estimate of the clean-up alone is \$40 million.

. . .

The weekend of April 13 brought us another problem. Radioactive iodine levels in the area suddenly increased, caused, according to the NRC, by the air filtration system. NRC's Karl Abraham said that readings taken from the air and readings taken from the ground are not necessarily comparable. It was thought the leakage came from the changing of charcoal filters.

By Tuesday of that week, the iodine leakage increased but not to the danger level although it had more than tripled.

By Wednesday, levels exceeded federal limits but there was no serious health threat to people living nearby. At his final news briefing before leaving for Washington, Harold Denton told us the problem was caused by Met-Ed workers who, instead of replacing the charcoal filters one by one, had removed twenty at one time, thus allowing the iodine to escape. A six-day bombardment. We held our collective breath and settled down again.

Meantime, efforts were being made to effect a cold shut-down of the plant. THE PLAN was to shut off the 9,000 h.p. pump that had been cooling the reactor and allow water to flow through it naturally. The problem with THE PLAN was that it had never been tried before. A few scientists advised against it, fearing formation of another hydrogen bubble. A target date of Wednesday, May 2 was set. (Why is everything on Wednesday?)

Again, I was ready to run. So were a lot of others, particularly those living close by. People called the NRC wanting to know if they should evacuate. No special alert was set for that date but emergency personnel were still on stand-by. Should THE PLAN fail, said the NRC, they would go back to the methods already being used to cool down the reactor.

Almost two weeks to agonize. We dug in.

• • •

Then, about 1 a.m. on Friday, April 27, good old Unit Two came through. An instrument that was supposed to show the water level inside the pressurizer malfunctioned, instruments became erratic and, belching its final hiss of steam into the control room and spewing one last burst of small and harmless radiation into the air, it collapsed. Willed to death by the battering of a thousand voo-doo brooms. BEGONE!!

• • •

It reared its head one last time as utility officials briefed presidential commission V.I.P.'s in the control room on May 17. There came a sepuchral voice over the intercom: all personnel would be advised that the fire was under control.

The construction workers' porta-pot had burned.

• • •

S A F E

Webster says: "Safe is secure; safe is free from risk; safe is without threat."

Safe is an absolute. There is no such thing as "a little safe". Nothing can be made "more safe". It either is . . . or it isn't . . . safe.

There were a number of warnings that the status was not quo at the Three Mile Island plant.

Richard Pollack, Director of Critical Mass, reported that the plant had a history of valve failures, cooling system failures, failures of emergency systems, that indicated that it was not ready to go into operation in December 1978 and should have been red flags that this was a troubled plant.

In fact, just fifteen days after start-up, the Unit Two reactor was closed down for two weeks because of ruptured pipes and leaking valves.

Going further back, members of the Advisory Committee on Reactor Safeguards warned repeatedly, as early as 1972, that instruments were inadequate to monitor serious accidents. This was a general statement regarding all reactors, not specifically those of TMI.

However, almost a year before the accident, Babcock and Wilcox, manufacturer of the TMI reactors, was warned that a pressure gauge was not a reliable indicator of core cooling conditions. The warning came from Carl Michelson, a leading Tennessee Valley Authority nuclear engineer on loan from TVA to a Congressional Committee investigating TMI. He claimed this type of indicator would cause an operator to "misbelieve the indicator level."

The General Accounting Office cited a report dated January 8, 1979 saying there appeared to be safety problems with the type of plant used at TMI. On March 6, an assistant director of the NRC recommended that the report be sent to the safety board. It arrived there on March 29, the day after the accident.

The Nuclear Regulatory Commission warned that Met-Ed could lose its license to operate a nuclear power plant depending on the outcome of the investigations.

Commissioner John Ahearn notes that operating utilities do not have the backup staff to look at the questions in an accident this severe. He said transcripts of discussions among the NRC staff and NRC technical experts at the accident site portrayed a "deep distrust" of the technical abilities of Metropolitan Edison and that Met-Ed's performance does raise questions about NRC licensing procedures. He added that most utility companies operating nuclear reactors probably would be no better equipped to handle a major nuclear accident.

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A few safety improvements have evolved from the wreckage as testimony goes on and on before the President's Commission, before the Congressional hearings, before the Public Utilities Commission.

The House Interior Committee imposed a six-month moratorium on construction permits for new nuclear reactors. This actually doesn't do anything, but it is a gesture.

The Senate Environment and Public Works Committee approved legislation to close down in six months any reactors in states that have no government-approved evacuation plans, and this would apply also to plants under construction. (There's a testimony to what "safe" is.)

An emergency "hotline" phone from every nuclear power plant directly to the NRC operations center is mandated and the phones will be manned around the clock.

Joseph Hendrie said, "People never expected to see such a situation." That was why a simple device to measure water levels in the reactor core was never considered. Such a device would tell operators that the level was dangerously low. He also said that the TMI accident convinced him there are not adequate safeguards to ensure that nuclear power plant operators are properly trained.

• • •

In an effort to remedy this situation, the Labor and Energy Departments, in a joint venture, will use almost \$400,000 of CETA money, to train 44 migrant workers as radiological safety technicians and nuclear reactor operators.

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The President's Commission to investigate TMI is headed by John G. Kemeny, president of Dartmouth College, mathematician and a foremost computer authority. He compares the TMI affair with computer games and detective stories. He said that sometimes you get halfway through a good detective story to the point you are totally confused and don't know what to believe, and he thought that's where "we're starting" in this investigation.

His panel includes a governor, a housewife, a labor leader, two nuclear engineers and a sociologist. Describing differing and sometimes contradictory testimony during the first day or so of the hearings, Kemeny likened it to the old cliché of the left and the right hands.

Almost immediately, Kemeny cancelled any further hearings until his commission received power to place witnesses under oath, to subpoena witnesses and documents, and request criminal immunity for witnesses if necessary, due to some "new findings",

"new secrets" to be asked about. He preferred the witnesses to answer under threat of perjury.

Kemeny found it "shocking" that the TMI plant had not been made to conform with the updated 1975 NRC rules to require a design that would immediately seal the containment building when the emergency cooling system was turned on. The new safety requirements did not apply to reactors granted construction permits in or before 1975.

Roger Mattson, NRC, told the panel that the Carl Michelson report was in the hands of his staff members but it was not considered "a significant safety question", adding that, in hindsight, that judgment was not so good.

The Kemeny hearings will continue with the finished report due by October 25.

. . .

There were other thoughts on the accident. Dr. James C. Deddens, from Babcock & Wilcox, called nuclear power a strategic necessity to the future well-being and security of the United States and said the accident should be viewed as an unfortunate but valuable technological lesson, that it is "now our business to seize this opportunity to expand our knowledge and understanding and make future nuclear plants even safer."

(Valuable lesson . . . seize the opportunity . . . even safer.)

Carl Walski, President of the Atomic Industrial Forum, representing the nuclear power industry said the investigation would lead to changes in federal regulation, in the attention utility companies give to safety, in the training of reactor operators, in plant procedures, in plant design and in the way the reliability of equipment is established.

(Why don't we just start from scratch?)

Testifying before the main House subcommittee, Rep. James Weaver, D.-Ore., said the accident has proved "the extreme vulnerability of nuclear power". He added that operator ignorance of what was happening inside the reactor, caused by a failure of training and gauges, is a "terrible indictment of the entire technology".

But perhaps nuclear physicist, Norman Rasmussen, said it best when he compared the danger of a nuclear plant accident to getting hit by a meteor. He said the TMI accident might cause us to reevaluate our probabilities.

• • •

HENRY!

Coming, Mother!

Henry, I thought I told you to get rid of your old boomerang.

I keep throwing it away, Mom, but it keeps coming back!

NCR Chairman, Joseph Hendrie, told a Congressional Committee that when the accident first happened, Met-Ed discharged 12,000 gallons of radioactive toilet flushings and other waste water into the Susquehanna.

It didn't say "May I?" to anyone. It didn't tell anybody about it for several days.

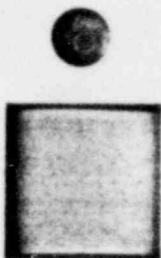
What to do with the water from the containment building.

On April 11, two trucks carrying liquid waste to the Chem-Nuclear Systems plant near Barnwell, South Carolina for burial were stopped by officials.

Heyward G. Shealy, Department of Health and Environmental Control, said he ordered the trucks not to enter South Carolina on being told that the wastes, supposedly low in radioactivity from the Unit One reactor, were actually highly radioactive and from the damaged Unit Two. He said no more shipments could come into his state without written confirmation of contents.

Nuclear wastes from the Peach Bottom Nuclear Plant in York County were given police escort through North Carolina on their way to Barnwell because of bomb threats.

State troopers in Illinois complained "They never tell us anything" referring to shipments of radioactive waste through their state from Three Mile Island. They would like to escort them through.



Hauled on flatbed trucks in steel and lead casks, the waste passes, via Interstate 80, through Ohio, Indiana, Illinois, Iowa, Nebraska, Wyoming, Utah, Idaho and Oregon before winding up at the Hanford, Washington plant.

"It's no different from low level radioactive materials that are transported on the highways every day," said Ken Clark, NRC spokesman. Probably that's why not governors, nor health officials, nor police, to say nothing of the public, were told that the junk from Reactor Two was tooling down their highways.

New federal regulations, however, limit the transport companies from carrying their cargo through urban areas and urge them to take precautions against hijackings or sabotage.

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"Waste" is the radioactive laden liquid left after reusable uranium and plutonium are separated out. Considered "high level", it is so "hot" that it will self-boil for years. At the Hanford Works, in the state of Washington, there are millions and millions of gallons of waste stored in underground tanks. By the year 2000 it is estimated the growing use of nuclear power will produce the equivalent of 60 million gallons more and it will be 10 to 30 times as radioactive as that in the Hanford plant now.

What makes this residue so dangerous is that, like Topsy, it continues to grow. Scientists call it the "half-life". For example, Zirconium 95, one radioisotope found in this waste, has a half life of 65 days. This means that one-half of a certain amount will decay within the first 65 days. Half of the remaining half will decay in the next 65 days, and so forth.

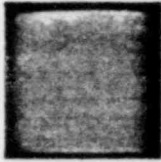

The bad guys are Strontium 90 and cesium 137 with 30 year half-lives. Plutonium 239 has a half-life of 24,000 years. It would need to be contained for 250,000 years before it became inactive.

Plutonium has a comparatively weak level of radiation - - unless you inhale a dust particle. Instant lung cancer.

Cesium radiation can penetrate anything except a thick shield of concrete or lead. If ingested, it can be excreted, like potassium, by the body in a few weeks.

Strontium also penetrates and, if ingested, much like calcium, heads for the bone cells. It lodges there and continues to radiate surrounding tissue for years.

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"Some of our nuke-waste is missing" could have been the caption for a comic strip had it not been such a deadly joke. Hanford, Washington, located near the Columbia River, was one of three atomic cities built during the Manhattan Project for the production of plutonium for nuclear warheads.

The waste from this plant is slowly being evaporated down into solid cakes of salt and stored in steel tanks, but millions of gallons of liquid are still in storage. On June 8, 1973, officials of the Atlantic Richfield Hanford Company, the AEC contractor in charge of the plant, discovered that one of their tanks was leaking. They, like the folks at Three Mile Island, kept the bad news to themselves and from the NRC, for a full day. Perhaps they were looking for it.

When technicians finally put the story together, despite some missing records, the tank had been leaking since "on or about April 20" and roughly 2500 gallons of liquid waste per day had leached from the steel and concrete tank with a total loss of 115,000 gallons.


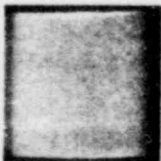
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"Project Bedrock" was proposed, an underground cavern 500 feet below the Tuscaloosa aquifer, the reservoir that supplies fresh water to much of Georgia and South Carolina, where the waste could be stored. But it was felt that there was danger of pollution of the aquifer and the project was dropped.

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Then came the Lyons, Kansas project. In an abandoned salt mine 1000 feet below the ground, the AEC proposed to bury all commercial waste from reactors for the rest of this century. Salt was considered the safest alternative since the very presence of salt denotes the lack of water. Rock salt almost equals concrete as a radiation shield and because of its plasticity, there would be little likelihood of earthquake or fission leaks.

As political opposition to the idea began to grow, it was discovered that less than a half a mile away from the proposed site



was an active salt mine. Owners had experimented with a hydraulic fracturing mining technique and had "lost" 175,000 gallons of water. No one knew where the water had gone, and, therefore, it was considered that the geological integrity of the AEC proposed dumping site had been compromised. That project was abandoned.

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There have been excursions into the possibility of shipping the waste into outer space (too expensive), transmutation (alter the wastes into something less harmful), burial at sea (with full military honors?) or carting it off to the Polar regions (where it could well melt down through the whole globe). Geological disposal, at this time, is still the most promising.

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Japan has found an answer.

It makes garbage runs to Europe on a regular basis, stopping unannounced and uninvited at Honolulu. It has been doing this since 1976, which the Nuclear Regulatory Commission just confirmed to Rep. Cecil Heftel, D.-Hawaii.

This oddity was discovered by a group of environmentalists in Hawaii who got their information from Greenpeace in France. They were told that on June 8 a ship containing up to 60 tons of radioactive material would be dropping in, the only stop on the Japanese tour before entering the Panama Canal, then on to Europe. Aloha.

The Governor of Hawaii and the Civil Defense people say they know nothing about this. The NRC, contacted in San Francisco, said, oh yes, the Department of Energy approves the movements of nuclear material (ours and theirs) but leaves it up to the Coast Guard to extend permission for the ships to enter U.S. ports. Federal regulations require the Coast Guard to have 24 hours' notice of incoming hazardous cargoes and they must check for radioactive leaks.

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Meantime, back down at the Susquehanna, our problem continues literally to grow: THURSDAY, MAY 24, 1979 . . . MET-ED

1



WILL DUMP 500,000 GALLONS OF CONTAMINATED WATER INTO THE SUSQUEHANNA RIVER.

Five hundred thousand gallons! So drink up you folks over there in Columbia and Lancaster!

• • •

Rep. Robert Walker, 16th District Congressman from the river area, warned: "When the first thimbleful of water hits the Susquehanna, you've got a revolt on your hands you'll never be able to contain in terms of getting Three Mile Island back on line."

The Susquehanna provides drinking water for close to 100,000 people in Lancaster and Columbia. Met-Ed says the water will be "cleaned". In fact, Herman Dieckamp, president of GPU, owner of Met-Ed, avowed he would allow his family to eat fish from the Susquehanna, a statement which might well result in some interesting interstate commerce of that commodity.

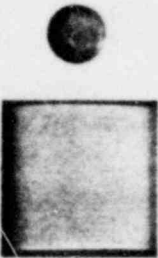
The Susquehanna Valley Alliance, a group of "friends of clean water" in and around Lancaster County is building a legal fund and filed suit on May 25 in Federal Court, Middle District, Pennsylvania to halt the discharge of water by Met-Ed. Now the Commonwealth of Pennsylvania is entering the suit as a "friend of the court" seeking to help in the fact-finding process.

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In an ecology where one life form is dependent upon another and the cycle of things is complete . . . the earth to growing, living things to back-to-the-earth-again cycle . . . what would you do with a thing, man-made, that having contributed only once in its lifetime lies restless and reproducing its own unearthly spores, building and threatening and gobbling up the very life forms it was contrived to help?

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About two weeks before TMI, my little world-traveling auntie, ecology minded long before it became chic, told me of a very disturbing dream.



She and I were together digging in a hole. We dug and dug, then I jumped in, stretched out flat on my back and, finding it not yet big enough, jumped back out and we dug again.

Most people would say RUBBISH! - but witches tend to run in the family so the dream bothered me as I am sure it did her. I was extra careful in my car, even volunteered for my annual physical. I "go to the flicks" every time I shut my eyes, the victim I suppose of a vivid imagination and a mind full of nonsense that produces all kinds of scenarios, some prophetic, some in living color and 3-D.

Several weeks after the accident - - it seems so strange now to measure everything in terms of whether it was before or after TMI - - the Pennsylvania Department of Environmental Resources brought in a computerized whole body scanner. It looks for the world like a body drawer in the morgue. YOU CLIMB INTO IT, LIE DOWN ON YOUR BACK, THEN JUMP OUT AGAIN.

There were those who were put out because the testing was restricted to residents of the close-in area. But no way! would I have crawled into that thing.

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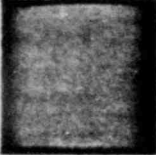

Radiation is defined as energy moving through space as invisible waves. The frequency of the waves determines radiation characteristics and their effect on the human body. Ionizing radiation creates electrically charged ions which can disrupt body processes, including life. Non-ionizing radiation lacks the ability to create ions, but can disrupt body processes and cause sickness.

Dr. George Wald, a 1967 Nobel biologist, said the harmful effects of the accident may not show up for 30 to 40 years in an increase in cancer rates.

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Radiation measurements were obtained at the accident site from several sources. One of them, Radiation Monitoring Corporation, was founded by General Public Utilities and seven other utility companies. Ralph Nader's "Critical Mass" sees a conflict of interest in using their radiation figures, claiming that the NRC passed the figures along as having come from the NRC. He also said that GPU had not disclosed its financial interest in the firm.

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A memo signed by Surgeon General Julius B. Richmond, FDA Commissioner Donald Kennedy and National Institute of Health Director Donald Frederickson recommended that medicine, potassium-iodine, be distributed free to the 130,000 people within ten miles of the plant, to be kept in readiness in case of a sudden release of radioactive iodine. They urged that the 225 workers already exposed be given immediate doses.

To that end, 259,000 bottles of potassium-iodine were shipped to a warehouse in Middletown. As a preventative, the medicine settles in the thyroid and blocks out the radioactive iodine. It is helpful in preventing damage to the thyroid after exposure. But it was not given out. The medicine can cause heart damage.

When the U.S. Government speculated that the reason Met-Ed and the state of Pennsylvania did not follow the Surgeon-General's recommendation out of fear of causing panic, neither party replied to the speculation.

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If they won't give us potassium for the radiation, how about a little something for the nerves?


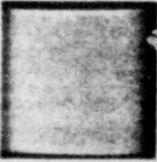
People became physically ill with the worry caused by the accident and with the potential for worry about what might happen a few years from now.

Area mental health agencies are aware of the problem, reporting patients with high levels of anxiety, continued fear and anger, uncertainty.

When people boast about the size of their strawberries, the greenness of the grass, they grin evilly and say IT'S THE RADIATION. But they're not really laughing. It isn't funny.

If someone invites you to a picnic at Three Mile Island, you've been insulted. One man suggested that the utility bottle the water and send some to each of its stockholders along with the annual report.

I had never been to Goldsboro, so a friend and I made the side trip on our way to a meeting. The sight of those stacks is enough to make your skin crawl. Now I understand the word "hate" as I have never understood it before.



PART III
Economic Fallout

Increasingly, we are reminded of the "let them eat cake" syndrome, for there are those among us who at one and the same time both manage to consume and retain theirs.

General Public Utilities Corporation is a holding company comprised of Metropolitan Edison Company, one-half owner of Three Mile Island, and Pennsylvania Electric Company, Johnstown, Pa. and Jersey Central Power & Light, Morristown, N.J., each owning one-quarter of the nuclear power plant.

The executive offices of GPU are at Parsippany, New Jersey. William G. Kuhns is Chairman and Chief Executive Officer and also one of ten Directors whose annual retainers were cut, after the accident, to \$6,000 each, plus \$300 for each meeting. There is one York area man on the Board, Louis J. Appell, Jr., President of Susquehanna Broadcasting Company that operates WSBA-AM, FM, TV and Cable-TV and the Pfaltzgraff Company.

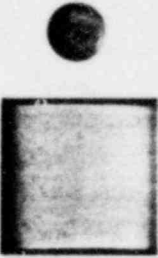
Forbes magazine, in their annual compilation of the top 500 companies, ranks General Public Utilities 333rd in sales, 160th in earnings, 115th in assets and 135th in stock value.

These figures would indicate that while the value of the actual sales (power) was something less than midpoint on the big business social register, the earnings were fairly high and the company-held assets even higher.

How then can one of its subsidiaries, Metropolitan Edison Company, scream bankruptcy? This is where the have-your-cake-and-eat-it comes in. A holding company has the advantage of all the good things coming in without being obligated to share when one or the other of its satellite companies runs amuck. It's much like the "I will not be responsible" ads you might see in the public legal notices.

There is another advantage. Each smaller company can scramble off in a different direction looking for funds for the general good.

After the March 28th accident, Jersey Central asked the state Board of Public Utilities for permission to borrow \$10 million to "expand its headquarters". It also told the Board it would seek a rate increase to cover the cost of purchased power because of Three Mile. This it did on May 4.



Pennsylvania Electric, meanwhile, had been granted a \$56.2 million rate hike, \$25 million of which was earmarked toward operating the Three Mile reactors. On April 25, the Pennsylvania PUC cut the \$25 million on the assumption that if the reactor was not operable, Penelec would not need the money to run it. Penelec called the PUC action "unlawful and unreasonable" and asked Commonwealth Court in Harrisburg to review the order.

Metropolitan Edison Company had been granted \$49 million to cover costs of the new reactor and that was to become effective on March 29 of this year. The events of March 28 impeded the progress of that rate hike.

The Pennsylvania Consumer Advocate, Mark Widoff, petitioned the PUC to reconsider the \$49 million given to Met-Ed in addition to rescinding the rate hike given to Penelec and asked for a freeze on the net energy clause which allows utilities to automatically pass along any extraordinary costs of furnishing power. The PUC instructed Met-Ed to bill its customers under the old existing rates. William Kuhns said there would have to be a sharing of the burden among customers, investors and employees if Met-Ed was to continue to supply adequate service.

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In its urgent poverty plea before the PUC, Metropolitan Edison forgot to list on its schedule of income a \$9.3 million real estate tax refund in the "cash flow" segment of the report. John G. Graham, Treasurer of GPU, explained that, while company officials knew well in advance of the incoming \$9.3 million, the facts listed on the cash flow schedule come from a great many sources and he did not see the refund as a net cash improvement.

?????

The tax refund was the result of a long legal battle between the utility and the state over whether the cooling towers were to be considered real estate or machinery. Deciding in favor of machinery, the \$9.3 refund was awarded for the years 1970-75; there will be more coming for 1976, 1977.

• • •

I was amused (if that's the word) to see in a recent syndicated

article carried by the Dispatch that "a scandal could be brewing in the utility company industry". William Hoffman, Crown Syndicate, quotes from the "Environmental Action Foundation" figures that reveal that utility companies are charging customers for income taxes - - this I assume is figured in with their costs of producing energy - - but not actually paying Uncle Sam. He quotes figures of the taking-in of \$2.45 BILLION against actual paying out of taxes of \$374 MILLION to the IRS. Boston Edison, for example, charged its customers \$26,155,055 for taxes but paid the IRS none.

He also reports that the Securities and Exchange Commission revealed that 26 utilities with nuclear investments paid over \$3 million in a recent year for surveillance of nuclear opponents. He concludes, "It is clear that much of what appears on an electric bill has little to do with the cost of electricity."

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It was like going to the Friday night fights. The rate hearings, both before the PUC in Harrisburg, and the more local ones, began to attract an "in" crowd. They whistled and stomped when pleased with a speaker, but their outward good humor masked a kind of desperation.

On the same day that Met-Ed pleaded bankruptcy, the PUC trial staff maintained that the company's projected profit for this year is \$98.9 million.

The radiation had barely cleared when we were hit with figures of what the clean-up would be, what the repairs to the reactor would be, and particularly what it would cost to replace the power generated by Unit Two. These last seemed to be ball-park figures because they varied according to the teller.

One of the more popular themes was that it would ONLY cost each consumer \$7.50 extra per month. Have you any idea what another \$7.50 is to a person on a fixed income? Add to that \$7.50 the increase in every consumer product and service that manufacturers and purveyors of services would have to charge to cover their increased costs.

Met-Ed counsel, James B. Liberman, said his client needed a "tourniquet and a transfusion" by way of a PUC increase in order to forestall bankruptcy.

Perhaps this is what prompted Carl Derespina to plop down a honey jar filled with his own blood before PUC Chairman Wilson Goode (that poor man!) at a public hearing in Reading.

Jersey Central, apparently also in a financial bind, borrowed \$8 million to pay its Pennsylvania-New Jersey-Maryland Interconnection bill for purchased power, using its stash of 845,000 pounds of uranium at the Kerr-McGee plant in Oklahoma as collateral. The money was borrowed through the parent company, GPU, from a group of New Jersey banks. GPU also sought to borrow another \$400 million to keep the company afloat.

All set to implement its \$49 million rate hike on the next billing cycle, Met-Ed found itself stopped in those tracks by the PUC who instructed them to hold off temporarily. This "further complicated the company's serious cash flow problems".

The utility, saying it meant to reflect its position of "sharing" the financial burden with the consumer, offered to accept only \$33 million of the questionable \$49 million.

On April 19, the PUC handed down the decision to freeze the \$49 million pending hearings and testimony from the utility and the public.

Score: Christians One - - - Lions Zero.

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Imagery: Collective Mental Images

Public relations, as a field, thrives on images. It can both create and cover up an image. It can make that which is seem like that which is not, and the other way around. It can promote, demote, and sometimes deceive, but in the end will only deceive itself.

I've been in public relations for twenty years, and I wouldn't touch Met-Ed with a rubber-tipped pole.

Had the utility's relationship with its paying public been on a

more even keel, it might have saved itself its present unenviable position.

Unyielding in its demands over the years and kow-towed to by a heretofore sympathetic Public Utilities Commission, sometimes referred to hereabouts as the Public-Be-Damned Commission, it has come down hard and often on its customers.

On that dreadful Friday when Governor Thornburgh ordered the pregnant women and preschool children out of the area, Met-Ed told its pregnant employees and parents of preschool children to report to work at a temporary office set up in Middletown (within the five mile zone) or forfeit pay or vacation time.

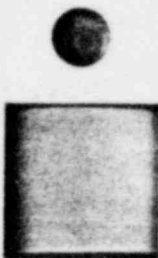
I saw Walter Cronkite deliver this message to the world on the six o'clock news and thought I detected a glimmer of "do-you-believe-it?" If I misread you, sir, forgive me. I found it hard to believe.

A Boston group, "Working Women", sent telegrams to Thornburgh and to Walter Creitz, President of Met-Ed, deploring the inhuman treatment of women employees saying they had already been victimized by a management incapable of meeting safety responsibilities. Several days and a lot of press mileage later, the utility relented.

In October of 1978, Met-Ed, sensing that the mood of the people was indeed ugly, set up a Consumer Advisory Council, ostensibly to inform the company of consumer needs, ideas, etc. This was done after a vehement petition protest by a citizens' group from Southern York County to prevent another large rate increase. The consumer group was comprised of people from various areas of York County, particularly those who were most vehement in their protests. It met once a month in Met-Ed corporate offices in York and what minutes were taken were done so by a corporate secretary.

Jeanine Petrucci of Stewartstown, one of the original members, just resigned saying she had made no significant contribution to the people of Southern York County (by her attendance at the meetings) and citing a lack of trust (in the utility) too deeply rooted for appreciable change. She called the council "cosmetic window dressing."

This lack of trust is not peculiar to Mrs. Petrucci. We have heard so many conflicting statements, so many half-truths.



One favorite utility machination is to have the public consider its shareholders. Better than 50%, say they, are people who are retired and counting on their investments for their retirement years. This in itself is probably a valid statement. But if you tuck into account the number of retired people who own utility stock and put that directly in proportion to the number of retired people (period), the story will be grossly different. Most retired people are hanging on by the skin of their teeth. They have barely enough money to live on, let alone invest.

Then too, investing in stock, or gambling on the horses, is not mandatory. Sometimes you win at the two dollar window, sometimes not.

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Still hammering away for a rate increase, still making dire threats of bankruptcy, brown-outs over the summer months, all kinds of bad things, and probably still smarting from being publicly shushed by the NRC, Met-Ed took a new tack.

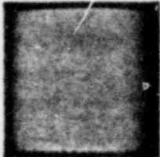
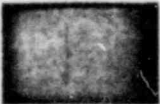
They engaged the prestigious public relations firm of Hill-Knowlton of Chicago, whose forte is low-profile campaigns to raise public esteem of companies beset with public relations problems. Stanley Cohen, Washington Bureau Chief of "Advertising Age" said that Hill-Knowlton is very expensive.

Hill-Knowlton, of course, is under no obligation to discuss its fees. But here you have a company, Met-Ed, its financial back up against a wall, pleading with the PUC for more money from the consumers and not at all willing to tell us what they were going to do with it.

I see some p.r. inroads, observing with a trained and jaundiced eye, into the morass but the problem has paradoxically been building and deteriorating these many years. The company has lately taken to inviting community leaders and v.i.p.'s to the plant for a round of show and tell. At a recent press conference, Herman Dieckamp, President of GPU, when asked what might happen if the public, particularly those living close by, failed to accept the opening of Unit One, said well he guessed they could move.

To Hill-Knowlton: Bon Chance!

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. . .

The Ohio State Senate just passed and sent on to the House a measure outlawing the charge-off of goodwill and motivational advertising onto customers' bills, an expense utilities hardly need since they generally are monopolies. Ohio Senator Michael Schwarzwald, D-Columbus, said he did not object to utilities advertising but "didn't believe I or the people in my district ought to have to pay for it".

. . .

"The public is protected by Price-Anderson
....."

Pardon me?

Price Anderson.

What's that?


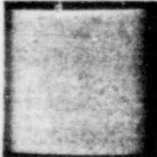
One of the greatest problems in the rapid development of nuclear power was that of indemnity. What happens in the case of a major nuclear accident. Who pays?

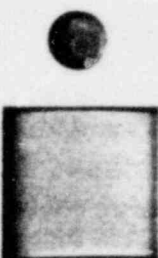
A government study done back in 1957 at Brookhaven National Laboratory projected a series of hypothetical accidents in trying to determine what the extreme limits might be in terms of lives and property damage. The study did point out one clinker in the development of nuclear power: there can be no reliable prediction of the probability and consequences of an accident. This is a kind of learn-as-you-go process.

The government recognized that the cost of insurance to indemnify nuclear industry operators would be horrendous and, thereby, slow down the building of reactors, so the Joint Committee on Atomic Energy proposed a government subsidy. It is called the Price Anderson Act and was signed into law by President Eisenhower on September 2, 1957. It was amended in 1965.

Price Anderson sets total liability in the event of a nuclear mishap at \$560 million . . . \$60 million provided by private insurance coverage and \$500 million to be paid by the government (the taxpayers). More than likely, in the case of an "event", plant damages would be paid for first.

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I am sure that when you were packing your belongings that terrible weekend in March the thought ran through your heads, as it did through ours: WE HAVE NO INSURANCE.

Had the radiation come, according to a study by the Federal Insurance Administration, property damage alone in the Three Mile Island area would have totaled between \$3 billion and \$17 billion.

You and I, Mr. and Mrs. America, have no nuclear insurance. Our homeowners' policies exclude nuclear damage; ditto for the car. Any proceeds from life or health policies would be fast depleted in this kind of disaster. You could apply to Congress for help when you are declared a "disaster", but you'll be standing at the end of a long line of flood and other natural disaster victims.

Because the government requires the nuclear industry to purchase all of that type of insurance available, we can't have any.

Think about this, very carefully.

Multiply your present age by the number of years you have worked, add in the total of your assets, subtract the cost of bringing up your family to say nothing of general living expenses, add in the love and sense of accomplishment you have put into your home and your American Dream plot of ground. Deduct from what you have earned yourselves what your parents were able to leave to you. Add back in what you will have left, in the case of a nuclear disaster, to pass on to your own kids. Guess what you have.

You have nothing.

Fini! Kaput! Wiped out!

And if you plan to develop cancer as the result of the radiation, do it before the twenty year limitation or you won't get paid for that either.

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There is a movement afoot to repeal Price Anderson, thereby making the nuclear industry completely responsible for its actions. The contention is that once the government subsidy stops, nuclear power companies will not be able to afford the risks involved.

Since power company rate structures allow them to include the cost of purchasing insurance in their operating costs, the rate-payer is in turn charged his proportionate share of that amount. Therefore, he is not only paying once toward the government subsidization of insurance through Price Anderson, he is paying for the power company's share.

Governor Brendan T. Byrne, of New Jersey, home of General Public Utilities and their Jersey Central Power and Light Company, is seeking yet another type of "insurance" for the power companies.

In a letter to Energy Secretary James R. Schlesinger, he "urged the administration to support federal legislation that would establish a fund for the direct and indirect costs of accidents such as the one at Three Mile Island on March 28." "It would be patently unfair", said he, "for consumers in Pennsylvania and New Jersey alone to bear the full burden of those costs associated with national decisions to promote nuclear power." Byrne suggested the fund should be financed through an assessment on existing and proposed nuclear plants.

Governor James R. Thompson, Illinois, proposed and had passed in the House legislation imposing heavy fees on the nuclear power industry to implement a program to "protect the public" in a nuclear emergency.

Governor Thornburgh of Pennsylvania has come up with a similar suggestion. But without decent legislation to prevent the utilities from passing along the costs of all these fine things to the consumers, what good are they doing us?

Considering that we are picking up the tab for things publicly related (like the film now playing at the TMI Observation Center, to say nothing of Met-Ed's monumental attempt at re-educating us), taxes for one thing and another collected but not paid, the entire cost of nuclear insurance for the plants either through taxes or higher rates, I don't think we can afford any more niceties. I have a more simplistic solution. Mothballs.

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Who's Afraid of the PUC?

The people of Pennsylvania. Or so it would seem. With apology for past verbal brickbats in the PUC's direction, let me share with you my gleanings from the Pennsylvania Manual.

Back in 1937, the Legislature of the Commonwealth of Pennsylvania established an "independent, quasi-judicial agency to establish and maintain reasonable rates and safe, adequate service in the regulation of the state's public utilities". The agency is called the Public Utilities Commission.

This is a five-member commission, but at present there are only three, by reason of one vacated seat and one seat up for renewal. Appointments are made by the governor for staggered ten year terms. They must be confirmed in the Senate by a two-thirds vote.

The Commissioners oversee the work of eight bureaus: Rates and Fixed Utilities; Investigations, Service and Enforcement; Law; Transportation; Secretary; Administrative Law Judges; Consumer Services; and Conservation, Economics and Energy Planning. They regulate some 5,000 utilities, both corporations and individuals, dealing with electricity, telephone, telegraph, water, natural gas, steam heat, sewage collection and disposal, transportation and pipeline transmission of gas and oil.

The Public Utilities Commission is a regulatory agency. It is required to work WITHIN THE LAWS PROPOSED AND PASSED BY THE LEGISLATURE. It does not make laws.

Therefore. Instead of verbally assaulting the PUC when it displeases you, see your friendly legislator.

Of course, he may not be all that visible these days. Nor all that friendly. One constituent left a note on a representative's desk at the Capitol asking him to call her regarding the TMI rate increase. The conversation went like this:

He said: He didn't need anyone to tell him how to run his office.

She said: By God, somebody has to run it; you're never there!

She added: We cannot afford to pay any more than we are paying (for electricity) - we are poor people here in Windsor; you can pay, you are rich.

He said: Woman, you are nuts!

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A law is a rule enforced by a controlling authority.

The controlling authority, in the case of "the people vs. the utility" is the Pennsylvania Legislature. The Legislature is a body of persons in a state who can make, alter and repeal laws.

The above is offered to our elected officials with good intent just in case they've forgotten what it is they're supposed to do.

There is a great reluctance on the part of Pennsylvania legislators to come up with laws that will say to the Public Utilities Commission IN SUCH AND SUCH AN EVENT, THIS IS HOW YOU MAY REGULATE.

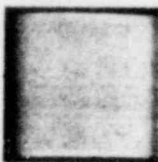

Without new laws, without changes in present laws, the PUC had no guidelines to work with. What happened here was unique. Never in the history of the country had a nuclear accident of this kind taken place, one in which the utility assumed it had every right to apply the have-your-cake-and-eat-it principle.

Each state that now has or expects to have an operational nuclear reactor had better come up with legislation that will apply to the accidents that can't happen.

Aside from clucking noises, hand-wringing, resolutions to remedy the situation, Pennsylvania lawmakers have done nothing. They have put into "the works" a group of bills that were to provide the consumer greater representation in the arenas where decisions are made that affect utility rates, ad infinitum. Two of the bills were declared illegal.

If in a legislative body, there is not sufficient knowledge of the law to construct a law that will be legal, we are in worse shape than I thought.

One state senator submitted a bill giving the PUC permission to decide if a utility can raise rates to pay for the cost of nuclear accidents, which compares favorably in idiocy with another suggestion to conduct a jury trial to decide who pays, based on who was at fault. The bill, passed in the Senate despite static from more sensible folk, has been called unconstitutional. I call it a



waste of time since the PUC has ALWAYS had the RIGHT to decide.

It's the WHAT to decide that is important, and it is here that you will find your legislators still crouched behind the PUC bench, sympathizing with the consumer if he is put-upon and sympathizing with utility lobbyists when they do not win. Their stock answer is THE PUC DID IT.

The lawmakers, those folks we elect to office and are expected to revere, had a once-in-a-lifetime opportunity to deal with an issue so basic, so intertwined with our rights under the Constitution, that it precluded any other single issue in our times.

According to a recent poll conducted by Rep. Douglas Walgren, D.-Pa., 85% of those responding rated the Pennsylvania Legislature as "not so good" or "poor", giving them the lowest grade of any government level listed.

They have had since March 28th, the day of the accident, almost three months, to come up with laws that will protect the public. They have come up with nothing. This, I suppose, is the game of politics but we are tired of playing the game.

• • •

Going a step up, Governor Richard Thornburgh, his wife and his staff deserve a lot of credit for their behavior during the immediacy of the accident. Hampered as he was by the lack of useful information, or by the complexity of conflicting information, he conducted himself and his staff well.

But in a quick about-face, he directed Attorney General Edward Biester to be in charge of all strategy and legal matters involving the TMI accident including those normally handled by the Consumer Advocate, Mark Widoff.

Widoff, appointed to the office during the Shapp administration, had been very effective in consumer affairs, particularly those relating to utility regulation. He was slated to leave office on April 25th, but in most untypical lame-duck fashion, he continued to build his case on the side of the consumer. Widoff felt that the intervention of the attorney general in consumer affairs was improper.

Thornburgh then proceeded to reappoint Robert Bloom to another ten year term as a Public Utilities Commissioner. Bloom has an impressive list of credits to his name in defense of utilities and his appointment is being contested in the Senate and actively protested by environmental and consumer groups, who feel that with Bloom on the Commission, the deck is heavily stacked in favor of the utility.

With both the oh-you-poor-people routine and the lack of useful information still fresh in mind, the Governor just might have earmarked, in his 1979-80 budget, money for needed radiation monitoring equipment. Since he did not, there is a bill in to give the Department of Environmental Resources \$300,000 for the mobile monitoring van considered by Thomas Gerusky, Radiological Health Chief, to be an absolute necessity. Two prior house bills for this purpose disappeared. One died in committee; the other was lost in a Senate budget fight.

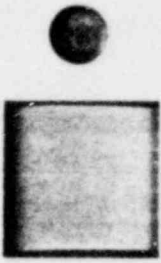
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I was lounging in the sun one day looking through my hat . . . I have this old beat-up straw thing that I pull down over my face when I need to think and you can't see if I'm sleeping or not but I can watch you figure it out . . . thinking about the best way to progress from the "what happened" and the "why" to the result.

Actually, the accident itself was a result. It came about because of a lack of planning, a lack of sufficient knowledge, a lack of regulation and enforcement of rules in an industry that, because of those woeful lacks, might have rid the world of a million souls.

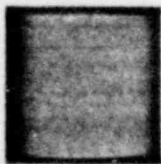
The accident was in itself a cause. Having hit the American public between its sleeping eyes, the nuclear industry blasted a chink in the wall of mystery and secrecy and, once penetrated, the wall began to crumble.

Three Mile Island polarized the interest of the world on a technology fought, for many years, by a relative few. Discredited, branded dissident, they were a motley assortment pleading to be heard. I liken them now to the rag-tag of two hundred years ago who cried out against tyranny of another kind, their "shot heard 'round the world" and our "hiss of steam" one and the same.



PART IV

The Second War for Independence



It's like living under siege.

Since the accident, the utility has waged a psychological warfare unbelievable in scope and the people here have progressed from frightened and worried to angry and defiant.

Before the Public Utilities Commission, a Met-Ed spokesman, Bernard H. Cherry, said the utility would try to restore the public's faith in nuclear power before it starts up Three Mile Island Unit One, the twin of the crippled reactor.

But if the company fails to regain the public confidence, said he, IT WILL START UP THE PLANT ANYWAY.

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At a public meeting of the York County Task Force on Friday, May 11, in front of a handful of our elected officials, a youngish man stood up and said that if Met-Ed ever tries to put Three Mile Island back into operation, YOU ARE GOING TO SEE SOME CIVIL DISOBEDIENCE.

He said it calmly, without rancor. He did not incite the rest of us to join him.

• • •

Something has happened here, some all-inclusive, permeating, insidious thing that has changed the role of the usually stable people of this part of Pennsylvania from acceptance to activism.

I have lived in the area 25 years, having moved from Baltimore back in 1954, so if I am not officially a native, at least I've been around long enough to have learned something both from and about them.

They are largely of German descent somewhere along the line. They are, as a general class, hard-working, honest people. They are mostly a thrifty people, the real natives preferring to live, usually, below their means. Combining all of these talents, they have built for themselves a special niche - - in a society given to hand-outs and permissiveness - - by maintaining their self-reliance and discipline. They work because that's what you do.

But they have another trait which I, having come from a more liberal, big-town kind of environment, find infuriating.

They accept most of that which is doled out to them, standing in awe of anything that smacks of authority: the IRS, the local minister, their chosen leaders regardless of how good or bad, even the chap who runs the neighborhood supermarket. They do, from time to time, grumble at things officialdom hands out but mostly you can count on them to acquiesce. Right?

Not right. Not this time.

What was it that caused them to speak out, to clamor for attention, to load themselves on buses to go to Harrisburg to protest, to threaten non-payment of electric bills - - and this is really radical, for the average citizen here will open his daily mail and run immediately down the street, cash in hand to pay promptly.

The accident itself? I don't believe so. Terrorized as we were, accidents happen. Equipment at the hands of people can be deadly.

Met-Ed, howling in frustrated rage at an occurrence it did not know how to handle, told us in no uncertain terms that the customers would pay for the damages.

Just like that. No apologies, no equivocations.

A \$700 million plant plunked down between the beautiful counties of Lancaster and York on the Susquehanna River, wrecked at the hands of a private enterprise never known for its graciousness to customers.

A concrete shell, one end result of the U. S. Government's thirty year multi-billion dollar venture into the nuclear business. Switches and dials and lights, largely researched at taxpayer expense, with the objective of "giving" us cheap, safe and plentiful energy.

A private enterprise interested in the bottom-line figure set up and paid for to a great extent with taxpayer money, then supported in its enterprise with more taxpayer money.

People were astounded.

The anguish of the very real, life-threatening trauma we had just muddled through was now compounded by the unthinkable. I have never seen people so deeply angry - - an on-burning, all-consuming anger, festering and erupting into pure hatred.

The utility roared its displeasure. The people spat in its eye.

• • •

A MODERN DAY JUDAS said Fern Hetrick of New Cumberland about Met-Ed . . . NEGLIGENCE, RECKLESS . . . WITH THEIR DEADLY DOSES OF LIES and ILL CONCERN FOR HUMAN LIFE AND HEALTH.

Pat Smith, Newberry Township: MET-ED . . . INCOMPETENT AND DECEITFUL.

Only the end of this saga, and we are far, far from the end, will tell how great an impact the consumer had on its outcome. Some, like myself, got into the fray because of the economics, some for the politics, some to do away with nuclear power forever.

In uniting, for whatever reasons, we represented a force that could no longer be ignored, and in uniting we unintentionally conspired to cut off at the knees a foe that had foolishly backed all of us into the same corner.

• • •

NO GREATER INEQUITY COULD OCCUR FROM THE ACCIDENT THAN TO ASK THE PEOPLE WHO WERE VICTIMS IN THAT TRAGEDY TO PAY FOR IT. These were the words of Robert Settle, a spokesman for the state chapter of the Citizen-Labor Coalition.

Mary Ann Klein, Southcentral Citizens for Action, urged customers to refuse to pay the costs of the clean-up, promising that if the PUC did not act favorably to the public, her group would issue a mandate to Thornburgh, Met-Ed and the PUC.

WE WILL FIGHT LIKE HELL TO PREVENT OUR PEOPLE FROM PAYING FOR THIS DISASTER: Hugh Carcella, Executive Director of the Pennsylvania Association of Older People. The Senior Power Action Group of York said it would petition to intervene in the PUC hearings.

In a satirical spoof of the accident, Diane Todd, Felton, wrote:

RESIDENTS OF YORK COUNTY HAVE BEEN TOLD BY OFFICIALS THAT THE NUCLEAR DISASTER IS A BLESSING IN DISGUISE; NOW THEY'LL BE ABLE TO READ THEIR NEWSPAPERS BY THEIR OWN LIGHT.

Everybody talked about it. Some got eloquent and wrote about it: I'VE ALREADY PAID WITH EVERY NERVE IN MY BODY . . . Raetta Thomson, York. MET-ED SPOKE OF THE "INCIDENT" AT TMI AS THOUGH A SIMPLE HOUSEHOLD APPLIANCE HAD BROKEN DOWN . . . Karen Erdos, York. OUR NUCLEAR POWER PLANTS HAVE PUT US AND OUR CHILDREN IN BONDAGE FOR OUR HEALTH, OUR WELL-BEING AND OUR LIVES . . . Gail Bradford, York. ANYONE WHO HAS SEEN A DAILY NEWS PROGRAM OR READ A NEWSPAPER SINCE MARCH 28 SHOULD BE ABLE TO FIGURE OUT THAT MET-ED HAS NEVER HAD UNIT TWO UNDER CONTROL FROM THE DAY IT WAS PLACED ON LINE . . . Jessica Snider, Jacobus. THE 44 MILLION STOCKHOLDERS WHO VOTED AGAINST CLOSING TMI, HOW MANY LIVE IN OUR AREA? . . . Dolores Becker, Thomasville. THE MORE LEARNED ABOUT THE SYSTEM, THE MORE TERRIFYING AND CRITICAL THE CHOICE FOR THIS FORM OF ENERGY BECOMES . . . Mary Ryscavage, York.

It was natural to assume that at the height of the excitement over the accident, the comments and the letters to editors would fly thick and fast. We are now into May, and while there are pleadings from time to time for people to return to what is considered normal for this area, normal being a degree of complacency, the missives continue to fly. MET-ED COULD TURN A PROFIT ON TMI, AFTER IT'S DEACTIVATED AND DECONTAMINATED, wrote Walter Cooper, of Red Lion, BY TURNING IT INTO A TOURIST ATTRACTION THAT WOULD VIE WITH GETTYSBURG BATTLEFIELD AS ANOTHER TURNING POINT IN OUR HISTORY. And a man from Glen Rock, Edward Zelinski, Jr., noted PENNSYLVANIANS WILL NO LONGER TOLERATE ELECTED OFFICIALS WHO DO NOT HEED THE VOICE OF THE PEOPLE.

• • •

A blizzard of petitions hit the streets, petitions against the rate hike, petitions to shut down TMI permanently. Local Union 786, UAW distributed 3000 of them to members saying Met-Ed should pay for its mistakes from its profits or investments, not "our" pockets.

• • •

The problem here gave substance to the groups who had actively protested the "nukes" for years. In Boston, members of the Boston Clamshell set up an evening vigil at the home of Governor Edward King to call for withdrawal of his support of the nuclear power industry. I have a notion there were two persons late for school the next day, particularly since the one with the red hair was slightly off-campus.

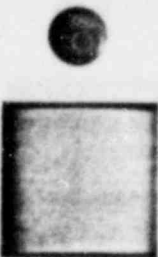
Suddenly the anti-nukes began to lose their radical, long-haired troublemaker status. Women and children in white marched in front of Met-Ed's home office in Reading in a protest staged by the Three Mile Island Alert.

The big display, of course, came on Sunday, May 6, when crowds, estimated at upwards of 75,000 descended on Washington D. C. I just read a tiny blip in the paper that said hardly a blade of grass was bent, there was no unruliness and no litter. Tim Lefever, York County Environmental Council, seemed hopeful that alternative energy measures will phase out nuclear power.

• • •

Blessed are the peacemakers . . . blessed, perhaps, but on the receiving end of some heavy flak whenever we were told to settle down, let bygones, etc. In a way, things have settled down . . . down to a small group here, a larger one around the corner, somebody from the Keystone Alliance connecting with someone else from Williamsport. An emissary from Newberrytown made contact with the York group and one of our York group has a brother in Pittsburgh who knows a member of Limerick Ecology.

There are gray flannel suits in the crowd, and matching Agnier bags and shoes. There are little old ladies and mothers pushing strollers. And children. Little ones wearing signs. One night at a PUC hearing, several youngsters had a go at the speaker's stand.



There was a group of GPU attorneys sitting near the back of the auditorium, impeccable of dress, inscrutable of face, and I couldn't help but wonder what they were thinking. One was literally attacked by an irate mother as he left the building.

• • •

Anyone for lessons in civil disobedience? Here in York County? Are you kidding? They're not kidding. With rumors of TMI Unit One starting up and with the utility urging that the populace be educated and thereby reassured, school of a different nature is in session. The TMI Civil Disobedience Committee wants to debate the issue with Met-Ed officials.

A. N. G. R. Y. ?

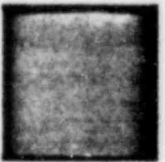

Enough people are to have formed one more new group here in York. The initials stand for: Anti-Nuclear Group Representing York. Its main function is to confront nuclear industry issues. It is at the present time compiling data on any symptoms of radiation sickness which will be turned in to a doctor at the Hershey Medical Center. The foremost issue now is to prevent the opening of the Unit One reactor.

Meantime, back at the seashore, Dr. Judith Johnsrud, co-director of the Pennsylvania Environmental Coalition on Nuclear Power, addressed a gathering at Atlantic City. Her Coalition will petition the NRC to remove Met-Ed's license for Unit One. It is to be hoped that the NRC will have learned a very expensive lesson when, through this group's efforts, the license for TMI-Two was revoked temporarily last year, then reinstated.

The York County Council of Churches wants to see all nuclear plants in Pennsylvania phased out and licenses denied to any in the future.

Faculty members of York College of Pennsylvania issued a resolution banning the reactivation of Unit One until stringent safety measures are taken. Among other things they would like to see mechanical systems redesigned so that the operator could not shut down any automatic safety control systems without action by a representative of the NRC. (Like a child-proof aspirin bottle?)

1



• • •

Before a special Pennsylvania House Committee, the people of Goldsboro expressed their anger, fear and hate for the "monster in the back yard". During four hours of hearings, not one voice was raised in defense of the utility. What would YOU say to an eight year old child who wants to know if he'll die from cancer?

• • •

Going back many years, most cities of any size boasted a "Better Business Bureau" type of thing, designed to help people resolve problems with products and services. Those early endeavors spawned a whole new industry, that of consumer protection.


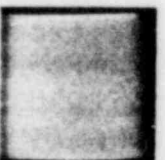
Consumer advocates of today are well versed in knowing how to expedite matters that the average citizen would not know how to begin correcting. Many advocates on a county level started out in CETA funded jobs, quickly caught hold as the public realized the tremendous value of their services, and the offices then became part of the county government.

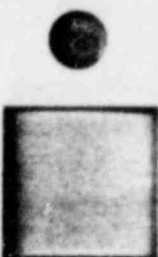
Here in York County, some 440 consumer complaints were registered in a single month. The office here needs to be made an official one, particularly since it is the one avenue of consumer participation as a method of collective clout on other than individual matters.

• • •

Flash from The Outback

An injunction preventing an American oil company from searching for oil on sacred aboriginal lands in Western Australia was lifted by Justice Peter Brinsden, who said permission to do this appeared to be in accord with the Aboriginal Heritage Act. Despite protests by the aborigines, Amax Petroleum Inc. was given the go-ahead to explore for oil.





Australia is one of the major importers of oil, to the tune of about \$800 million last year. Western Australia has long been known for its heavy gold deposits and, along with the gold, generally are found deposits of lead, copper, sometimes silver, and uranium.

Exxon is dickering with the Pennsylvania Game Commission right now to come into our state game lands and explore for uranium. The eight member commission is courting disaster with this one. Pennsylvania probably has more hunters per square inch than any other state in the Union. The commission held a closed meeting with Exxon representatives and their Harrisburg attorney recently. Sunshine Laws?

Gulf Mineral Resources Corporation, in one of the most costly projects in the history of Gulf Oil, is digging away into Mount Taylor in New Mexico. The Navajo hold Mount Taylor sacred but what price progress? The state of New Mexico reports that by 1990 the number of uranium mines will double. This is great for the state's financial health and it will provide jobs.

Proposed dumping site for the radioactive waste? Near the Carlsbad Caverns, one of our magnificent natural underground displays. Opponents of the idea say that New Mexico will become the nuclear waste dump of the United States.

. . .

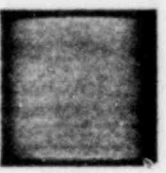

I hear arguments all the time from people who say BUT WE HAVE TO HAVE THE NUCLEAR POWER. WE NEED THE ENERGY.

What if?

What if we stuffed the genie back into his bottle, scrapped the nuclear power plants, groveled around in the dark and waited for the advent of another Thomas Alva Edison?

What if the "oil shortage", and I do not deny that the Mid-east has done its bit to throttle us, were just another high level p.r. campaign to whip those of us who deserted the ranks of nuclear power due to TMI back into line?

1



MAKE THEM THINK WE'RE GOING TO RUN OUT OF OIL
TOMORROW. WE'VE GOT TO HAVE THE NUCLEAR POWER.

The large oil companies have invested, and continue to invest,
heavily in the nuclear industry.

• • •

There is pending before the House and Senate Committee, a
plan to expand Nuclear Regulatory Commission powers to make
certain kinds of information secret. I have no quarrel with things
defensive. I have no interest in putting together a bomb or sabo-
taging nuclear materials.

But the new plan, called "Safeguards Information" would bar
unauthorized disclosure of information that could have a signifi-
cant adverse effect on the health and safety of the public. What
if the secrets, as they have certainly done in the past, tend to
lean in the direction of what is expedient for the nuclear industry
as opposed to what is good for the public mental and physical
health?

I think we have had enough of secrets. We have been safe-
guarded from information, some of it very vital, for too many
years.


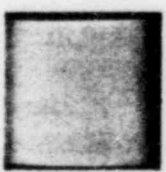
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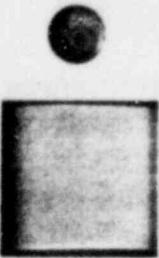
I've often heard the comment that when "they" find out how
to hang a meter on the sun we'll have all the solar power we need.

A group of financiers (what else?), one a United States senator,
calling themselves "Operation Sunpower" is investigating solar
heating for the Mid-Atlantic states. Their ideas seem worthy. Let
us pray.

• • •

Some of us think windmills are for tilting, but down in North
Carolina the world's largest generating windmill was just dedi-
cated. The U. S. Department of Energy and NASA sponsored the
project which will supply power for between 300 and 500 homes,
under ideal wind conditions.





Some of us remember walking across small country dams, sailing boats made of paper and sticks over them. We used to picnic by them, fish from them, dangle bare feet in them. We forgot they can generate power. There are thousands of them throughout the country and this "new energy source" is getting a second, more circumspect look.

• • •

Here comes a guy, Bryan Allen, a California biologist, who just pedaled his way over the English Channel, not on top of the water, but up in the air, in something he calls his Gossamer Albatross, a plastic-skinned pedal plane with 48 foot wings. Ingenious.

Now, if he can keep the enthusiastic French of Cap Gris Nez from tearing off the wings in their joyous welcome, he may have something.

• • •

An agency spokesman for the New York Public Service Commission, Francis Rivett, recommended that applications for two nuclear reactors in New Haven, New York, be dismissed because they were premature and legally insufficient. He added it was uncertain the power would be needed by the 1990s when the reactors would be ready. The PSC acted because of convincing motions from the Ecology Action of Oswego County.

• • •

Up in New Hampshire, the legislature forced Public Service Company to reduce its 50% ownership of Seabrook. Eight percent is up for grabs, along with some interest from United Illumination of Connecticut which also would like to reduce its share of the beleaguered plant. Three or four small utilities have been offered the interest, but some are reluctant because of the outlawed "Construction Works in Progress" which allowed Public Service Company to bill customers in advance for the Seabrook plant. The small New Hampshire companies were reported "not standing in line".

• • •

Arizona is not sure it wants the distinction of having the country's largest generating station, Palo Verde, on its premises since almost all of the power generated by the five reactors would be going out-of-state, most of it to California. Opponents of the plant see it as a "front" for California utilities and a "farm" for California nuclear plants. Utilities spent approximately \$1 million to defeat the measure when it appeared on the 1976 ballot, while anti-nuke groups raised a big \$20,000 to advertise their position.

• • •

In the spirit of fairness, the U. S. Government will now do for the coal industry what it did for the nuclear. South Africa is already using a technology that converts coal into gasoline. The U. S. is going to appropriate \$2 billion in subsidies and another \$1 billion in guarantees to that end.

Down in South America, they've been running around on pampas grass for years. Guess who showed them how to stuff that in their tanks and burn it? A couple of our large oil companies.

• • •

Because the "country is mad at all of us - - the president, the congress, and the oil companies", Senator Henry Jackson, (D - Wash.) and eighteen other senators are pushing legislation to promote massive energy development.

Proposed are low BTU coal gasification projects, geo-thermal plants, urban and industrial waste conversion plants and something called Solvent Refined Coal Projects in Kentucky and West Virginia.

I am gratified that when "they" come up with these marvelous new and promising energy sources, we're not given the song and dance that they were discovered just last night over a glass of sherry. "They" know that we know better now.

• • •

ENERGY, OIL AND UTILITIES COMPLETELY DOMINATE THE CONGRESS: This from one of its more candid members.

THE AMERICAN PEOPLE ARE IN THE MOOD TO DO SOMETHING, EVEN IF IT'S WRONG: this from another at a news conference.

Now we have two who are on the scent. Gasoline and alcohol, up to this point in time, have never mixed. Now they call it gasohol but we'd best not drink it.

Gasoline and politics or nuclear power and politics have proven even more deadly combinations. Many of our chosen dabble heavily in oil and utility stocks. I think they should be investors, OR representatives. Some, in the interest of good taste, have dropped their holdings, but they are in the minority. I find it personally distasteful to think that the people I helped to elect to positions of authority and trust are more interested in their own welfare and that of their special interests than in mine. By the same token, I am no longer naive.

Between 1962 and 1973, Gulf Oil contributed close to \$4 million to a few of our elected: 18 governors, 100 senators, many members of the House, some state judges, local politicians and a former governor and ex-senator who made it further up the line.

Babcock & Wilcox have a Good Government Fund. Before TMI, they gave campaign funds, in small hundreds of dollars, to a dozen members of the Senate and 30 House members. The fund promotes good citizenship "to protect and advance the industries, etc." Some of the recipients now sit on subcommittees investigating the accident. Most claimed no knowledge of the funds; two gave them back.

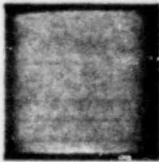

• • •

One final "what if?"

What if every single one of us slowed it down? Drive a little less each day; plan the laundry; plan the cooking. I may be the only householder in York without a clothes dryer and I despise things that spin and buzz and whirl and blast. One thing I will not give up, though, is my iron. I love to iron. I love to smash down wrinkles.

Open the windows for fresh air; open the drapes for light. Turn off the T.V. Grab a book instead; go back to school; talk to your kids; call up your grandmother. Write your Congressman?

1



...

We were sitting on the sofa one night, shortly after the TMI accident, watching the 11 o'clock news, hearing once again that MET-ED SAYS YOU PEOPLE OUT THERE WILL HAVE TO PAY FOR THIS! when Peter suddenly slammed the paper on the floor, turned on me and said WHEN ARE YOU GOING TO DO SOMETHING ABOUT THIS?

I didn't sleep all that night. I didn't know what to do.

I've been known to come out of the woodwork on state occasions to attack some blatant scheme that has attracted my attention, to get political (I only work with or against you, never for you). I've been fortunate in many respects, one of them being that I have not suffered the identity crisis most ladies of my age encounter. I've always done my own thing, so far as I felt it did not interfere with my family responsibilities, mostly because I've been blessed with a husband who works very hard and tolerates my crusades.


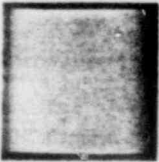
Pete not only boosted me back up on my white charger, he gave the thing a smart crack on the rump! If I got carried away in a rush and if the carrying away had some unusual results, blame it on him.

I made a phone call or two the next morning to see what, if anything, was going on in the way of a formal protest, could not connect, so hastily scribbled a petition, hauled it off to a printer, then recruited some friends to help get it out. By the following Tuesday, we stood shivering in the sudden cold outside a local department store waylaying anyone who looked like he could write. People literally scrambled for the petitions. And some of the remarks:

"Will you sign, sir?" **YOU DAMN RIGHT I WILL!**

"Would you like to sign a petition against the rate hike?" **YOU BET! FIRST THEY TRY TO KILL US, THEN THEY WANT TO CHARGE US FOR IT.**

In years to come, when someone asks how I spent my 25th wedding anniversary, I can say that I went out protesting, a thing I have never done in my life. It seemed of little consequence then



since other groups had amassed names by the thousands, but at the time it was all I could think of and it did lead to bigger and better delights.

On Thursday, April 19, I drove to Harrisburg very early in the morning to the PUC public hearing. True, it was a non-evidential hearing - - they allow you to let off steam but it has no effect on their rulings.

As I walked to the auditorium, a very fine looking, well groomed, theatrical looking older lady danced toward me. She advanced a few steps, then bowed and smiled, took a step or two back and curtsied and acknowledged the applause of her no longer seen audience. She waved from time to time at nothing in particular, then stopped and held up the traffic.

And I thought to myself: Lady, you're better off than I am.

• • •

A consumer group from York, led by Laura Berger, our consumer advocate person, sat down around me as the auditorium began to fill. There was an air of expectancy in the crowd, a peculiar mixture of tension, of hope and despair. A lot of these people were the "regulars" - - Tony Novak brought his tape recorder; Mary Leibowitz brought her lunch.

The TV crews arrived and the audience straightened its shoulders. Papers rattled, feet shuffled, the Main Event was about to take place.

Enter the three Public Utilities Commissioners. Enter the Consumer Advocate attorneys. The stage was set, the lights adjusted, the mikes turned on.

And all hell broke loose.

There were hisses and catcalls every time the word MET-ED was mentioned. There were shouts of LET THEM GO BANKRUPT, and Wilson Goode, Chairman of the Fracas, banged his gavel all the harder.

Cameras panned, light bulbs flashed. Petitions were presented, speeches made. I asked Mrs. Berger to have someone add my small collection to the pile but she said each group should present its own, thereby showing more widespread involvement in the issue.

And so it was that the Hill'n Dale Housewives gave public vent to their wrath.

There were hearings and meetings and lots of interim plots and, oh, how I do like to dig!

• • •

My love affair with the printed word began at age four when I took to reading "Uncle Wiggle" in the Baltimore Evening Sun. At first, my parents thought I was putting them on, that I somehow had memorized the stories my dad read to us each night.

I could hardly wait for the boy to sling the neatly folded paper onto the porch, sometimes wreaking havoc on my mother's potted plants and I would grab it and run like the devil to my sanctuary, spread it out on the floor and, on hands and knees, eagerly discover what my favorite rabbit was about that day.

Yet, when I finally got to school and the teacher mysteriously asked what the strange symbols were arranged around the room, I had no more idea than the other first graders. They were letters. I didn't have time for letters. I found letters a bore. I needed words. I craved them, devoured them and, like a miser, stored them up one by one.

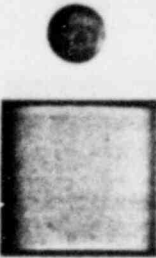
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Eons later, on a Monday morning, a copy of the Friday, May 4th Baltimore Sun fell into my hands. I was busy, thought briefly of adding it to my pile of things to put out of the house, then reverted to norm, spread it out on the living room floor . . . and got the shock of my life.

Right there on the front page was a story about a nuclear plant accident and I thought to myself, "aren't they a little late . . .?" until I realized it was not TMI they were talking about.

I discussed it out loud (to the dogs) but could not remember seeing it in the York papers or hearing it on radio or TV, but, then we had been away for the weekend. Better check it out.

I took it to the local TV station where the news person said,



"Gee, Gloria, I don't remember seeing it on the wire". Two radio stations offered like disclaimers, one adding that they had seen it but felt people were sick and tired of hearing about the accident. The two dailies had run it, the Dispatch on the front page in what looked to be a p.r. release, and the Record in a small item inside.

The York County TMI Task Force headed for Harrisburg that Tuesday evening, May 8, to a public session. I had made photocopies of the news articles, typed some very brief notes on the subject and stapled them together into neat packets for the press with one for the PUC bench. All the copies disappeared but I never saw nor heard of my big story again. Nobody wanted it.

• • •

On Wednesday, May 9, there was a meeting of General Publics Utilities stockholders in Johnstown, Pennsylvania.

The TMI accident had an untoward effect on the stock market resulting in heavy selling of nuclear stocks and a trend toward coal-related shares. GPU immediately effected a trading halt and indicated to its top level employees that to buy or sell shares might indicate "inside knowledge". Shares of GPU dropped to half their former value.

The Wall Street Journal of Thursday, May 10, reported that company officials were "clearly surprised and relieved" at the low-key atmosphere that prevailed. Considering the intensity of the TMI accident, and aside from a few verbal attacks, including one move to shut down the plant forever, shareholders were "unexpectedly tranquil and supportive".

I saw nothing in the article to indicate that my *new* news had been shared at the meeting, nor did I see it in the GPU Annual Stockholders Report.

The Report did mention, as had various newspaper articles, cuts in GPU salaries and directors' fees, cancellations of construction projects, lower dividends, a few other measures aimed at holding down expenses.

It went on to say that customers should participate in sharing the financial burden of the accident, that the company was engaged in a healing process and that its commitment to maintain the financial and operational integrity toward customers, share-

holders and employees would not be diminished.

• • •

The Accident at Oyster Creek

On Wednesday, May 2, 1979, a worker at Jersey Central's Oyster Creek nuclear plant caused a false signal to be sounded which started automatic shut-down of the plant. The plant was out of service from that day until May 31. No radioactivity was released.

In a front-page article in the Baltimore Sun of Friday, May 4, Robert Ruby, Sun Staff Correspondent, reported "New Accident Paralleled Three Mile".

When the false signal was sounded, circuit breakers rearranged themselves so that current for crucial cooling pumps would come from a special generator, but "for reasons not known", the generator was out of service, reported the NRC. The transient happened at 1:51 p.m. NRC officials only learned that the triple low alarm had sounded around midnight. Technicians inexplicably turned off control room equipment that would have recorded what happened in the plant.

Edson Case, deputy director of reactor regulations, called the accident unusual since it was unprecedented for the last-ditch alarm, warning of a low water level, to sound.

Comparing TMI to Oyster Creek, the NRC found that both accidents began during routine maintenance tests, both involved questionable instrument readings, and both involved a sequence of events that had not been considered when the plants were licensed. The TMI unit is a Babcock & Wilcox pressurized water reactor. Oyster Creek is a General Electric boiling water reactor, and is located forty miles north of Atlantic City in the heart of the Jersey Shore resort area.

On Friday, May 4, Jersey Central filed with the New Jersey Board of Public Utilities Commissioners for \$113 million to make up losses on the TMI accident.

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. . .

Score to Date

March 27, 1979 - Met-Ed almost had a serious accident when it violated its operating license in attempting to start up Unit One at Three Mile Island.

March 28, 1979 - THE BIG ONE - Unit Two.

May 2, 1979 - Jersey Central's accident caused water levels to drop so low that it might have uncovered the fuel.

There are a number of lawsuits around, one brought by a GPU shareholder who claims her stock was devalued as a result of company negligence.

A Lebanon, Pennsylvania man introduced a resolution at the Johnstown meeting to permanently close the TMI plant because he felt we shouldn't be into nuclear power until we have complete control of it. He suffered a rousing defeat when the votes were in: 44.8 million less 22 in favor of his resolution.

Another stockholder suggested that GPU executives be paid in company stock for the duration of the crisis. He drew applause but no second.

And one stopped at TMI on his way to Johnstown to admire the plant, calling it "magnificent - - one that normally any shareholder could be proud of". He hoped one day to be proud of it again.


God forbid.

. . .

Fifteen years ago, I wrote a book on skiing, then in its innocence, and packed it off to McGraw-Hill. They packed it back with a note that "despite its obvious merits, the general feeling seems to be there would not be a large enough market for a book of this type, etc..."

In the book, I casually compared the sending

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*of a certain reporter off to cover the antics of
our crowd's skiing week to dispatching me to
write a book on nuclear fission.*

*And here I sit, these many years later, writing
a book on nuclear fission.*

I was surprised and not exactly pleased to find myself labeled in the York Dispatch by a reporter friend of mine as "Gloria Davis, who has been speaking out against nuclear power."

Shiela Kohr had covered the first official public meeting of the York County TMI Task Force. She married an old skiing buddy of ours and, to this day, I can see Don zooming heavenward atop a free-wheeling poma lift up at Mont Blanc in Canada. He was aided in his folly by a large, heavy-handed attendant whose peculiar delight it was to give you an extra shove between the shoulder blades as the platter caught between your knees - - or slightly north of there - - and the greater your personal discomfort, the more he laughed. Don crashed and burned.

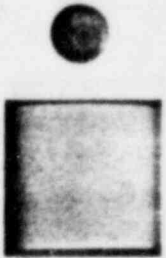
Shiela's statement gave me just cause to think. Was this really what I had been doing? Looking back over my narrative, I can see my attitude changing.

I was not anti-nuke. I sat on the fence with the rest of the solid, middle-class, middle-aged citizens. We need the energy. What's the big deal?

When our older children on that awful day kept telling us to "get out of there", my stock answer was that I was worried, but not afraid. Their stock reply was that I didn't know enough about it to be afraid. They were right.

I began to accumulate every word I could find on the accident itself, the hearings, the investigations, dug around in libraries for books on things nuclear, read reprints of articles, particularly those written by people really in the know, those who had launched the industry into the world with the purest of intent but discovered that their ideals were compromised left and right . . . men and women of learning, scientists, educators, humanitarians no longer able to justify their work seeing what had become of it.

Thinking that my literary excursions had pretty well covered things, I found I knew nothing whatever about the subject. All of



my reading adventures, from junk mail to telephone books, had not prepared me for this one single occurrence. The hiss of steam literally turned on the back burner of my brain.

All I knew about nuclear power was that if your hair were trimmed, or if you wore white gloves and pearls, you were for it. Only long-haired, grubby kids, with an occasional ancient loony or two thrown in, were against progress in our Brittle New World.

As my information began to come together, I found myself distrustful (?) of these new thoughts. Ashamed? Perhaps inferior is the word. I was supposed to be bright. How did I miss it?

By chance, I went to my first demonstration on Memorial Day on the steps of the Capitol in Harrisburg. Laura Berger and I, along with Sue Leisenring and Yarka Kasl - - and do those two ladies know their way around the lawmakers' lair! - - to attend the rate hearings. On lunch break, we joined the protesters.

The rally was sponsored by the Environmental Coalition on Nuclear Power. Attending were groups from the Keystone Alliance, the Grey Panthers, the Consumer Education and Protective Association of Philadelphia, Three Mile Island Alert, Limerick Ecology Action, Mobilization for Survival and the Pennsylvania Alliance for Jobs and Energy of Pittsburgh.

It was a working day and there was not too great a crowd. We were there. I felt wicked.

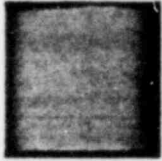

The following night I went to a public meeting in a public high school auditorium in York and saw a few other people of my background. They seemed at ease. I slunk away as soon as the lights went out for the slide show.

I felt uncomfortable. I don't know why.

Unless it's because I don't seem to fit anywhere. I'm not a group person, not a joiner. I've always felt that "belonging" inhibited my lateral movement. Popularity, notoriety, have never mattered to me; they matter less, if that's possible, as I grow older.


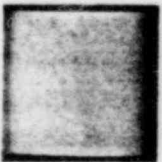
I am an Ayn Rand person. I believe in the celebration of the individual human mind, although I depart from her philosophy in one respect. She is a professed atheist. I need all the help I can get.

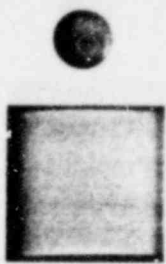
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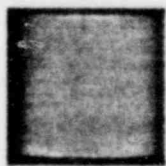
"To the village square we
must carry the facts of
atomic energy... from there
must come America's voice."

Albert Einstein





Part V
The Beginning



Coming to Praise Caesar

In my text I have quoted superlatives on Met-Ed's handling of the accident: an operation labeled "sloppy and messy", "absolute chaos", "technically thin"; communications called "obfuscator: and duplicitous" and "certainly lousy"; public opinion crying "negligent", "incompetent", "irresponsible".

The technology itself: The accident proved "the extreme vulnerability of nuclear power", " a 19th century industry running a 21st century technology".

May I make one small offering in defense of the utility: Thank you, Met-Ed.

The accident at Three Mile Island, fortunately not killing anybody outright nor causing undue property damage, accomplished in a matter of weeks what might otherwise have taken decades.

It captured the unflagging attention of almost a million people close by and alerted the entire world to the danger of the technology itself and the utter callousness with which it was foisted upon us.

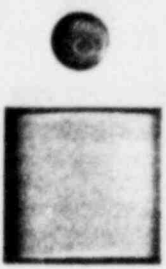
It caused an uneasy stirring, among other operating utilities and their multi-national friends, among investors in the nuclear industry, and certainly among practicing politicians who by now, I imagine, are not sure which way to run.

I doff my battered straw hat!

What a tremendous public relations job they did on us. "They" are the government, aided and abetted by industry, and backed up by a press and broadcast media that I choose to believe was as gullible and trusting as the American public.

The Supreme Court said many years ago that most American communities have far too little dissemination of information from diverse and antagonistic sources.

Back in the 1940s, the Commission on Freedom of the Press complained that "monopolies of fact and opinion are infinitely



more mischievous" than other kinds of monopolies, adding that they command the undivided attention of public office-holders who hold them higher in regard than the people who vote for them.

• • •

Public relations, to reiterate, is the telling of the good things and the failure to tell of the bad. It is the careful, methodical dissemination of information that will lead the population to smile and clap its hands and, by the skillful teasing of a very basic human failing, to invest its trust and sometimes its money in a system geared to pay off.

The human failing, if that's what it is, is the desire to get ahead, to do a little more for our children than our parents could do for us. Some of us were depression babies, many came through World War II and the Korean War. We wanted so desperately to give our children a sense of security, the opportunity for a good education, the incentive to get out into the world and clean it up. And look what we did.

We trusted too much and we worked so hard that, in our single-mindedness, we forgot to watch the store.



• • •

NUCLEAR POWER IS THE ANSWER TO OUR FUTURE ENERGY NEEDS. NUCLEAR POWER IS CHEAP. NUCLEAR POWER IS SAFE, AND CLEAN.

I do not recall ever seeing a tabulation of what it cost the federal government to research and set up the nuclear power industry, how much it costs to "regulate" it, to insure it, the bureaucracy it takes to run it. I have not seen put together in one spot the cost of the "incidents", or "transients" as they are won't to call them. How about the studies on health effects and the costs of the investigations when an accident occurs? Probably just as well. A billion or a million billion - - quite beyond my thinking. All tax dollars.

Safe? And clean? Ask anyone who lives near TMI. Ask how safe they feel when they look at the towers, or how clean, when each passing week brings out a little more of the awesomeness of

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what happened to us here. Instead of "so much" radiation, it is now billed as "SO MUCH".

Using the Freedom of Information Act, the Union of Concerned Scientists - - the drop-outs of the nuclear age - - were able to obtain THE NUGGET FILE, a foot-thick compilation of "incidents" collected by an NRC official over a ten year period. Safe? Clean?

We are victims of the old shell game, the medicine show, the something-for-nothing. It was snake-oil and a universal cure for whatever ailed us. We were had.

• • •

The issue of nuclear power, to my Teutonic mind, is completely illogical. If something can destroy my family, my home, all that I have ever worked for and believe in, how can it possibly be good for me?

I am as surely threatened as if an invading army were at this moment goose-stepping through my door.

Many people call the issue immoral, and it may well be since the people of this nation had no share in the decision as to whether its good points outweighed the bad.


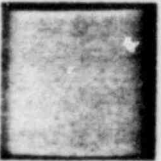
I call it something else: Illegal.

In its statement of policy, the Atomic Energy Act said: "Accordingly, it is hereby declared to be the policy of the people of

United States that, subject at all times to the paramount objective of assuring the common defense and security, the development and utilization of atomic energy shall, so far as practicable, be directed toward improving the public welfare, increasing the standard of living, strengthening free competition in private enterprise, and promoting world peace."

I challenge the "so far as practicable".

This play on words, is it an "out" for those who enacted the law and those who perpetuate the law? When it becomes "impracticable" to improve the public welfare and increase the



standard of living . . . such as in an accident like TMI . . . will this phrase enable government and the nuclear industry to go right on making "profound changes in our present ways of life"?

Is the *impracticability* of allowing us to live without fear to be outweighed by the expedience of making a good showing for the stockholders?

If the answer to that question is "yes", I contend that the cruelest hoax in the history of mankind was perpetrated with the signing of the Atomic Energy Act. In effect, it rewrote our Constitution, which promises:

We, the people of the United States, in order to form a more perfect union, establish justice, insure domestic tranquility, provide for the common defense, promote the general welfare, and secure the blessings of liberty to ourselves and our posterity, do ordain and establish the Constitution for the United States of America.

I can find no qualifying phrase that detracts from the absoluteness of those words, no "so far as practicable".

. . .

Today is Memorial Day, May 30, 1979.

I pray it will be a memorial to the resurgence of our people and that they will scream to the rafters: THIS IS OUR LAND. WE MUST PASS IT ON TO OUR CHILDREN.

Denouement:

"The final revelation of occurrence which clarifies the nature and outcome of a plot; the issue, outcome or solution of a complex situation."

Again, thank you Mr. Webster.

I read quite a lot and if the book is well written, I savor each word, sometimes prolonging the reading to enjoy them more - - the words. Many times the words are a delight, the plot beautifully put together, but by the end of the treatise, it's as though the author has tired of what he has written and shoved each character or situation back into its particular niche, or into another niche, sometimes better, sometimes not.

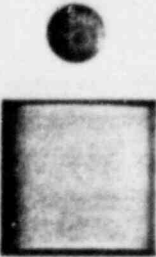
The trite ending of this book would be to say that the Good Guys won and the Bad Guys were relegated to the sunset. There are no pat answers to any of the numerous and complex problems that rose, along with the culprit hiss of steam, into our environment. The people whose sensibilities, psyches and pocketbooks were offended by the accident and by the antic actions of elected officials in whose trust we placed our welfare, will not run victorious from the PUC hearing room shouting and waving flags.

Somebody wins; somebody loses. And in the winning, or the losing, any realistic person knows there has to be some sort of compromise that makes a clear-cut victory for either side impossible.

The deadline for some kind of action is mid-June. By mid-June, the utility will have used up all of its available borrowing power. Banks will extend no more loans until the public demonstrates its willingness to put up some money. The public is not willing to do anything of the kind.

The gentlemen of the Public Utilities Commission of Pennsylvania have my profound empathy. They have before them a most unenviable task. It has been their job to hear reams of testimony, to come to a decision on what is the right thing to do.

The utility, Met-Ed, on the one hand demands compensation for a tragedy, albeit a self-inflicted tragedy. The people of the



community serviced by the utility demand morality from a system devised two hundred years ago to dispense justice to its citizens.

The decision, one way or the other, will bear the names of those who effected it. The names of the Legislative body of the Commonwealth of Pennsylvania will not appear even though they are the ones who make the laws wherein the PUC must work. The names of the utility and its varied interests will not appear; neither will the names of thousands of the utility's adversaries who protested its actions.

The choice will be a difficult and lasting one.

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THE FINAL QUESTION

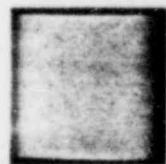
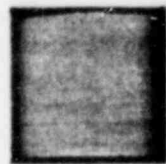
How do you tell your children:

Back in the spring of 1979, we acted in a manner we hoped would insure *your* general welfare and secure for *you* the blessings of liberty. We tried to pass on to you the kind of environment that was passed on to us as a very necessary quality of life.

We wanted you to see that action, positive, constructive action, always takes precedence over non-action. If Authority - - government and business - - has overrun us, it is because "it" acted, while we only thought about it.

We acted, children of the new generation, but did we act wisely. Is what we did enough?

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Epilogue

Friday, June 15, 1979

The Pennsylvania Public Utilities Commission ruled, effective July 1, 1979 and for 18 months:

1. Average residential rates are raised by roughly \$2.97 per month as opposed to the \$7.50 sought by Met-Ed.
2. Met-Ed must give back to the customers the \$11.8 million state public utility real estate tax refund.
3. Met-Ed may collect the \$14 million owed by customers due to high energy costs during the coal strike.

In addition

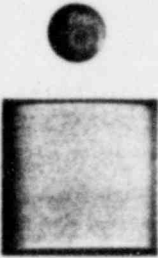
1. The PUC deducted a \$2.98 million adjustment from Met-Ed's annual revenue.
2. Met-Ed is required to create an energy-conservation program, offering a rate incentive to customers who reduce their usage by 5% or more per month.
3. Met-Ed must petition the PJM power pool to change its billing rates, to sell replacement power during breakdowns at cost.
4. The PUC trial staff will seek, by law, to eliminate state taxes on utilities that must buy replacement power because of lengthy breakdowns.
5. Met-Ed must have TMI Unit 1 back on line before the end of this year or the PUC will consider removing it from the rate base, thereby effecting a further rate reduction.
6. The PUC will investigate the management of both Met-Ed and GPU particularly during the time of construction and operation of TMI-2.

Criticizing the utility for "demonstrated obtuseness, inability to focus, lack of direction (and) an unwillingness to address the issues", Chairman W. Wilson Goode and Commissioner Michael Johnson concurred on all points; Commissioner Louis J. Carter dissented on a few.

Chairman William Kuhns, General Public Utilities, was "stunned . . . disappointed by the order".

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AS WE GO TO PRESS:

The Pennsylvania Legislature

Rejected the appointment of Robert Bloom as a Public Utilities Commissioner.

Gave the Pennsylvania Energy Council permanent status with authority to obtain data on energy from utilities and oil companies.

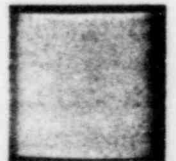
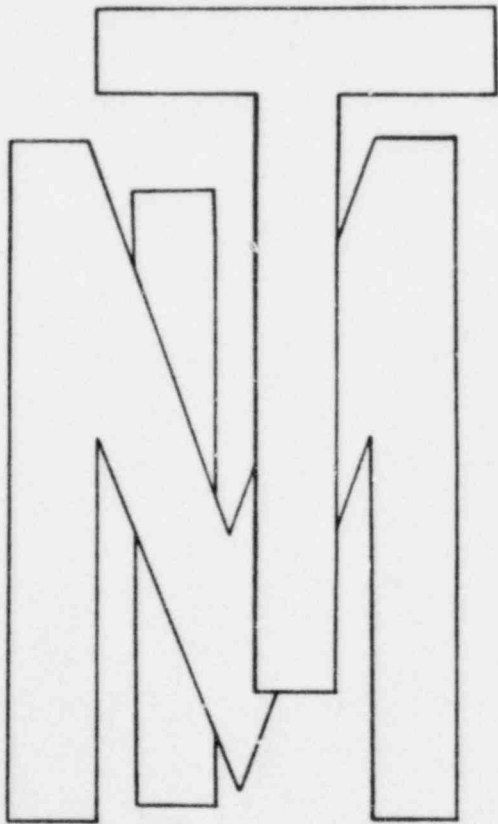
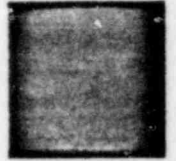
Rejected a move to water down the 1978 Ethics Code requiring lobbyists to "clean up their acts".

And, with amazing, unaccustomed alacrity, pounced upon the rebate, granted by the June 15 PUC order, to the ratepayers in order to pass the governor's budget, the theory being that if we didn't get the money back we, therefore, won't miss it.

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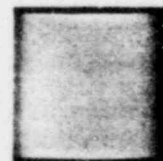
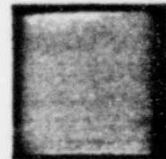
\$4.00



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York, Pennsylvania
July 18, 1979

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18. Three Mile Island Alert Island Updated ded 2/1980
19. NUREG-0591, Susquehanna Valley Alliance's Comments on Nuclear Regulatory Commission's Environmental Assessment Use of EPICOR-II at Three Mile Island, Unit 2 dtd 9/18/79

POOR ORIGINAL

APPROX? C. DER. 137 DISALUSSIONED? WRITE!!!

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Ivan M. Smith, Esquire, Chairman
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, D.C., 20555

Socket No. 50-289
(Restart of TMI Unit 1)

Other board members:
Dr. Walter H. Jordan
Dr. Linda W. Little

THREE MILE ISLAND ALERT, Inc.

315 Pepper Street
Hbg., Pa., 17102
233-7897

IN TERMS of personal emotional impact, the accident at Three Mile Island is over for most of us. Publication of reports by the various investigatory bodies may engage us once more in the intellectual problem of judging which experts to believe, but the reports will recall only dimly the fascination and terror we felt, even at a distance, last March.

For local residents, in contrast, only the first phase is over. Something of the intensity of the original experience is captured in the testimony of a Middletown physician, John Barnoski, given to the President's Commission on the Accident at Three Mile Island on May 19:

In the first several days, there was a lot of semi-hysteria, anxiety and fear. I had six- and seven-year-old children in my office acting like two-year-olds, becoming very dependent, hanging on mothers, sensing the parents' fear and frustration. I had older people with blood pressure problems because of their anxieties. Later, several weeks after the accident, I began seeing people with non-specific symptoms of fati-

LYNNE SHIVERS lived in Hiroshima for a year as a volunteer community worker. Currently she teaches English at the Community College in Philadelphia and lives at the Life Center, a political support community committed to radical social change through nonviolent action. The Center is affiliated with the Movement for a New Society.

guing, experiencing intense fear about the future. They must live with the inescapable fact that no one can tell them what the future holds for them.

An Invisible Enemy

National media keep repeating the soothing official reassurance that "minimal" radiation escaped into the environment following the accident, and that there will be no detectable increase in the incidence of cancer, developmental abnormalities or genetic ill health. But Dr. Chauncey Kepford, a physicist and a founder of the Environmental Coalition on Nuclear Power, reports that of 19 or 20 dosimeters located in the region, only five were situated further than a mile from the plant. With this degree of measurement, it is impossible for residents outside the immediate plant area to know whether they received radiation fallout.

Eric Breinauer of the Environmental Protection Agency (EPA), testifying under oath on June 2 at Elizabethtown, Pa., before the House Subcommittee on Science and Technology, said that the

'Three-Mile'

(continued from page 275)

ways: It is felt both by people who stayed and among the estimated 200,000 persons who decided to leave the area. As Bill Johnston testified:

I was one of the ones that evacuated. Now, there are two classes of us, largely, and I think we both feel a little guilty; people like me who left, and think, "My God, maybe I should have stayed. Maybe I could have been of some assistance." The other people that didn't leave, some of them have told me, "If I would have only known the gravity of the thing, I would have left. This will dwell on me. I may have hurt my children."

Local people continue to fear, though obviously they feared more intensely during the accident. Testimony given to the commission provides dramatic examples,

'Three-Mile': The Accident Isn't Over

Lynne Shivers

tigue, malaise, nervousness, insomnia. After discussing their problems with them, I finally was able to figure out from them that the symptoms related back to their anxiety and fear over Three Mile Island and mostly to their frustration over being unable to do anything. I began to see depressions, mostly anxiety.

Congressman William Goodling of the 19th Pennsylvania District testified on the same day: "I don't believe most Americans understand the psychological impact this accident has had upon the residents, especially in the five-mile area, who were constantly part of the news day after day. . . . Many have indicated that the peace of mind and the quality of life which were so abundant in this area prior to the accident have now disappeared."

It is hard for people in this practical-minded culture to believe that the feelings about the accident of people living near Three Mile Island are a central part of the event. Because of a certain residual anti-

radiation monitors inside the plant went off the scale for the first three days and thus became inoperable. The "Ad Hoc Population Dose Assessment Report" issued by the EPA, the Nuclear Regulatory Commission and the Department of Health, Education and Welfare reports (p. 49) that "given the limited number of observations [especially for the period March 28-31, when it would appear that most of the collective dose was delivered], it is evident that any approach to assessing the collective dose depends on a relatively small number of measurements. No amount of sophisticated analysis can change this fundamental limitation."

Scientists will not agree for some time, possibly years, about the amount of radiation that fell, or where. Thus people in the area are left to their own conclusions about their future health. This unknown is unnerving and shrouds everyday events with a sense of unreality and uncertainty. What are the values of "normal" life, of planning for the future, when the future is unknown? Or, as Angie Herrider testified before the President's Commission:

Alfred Mirando said, "Friday we had our doors open. Customers were in the store. And on the radio came the announcement that everyone was to stay indoors. The people in the store became filled with fear. It was a very traumatic event for those people." Georgia Lookingbill, a nurse at a day care center: "My memory of those days at work is vivid. I listened with apprehension to every news release. I watched the uncertain eyes and tension-filled faces of other fellow workers, all of us longing to be with our own children, crying inside because we had left them alone with friends or relatives to fulfill our professional responsibilities." Beverly Hess reported: "Our 14-year-old son Chris told me he's been having nightmares about nuclear villains that he keeps trying to protect me from. I have intermittent painful knots in my stomach, wakening nights and days of nervous overeating."

Just as often, people responded with

psychological bias, we tend to see emotions as less real than objective events. If there is an event that would contradict that bias, it is the Three Mile Island accident.

Perhaps the most thorough exploration of psychological stress resulting from traumatic events has been conducted by Dr. Robert J. Lifton, famous for his studies of the victims of the Hiroshima and Nagasaki bombings. Lifton's findings take on a livelier meaning since most of them have also shown up among people living near Three Mile Island. We who do not live in Goldsboro, Middletown, High Spire, Newberrytown, Harrisburg or Lancaster need to understand the full meaning of the Three Mile crisis. Any such understanding will include a grasp of how many local residents continue to feel.

Since there were no immediate deaths at Three Mile Island, we can expect to find some important differences between the emotional consequences of the accident and those rising out of other traumatic events such as the bombing of Hiroshima and Nagasaki, the experience of Auschwitz and Dachau, and natural disasters. No one in Pennsylvania experienced the grotesqueness of death associated with these other events; no indelible image of death remains. Consequently, Pennsylvanians are not suffering a life of grief as are some survivors of other events.

What people near Three Mile Island are

I just want to believe that my little girls are going to grow up and have little girls of their own. . . . And I'd have to think that there may not be a day when I'll see that. What's the use of me saying to my children, watch when you cross the street, wash your hands, eat your dinner? What's the use of me saying that if I can't even let them go out and breathe the air? Or if I can't believe it's safe?

From his research with survivors, Lifton suggests a resulting complex psychological pattern. The first pattern is "death imprint." But since no deaths occurred at Three Mile Island, this pattern is absent among local residents. The second pattern is death guilt; for Japanese survivors, this comes in the form of guilt for having survived. Why did I survive and not others?

A Double Bind

Residents near Three Mile Island did not experience guilt so intensely, but they are experiencing a form of guilt only slightly less damaging. This guilt cuts two

(continued on page 284)

anger instead of fear. Michael Minich told the Commission:

Asking me as a consumer to pay for any cleanup which insurance would take care of. . . is like asking the survivors of the Holocaust to pay for a retirement village of the SS. I really believe that. I don't say that to play on words. . . . in fact, I feel so strong that if they pass on the cost to me I'm not going to pay it. I'll go to jail first. I'm willing to suffer the consequences for that. They may call me a radical or whatever. I like to think I'm a patriot. Maybe I'm wrong in these feelings, but this is how I and many other people feel."

In letters to *The Middletown Press and Journal*, anger took the form of sarcasm: "I just figured out why Met. Ed. [Metropolitan Edison] wanted all the preschool aged children out of the area. They didn't want anybody smarter than them around." "Nuclear fish. Gassed baked

radiation beans, iodized red beet eggs, Cancerous fruit salad, Thyroid stringbean casserole, Operation meltdown jello salad. . . This menu is guaranteed to brighten up your day."

If fear and anger are not released, then the third element of the emotional pattern Lifton has described is psychic numbing. People's major defense against anxiety for the future is to cease to feel. If I feel nothing, then nothing significant happened. People vary in their ability to close off terrible memories. It is, of course, important to close off some feelings in order to carry on daily responsibilities. But a total psychic numbing prevents us from making sense of the experience, especially a traumatic one.

Lifton reports that when survivors of the atomic explosions or the German concentration camps were not able to release their trauma, they experienced what he calls "miscarried repair." The symptoms are bodily complaints, fatigue, loss of vitality, weakness, exhaustion, insomnia, nightmares and general depression and anxiety. Note that the same indications were reported in Dr. Barnoski's testimony cited earlier. Examples of psychic numbing were apparent in other letters to the *Press and Journal*: "I wish people would stop worrying about Three Mile Island." "People have been knocking Met. Ed. because of this little accident they've had. This happens anywhere. When all the people were down there making good money there was nothing at all said against Met. Ed. Boy was everyone happy. Now since they've had this little accident everyone wants to close them down." (The editor added a comment to this letter: "Surely you jest, 'little'!")

According to Lifton, the fourth emotional response deals with "nurturance" and "contagion." People who have experienced the same trauma identify with one another; they understand how other victims feel, non-victims will not. At the same time, however, there is a reluctance to identify with other sufferers since to do so admits that one is special in a strange way, an unnatural way.

People tend to resent outsiders who offer help of various sorts, fearing that offers of help are counterfeit. People fear that the help being offered is fake or not truly felt. People are reluctant to accept help also because such help implies dependence that the survivors did not choose to accept. Frequently, suspicions of

fake nurturance are expressed as fear or anger at the expectation of being treated like guinea pigs. At a hearing of the President's Commission, Kay Pickering said, ". . . [W]e are the guinea pigs for the benefit of others." Lifton reports that suspicion of counterfeit nurturance is similar to depression.

The Dangerous Victim

"Contagion anxiety" is the name Lifton gives to the dynamic when victims of any trauma fear that outsiders will fear them. This pattern is easiest to understand when survivors have probably or possibly been exposed to some level of radiation, but it is not limited to that condition. As one local resident wrote to the newspapers, "Thanks to the Traubels for putting up with our 'glowing personalities.' We had a 'radiant' time at your house. We didn't want to risk sending you a thank-you card because we thought we would contaminate all of Philadelphia." The message is lightly expressed, but the underlying tone is fear that contamination might be a real threat.

The uneasy fear of contamination, as well as the more subtle, almost unconscious, fear of being near people who experienced an important event, will discourage people from visiting the area. The Lancaster Tourist Bureau reports that tourism in the region fell to 50 percent of the expected level in June and July. The bureau estimates that 20 percent of the decline was occasioned by the nuclear accident; the rest is attributed to the fuel crisis and a local polio outbreak. The normal revenue of tourism for those two months is \$300 million; this year the two-month revenue was \$150 million. Most places in the region report that the tourism level rose in August, but the region near Three Mile Island did not show the same rise.

The fifth and final pattern is what Lifton calls "formulation," that is, coming to terms with the experience and attempting to create meaning and significance in one's life. The deeper the trauma, the more likely it is that formulation will take longer. We see through Lifton's research that a number of conflicting forces are at work among people who have experienced a fearful event, and these forces make the formulation process more difficult.

Scapegoating can take part during the formation process. This means that survivors are inclined to attribute all responsibility for the event to easy symbols of

authority. Scapegoating can be a way of interrupting formulation if survivors too easily attribute responsibility to a few obvious parties. But it is also a necessary part of the formulation process, since survivors are, in effect, saying, "You, not we, are responsible for this event." If we can clearly place responsibility on a person or group, then anger or fear can more easily be vented. Metropolitan Edison, the Nuclear Regulatory Commission, the Federal Government, the Three Mile Island staff, James Schlesinger, and President Carter have all been convenient scapegoats. (Of course, a person or group who has been scapegoated may have real responsibility.)

Meaning Through Action

Since formulation takes place over time, people frequently take on significant activity to prevent such an event from recurring. The establishment of the state of Israel and the promotion of Hiroshima as a "city of peace" are two well-known examples of this process. We can expect that similar processes will also take place among central Pennsylvania people. I predict that many people from the Middletown area will be active for some years in the effort to shut down the Three Mile Island plant, and some will call for abolishing nuclear power altogether.

We who did not experience the same intense fear can help in that healing formulation. No extraordinary actions are required. The most important response is simply to pay attention to what survivors of the Three Mile Island accident are saying; and the worst thing we can do is to deny that anything significant happened in Middletown on March 28. Simply "paying attention" may seem a passive role, yet it can have a profound healing effect on people who have experienced a traumatic event.

The President's Commission hearings were important for this reason. Anyone who heard the testimony given by some 43 persons at the hearing held at the Penn State University campus in Middletown will always remember the passion with which they spoke. At the conclusion of the day, Chairman John G. Kemeny said, "I would like to say to the citizens of this region that as long as I live, I'm not going to forget this particular day."

In the end, however, "formulation" requires something else. If people of the region are to achieve a sense of meaning from an experience that was otherwise frightening and destructive, a merely sympathetic hearing will not suffice. There must be evidence that policy and action are, or can be, affected by what they have to say. They are not alone in this. Other Americans—especially perhaps those who live within 50 miles of other nuclear power plants—have shared the doubts and fears of Pennsylvanians even if in lesser degree. They need to feel they can express their feelings with freedom from elitist derision. Those parties to the debate who dismiss "mere emotion" as irrelevant to policy misread the requirements of a humane politics. □

POOR ORIGINAL

Local - Central Pennsylvania

Three Mile Island Alert
315 Peffer Street
Harrisburg, Pennsylvania 17102
Tel. 717/233-7897

A.N.G.R.Y.
245 West Philadelphia St.
York, Pennsylvania
~~717/354-NUKE~~ 1-845-7419

Paul Bowman

Newberry Township Steering Com-
mittee on Three Mile Island
c/o Pat Smith
RD 1
Etters, Pennsylvania
938-6923

Susquehanna Valley Alliance
P.O. Box 683
Lancaster, Pa. 17604
Tel. 717/872-5172

People Against Nuclear Energy
c/o Jim Hurst
617 Briarcliff
Middletown, Pa. 17057
717/944-3909

Susquehanna Alliance
P.O. Box 249
Lewisburg, Pa. 17837
717/524-4386
524-7947

State

Environmental Coalition on
Nuclear Power
433 Orlando Avenue
State College, Pa. 16801
814/237-3900

Keystone Alliance
1006 S. 46th Street
Philadelphia, Pa.
215/387-5254

Mobilization for Survival
3601 Locust Walk
Philadelphia, Pa. 19104
215/386-4876

Limerick Ecology Action
P.O. Box 109
Kimberton, Pa. 19442
215/933-8726

State = Environmental Groups

Sierra Club
Box 105
Shartlesville, Pa. 19554

COPEG
c/o Margaret Ha
Lancaster, Pa.

State - Energy Groups

Pennsylvania Alliance
c/o TMIA
315 Peffer Street
Harrisburg, Pa.

Pa. Alliance for Jobs & Energy
207 Market Street
Pittsburgh, Pa. 15222
412/566-2290

Solar Power Advocates
c/o Paul Gipe
Harrisburg, Pa.
717/233-3996

Citizen/Labor Energy Coalition
c/o Jane Perkins
Harrisburg, Pa.
717/234-4114

Citizen Labor Energy Coalition
Eileen Kirilin
215/457-5200

Wind Power Information
c/o Paul Gipe
Harrisburg, Pa.
717/233-3996

THREE MILE ISLAND ALERT, INC

HEALTH QUESTIONNAIRE

In order to more accurately determine what occurred at Three Mile Island following the accident which began on March 28, 1979, we invite you to respond to the following questions.

PLEASE ANSWER AS ACCURATELY AS POSSIBLE AND INCLUDE:

- A. Date
- B. Time experienced; example: 7:00 AM to 2:00 PM
- C. Did condition change if you left (and returned) to area?
- D. Experienced this before- often, sometimes, never.

IF YOU NEED ADDITIONAL SPACE, NUMBER AND USE BACK OF PAPER.

- 1. Metallic Taste _____
- 2. Metallic or iodine-like odor _____
- 3. Watery or irritated eyes _____
- 4. Skin disorders (rash, etc.) _____
- 5. Respiratory problems _____
- 6. Gastro-intestinal disorder _____
- 7. Face flushing _____
- 8. Headache _____
- 9. Pregnancy problems _____
- 10. Menstrual irregularity _____
- 11. Change in dosage or type of prescribed medication _____
- 12. Anxiety _____

Did you observe any of the following:

- 13. Changes in animal behavior _____
- 14. Health problems with animals _____
- 15. Atmospheric - Climatic changes _____
- 16. Other _____

For purposes of validation and possible follow-up questions we ask that you include name, address, and phone number; (leave phone number blank if you'd rather not be contacted). Also include, if possible, your approximate location from the TMI plant.

If there are other members of your family, or neighbors who are interested and would like to respond to this survey, contact the TMIA Health Committee, 315 Peffer St., Harrisburg, Pa. 17102, 233-7897 and we'll send you the requested number of surveys.

The results of this survey will be published at a future date

THANK YOU FOR YOUR RESPONSE.

Please return to TMIA.

Name _____

Address _____

Phone # _____

THREE MILE ISLAND—ONE YEAR LATER

A Call To Action

One year ago our lives were disrupted; one year ago our homes were invaded. On March 28, 1979, an accident began at the Three Mile Island nuclear power plant, and the world around us froze. THE ACCIDENT IS NOT OVER. Our lives are still in great danger.

We face another spring knowing that our children may be irradiated when they go out to play. We do not know whether our air will be safe to breathe, our water safe to drink, our land safe to farm.

In the face of these dangers, Metropolitan Edison intends to reopen the Three Mile Island plant. WE ARE RESOLVED THAT THE NUCLEAR PLANT AT THREE MILE ISLAND WILL NEVER REOPEN . . . THAT ALL NUCLEAR FACILITIES, BOTH CIVILIAN AND MILITARY, BE SHUT DOWN . . . THAT THE TERROR, THE LIES AND THE DESTRUCTION BE TERMINATED IMMEDIATELY AND PERMANENTLY.

This March 28, 1980, the people of the Three Mile Island area will hold a service and commemorative vigil in Harrisburg. On Saturday, March 29, there will be a demonstration near the Three Mile Island nuclear facility to demand the permanent shutdown of the monstrosity which invaded and threatens our lives. We invite the people of central Pennsylvania and the areas most affected by the Three Mile Island accident to attend the action at TMI. Furthermore, we encourage people around the globe to commemorate the beginning of the accident by organizing actions in their own communities on the weekend of March 28-30.

The people of the Three Mile Island area are producing armbands, printed with a message reflecting our suffering, solidarity and hope. We are asking people worldwide to order these armbands from the March 28 Coalition in Harrisburg, and to distribute them and wear them on the weekend of March 28. The armbands will symbolize our determination that Three Mile Island not be forgotten, and demonstrate our commitment to a life-nurturing and non-nuclear world.

The suffering of the people of Three Mile Island is the suffering of all nuclear victims—those exposed to uranium mining, nuclear facilities and atomic weapons. We call for national and international efforts to end the nuclear nightmare. We call on you to demand the permanent shutdown of Three Mile Island by supporting local actions on March 28-30, 1980, and to participate in the national actions on April 26-28 in Washington and elsewhere. Support the movement for a non-nuclear world. In remembering Three Mile Island, we work for a NUCLEAR FREE FUTURE.

MARCH 28 COALITION
1037 Maclay Street
Harrisburg, PA 17103
717/233-NUKE

COALITION FOR A NON-NUCLEAR WORLD
236 Massachusetts Ave., N.E. #506
Washington, DC 20002
202/544-5228

TMI One Year Later—Organizing Memo

Included below are suggestions on how we can best coordinate our efforts for March 28-30, to insure maximum exposure for our demands and the April 26-28 actions. Also included is information about ordering armbands and about the demonstration at Three Mile Island.

Suggested Actions

Action suggestions include: vigils and rallies at utility offices, nuclear weapons facilities, government buildings and town centers . . . teach-ins . . . religious services . . . house meetings . . . advertisements in local newspapers and on radio . . . distribution of armbands at schools, churches and town centers . . . civil disobedience at appropriate targets. Individual actions might include: spending March 28 doing anti-nuclear work instead of one's normal job . . . wearing an armband the whole weekend . . . minimizing the use of electricity . . . five minutes of silence . . . initiating discussions of nuclear issues with everyone. Use your imagination, remembering we want to reach as many people as possible with our message that weekend.

Coordination and Media

Our main objective is to coordinate TMI anniversary actions in such a way that we gain national media attention for the demands of the March 28 Coalition (to keep TMI closed) and the Coalition for a Non-Nuclear World (Stop Nuclear Power, Zero Nuclear Weapons, Safe Energy, Full Employment and Honor Native American Treaties). To do this effectively we need to know what you are planning: type of event, where and when, sponsoring groups, contact persons, address and phone numbers . . . as much information as you can give us. Send this information to the Coalition for a Non-Nuclear World (CNNW). From this we will compile a list to send to the national media. We will also send each local action a copy to distribute to local media, along with fact sheets on TMI and materials on the CNNW.

We see this weekend as an opportunity to spread the word about the April 26-28 actions. To do so we ask that the publicity for your March 28-30 event include information about Coalition activities April 26-28; that you have thousands of leaflets about April activities at your TMI event to give to participants so they can spread them to others; that you sell bus tickets to Washington; that you sign up people for non-violence training; and that you include CNNW activities in all your media work. You could also distribute literature linking the TMI accident to the four non-nuclear power demands of the Coalition, particularly Zero Nuclear Weapons.

Harrisburg Demonstration

General housing will not be available. The March 28 Coalition is not equipped to house large numbers of people. Those who cannot get to TMI and back in one day are not encouraged to come. Large numbers of people travelling long distances to TMI in March may mean fewer in Washington in April, due to limits on resources, time and willingness to travel.

Small delegations are invited to come from every state. They can be chosen at regional meetings. They should contact the March 28 Coalition in Harrisburg so housing arrangements can be made. These delegations can then go back to their local areas and report to groups and the media what is happening at TMI, as well as on the Coalition.

If you are within driving distance of TMI and plan to come to the March 29 rally, we hope you will organize an event on March 28 or 30 in your community. The more events there are nationwide the more impact we will have.

Armbands

The March 28 Coalition is selling armbands with the message TMI—NEVER AGAIN and a logo. Cost per armband is \$1.00 (1-9), \$0.80 (10-49), or \$0.60 (50+). Order from the March 28 Coalition, 1037 Maclay Street, Harrisburg PA 17103.

POOR ORIGINAL

March 28 Coalition

1037 Maclay Street, Harrisburg, Pa., 17103

717-233-NUKE

TMI

IS NOT OVER

On March 28, 1979, the accident at Three Mile Island began. Our lives have not been the same since. We have all tried to lay our fears to rest, to return to the normal pace of life. But hardly a week passes without a new government report, a new public hearing, a new release of radiation "within acceptable limits." We know that the containment building is filled with high-level radioactive waste and that the utility can release the gases and dump the water at any time-- it need only declare an emergency. And we know that the utility plans to spend at least 400 million dollars of our money to put both reactors in use again. This is our chance to tell the world that TMI must never reopen. This is also the time that we need the support of our friends and neighbors: in airing our fear and anger, in celebrating the fact that we are still alive, and in putting forth a united front to overcome the money and power of the nuclear industry.

THIS IS OUR CHANCE TO SHOW OUR STRENGTH AND UNITY

The March 28 Coalition, consisting of groups and individuals from the Central Pennsylvania area, is planning two major areawide events to commemorate the beginning of the accident at TMI. On Friday evening, March 28, we will sponsor an inter-faith service and candlelight vigil at the Grace Methodist Church in downtown Harrisburg. Saturday, March 29, a rally will be held overlooking TMI. There will be nationally known speakers and musicians, but most of the rally will be devoted to speeches, entertainment and displays by local people. When the eyes of the world turn to us on March 28, it is most important that they see the people of Central Pennsylvania, the people who are most directly affected by the ongoing accident.

JOIN US NOW AND ON MARCH 28-29

Bring along your friends and neighbors even if they have not yet been to an anti-nuclear event. The March 28 Coalition urges you to volunteer your time to prepare for these events and to contribute money. We are now selling commemorative armbands, which will be worn at events around the world on March 28 and 29. Please buy an armband and plan to wear it then-- and buy ten more to sell to your friends to help us raise money for the Coalition. Call us at 717/233-NUKE to volunteer.

Anti-Nuclear Group Representing York; Chesapeake Energy Alliance (Baltimore); Coalition for Renewable Energy Resources (Elizabethtown); Keystone Alliance (Philadelphia); Lepoco (Allentown-Bethlehem); Newberry Township Steering Committee; Peach Bottom Alliance; People Against Nuclear Energy (Middletown); Susquehanna Alliance (Lewisburg); Susquehanna Valley Alliance (Lancaster); Three Mile Island Alert (Harrisburg). Endorsed by the Mobilization for Survival and the Environmental Coalition on Nuclear Power.

Please give YOUR support today!

Enclosed is \$ _____ as a contribution.

Enclosed is \$ _____ for _____ armbands.

name _____

(1-9 armbands @\$1.00; 10-49 @\$1.80; 50-99 @\$2.60
for 50 or more. Delivery after February 15

**SEND YOUR
ORDER TO**

March 28 Coalition
PO Box 481
Harrisburg, Pa, 17108

zip _____

phone _____

POOR ORIGINAL

March 28 Coalition

1037 MacLay Street, Harrisburg, Pa., 17103

717/233-NUKE

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name

(1-9 armbands @\$1.00; 10-49 @\$.90; @\$.60
for 50 or more. Delivery after February 15

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ORDER TO**

March 28 Coalition
PO Box 481
Harrisburg, Pa. 17108

zip

phone

TMI UNIT NO. 1 PROCEEDINGS
BEFORE
ATOMIC SAFETY AND LICENSING BOARD

POOR ORIGINAL

By Order dated July 21, 1979, the Nuclear Regulatory Commission ordered the closing of the undamaged reactor at TMI Unit No. 1. On August 9, 1979, the NRC issued another Order designating an Atomic Safety and Licensing Board to hold hearings concerning the reopening of the plant. TMIA has intervened in these proceedings.

Some of the issues that TMIA has requested the Board to consider are these eight:

1. The effect that the reopening of Unit No. 1 will have on the physical health of the population located near the plant.
2. The effect of additional radioactive discharges on the water quality of the Susquehanna River.
3. The effect that reopening will have on the psychological health of area residents; that this will adversely affect the economy because employees will be absent from work due to mental anxiety, people will leave the area and their jobs, and new businesses will refuse to locate in the area.
4. The inability of local and state officials to deal with civil unrest that may occur if Unit 1 is reopened. Additionally, disruptions cannot be dealt with by the licensee, Metropolitan Edison without danger to Unit 2 which will remain contaminated for many years.
5. The inability of Met-Ed to safely operate the unit.
6. That Met-Ed and GPU do not have the financial capability to operate a nuclear facility.
7. The inability of Met-Ed and the NRC to deal with a serious accident at Unit No. 1 while Unit No. 2 remains contaminated.
8. That an Environmental Impact Statement must be filed prior to reopening Unit No. 1.

TMIA has retained the law firm of Widoff Reager Selkowitz and Adler, P.C.. The firm is experienced in representing clients before the NRC and is familiar with the Atomic Energy Act and the National Environmental Policy Act. TMIA feels that the reopening of Unit No. 1 presents a clear and present danger to the people of Central Pennsylvania. With adequate support, TMIA is convinced that it can demonstrate to the NRC, and to the Courts, if necessary, that Unit No. 1 must remain closed forever.

For more information on the intervention, contact:

THREE MILE ISLAND ALERT
315 Peffer Street
Harrisburg, Pennsylvania

(717)233-7897

WHY NOT ENGAGE IN PREVENTIVE MEDICINE?

WHY WAIT FOR THE CATASTROPHE?

(ABSTRACT OF A LECTURE GIVEN BY RALPH NADER, 7/19/79)

Nuclear power now, given the disclosures of the last ten years, and the accidents at Browns Ferry, TMI, Fermi reactor and elsewhere, simply cannot withstand critical scrutiny, whether on economic, or safety, or liability grounds. From an economic point of view, if you take into effect the present and long term costs of nuclear power, including the storage of radioactive waste, including the safeguards against theft, sabotage, terrorism, including the problems of uranium tailings blowing radon gas over huge areas of the west, near uranium mines, including the problems of transporting by rail and truck, thousands of times every year, radioactive materials such as spent fuel rods, and in terms of trying to restrict the proliferation of nuclear weaponry all over the world, which is often facilitated by the sale of U. S. nuclear reactors to other countries.

These are enormous costs, and if they're all cranked in together with the cost of decommissioning the nuclear plants, what do you do with them after thirty years when they wear out, and they're still radioactively hot, whether to entomb them and guard them forever, or break them up into bits of radioactive waste, and try to find some geological substructure that will hold for a quarter of a million years for their safekeeping. All of this makes any comparison with other forms of energy one that's easy in terms of alternatives.

The folly of a nuclear future.

This, of course, does not take into account just one major nuclear power plant catastrophe. And here is where, from a policy point of view, it is folly to place the energy future of our country in a nuclear basket, where one major nuclear catastrophe would mean the end of the industry.

People can tolerate a lot of tragedy. They can tolerate the tragedy of coal mines, of offshore drilling station disasters, of continual pollution. They cannot and will not tolerate the uninhabit-

ability of a significant portion of this country for hundreds of years, or decades, and if there is a major nuclear power plant catastrophe, it amounts to one bite of the apple, and that'll be the end. Now when I asked that question of some pro-nuclear advocates, such as Dr. Alvin Weinberg, former head of the Oak Ridge Lab., and Senator John Pastore, I said: "What is your prediction if there is a major nuclear power plant catastrophe?" And they said that it would spell the end of the nuclear industry. Politically it would be untenable. Well, we can see that even TMI shook the industry to its foundations, and such an enthusiast for nuclear power as chairman Hendry of the Nuclear Regulatory Commission stated: " One more TMI would spell the end of the industry. "

Now if it's that unstable, and knowing human frailty and technology throughout history, if it's that unstable, why wait? Why wait for the catastrophe? Why not engage in preventive medicine, to foresee and forestall the risks? We really have two choices. We either wait for a catastrophe, and then the industry will be stopped, or we stop it now.

Is nuclear power necessary?

There is only one major barrier, which is easily refuted or overcome, and that is the feeling on capitol hill and elsewhere that somehow nuclear power is necessary. Nuclear power now accounts for three percent of our total energy consumption. Twelve percent of electricity, but only three percent of total energy. And so the question is, can we replace three percent of our energy with the fifty percent that we waste? If there's a figure that's been supported by more studies in the energy area than the 50% waste figure, I haven't seen it. Conservation can save us more electricity than nuclear (even given its optimistic projections which are not to be fulfilled) will give us. The American Institute of Architects in 1975 put forth a very detailed report showing

(over)

in dollars and cents, in technology that's here, that for less of an investment, retrofitting existing buildings for energy efficiencies, and establishing designs for new buildings will save far more energy than any one of the following sources: by 1990 coal, natural gas, domestic oil, or nuclear power. The savings were estimated at the equivalent of 12.5 millions of barrels of oil a day by 1990. Since 1975 the AIA figures have proven to be conservative, because the price of these fuels has gone up much sharper than the projections in the AIA study four years ago. The AIA study and other studies also showed that not only is there less investment with the conservation alternative, but there's less pollution, there's more jobs, less capital drain from needed areas of the economy, and there's less waste of water. Synfuels of course are an enormous devourer of water, particularly in the west, where it's badly needed by ranchers and farmers.

Sunfuels, not synfuels.

The emphasis by the White House on synfuels in recent weeks comes against the advice of the president's key economic and budgetary advisors, as well as environmental advisors, who have not spoken up publicly, but who think that synfuels are uneconomic, unsafe, unnecessary and unreliable. The synfuels drive started, politically speaking, in congress a few weeks ago, with the Morehead bill. But I tend to become impressed, when I see an almost unanimity of liberal and conservative economists denouncing a government program. And in this case, in the last three weeks, economists of all persuasions have said that this is madness. That whenever you get a government program that subsidizes the cost of manufacturing the fuel, and then subsidizes the purchase price which will be set above the world cartel price, you tend to wonder about the likely incentives for efficiency on the part of Mobil, or Exxon, or Peabody Coal, or whoever will reap the benefits of this double-header taxpayer subsidy. I think the motto should be "Sunfuels, not synfuels".

(This is an abstract of a lecture given by Ralph Nader at the National Institutes of Health, on July 19th, 1979). The entire transcript is available from the Solar Transition Committee at NIH/NIMH, Building 37, Room 4C28, NIH, Bethesda Md. 20205.

— Printed and distributed by the Solar Transition Committee at NIH/NIMH.

POOR ORIGINAL

TMI

Who will pay?

The recent accident at unit 2 of the Three Mile Island nuclear power plant has clearly demonstrated Metropolitan Edison's total disregard for the welfare of the residents surrounding the power plant. Not only do they belch radioactive gases into the air, Met Ed lies about the impact.

But Met Ed hasn't lied about the impact of the accident on our wallets. It wants us to pay for its negligence and incompetence.

WHAT'S HAPPENING ?

On March 29, the Public Utility Commission granted Met Ed a \$49 million rate increase. \$45 million of that was directly as a result of the inclusion of unit 2 in the rate base. According to public utility law, the P.U.C. can only charge its customers for a power plant that is operational. The increase for unit 2 will not go into affect until the P.U.C. approves the actual rate structure submitted by the utility.

But not only does Met Ed want to soak its customers for operating unit two, it wants to soak them again for not operating it. Through that neat little loophole known as the net energy clause, formally called the fuel adjustment clause, Met Ed can automatically pass through to its customers an additional \$7-\$8 per month which it claims it costs to buy electricity from other utilities.

And what about the cost of clean up? Met Ed can not automatically pass through those costs to its customers. It must and surely will ask the P.U.C. for a rate increase to cover those costs.

WHO WILL PAY?

The P.U.C. must and will decide who will bear the cost of the accident at Three Mile Island.

Should the customers pay for a plant which is not operational and may never be?

Should the customers pay for electricity which Met Ed has to buy because TMI is shut down?

Should the customers pay for the cost of cleaning up an accident that Met Ed may have caused through its own negligence?

WHO WILL DECIDE?

The Public Utility Commission can and will decide on all three issues. The P.U.C. Commissioners are not elected officials but they are sensitive to public pressure. It was public pressure from consumer groups across the state that forced the P.U.C. to issue a ban on winter shut offs. It will be pressure from Met Ed customers that will stop the commission from making us pay for utility company mistakes.

Is nuclear power really cheap?

For years, utility companies and government officials have been telling us that nuclear power is cheap. If it is so cheap, why aren't utility companies building any more new nuclear power plants? If it is so cheap, why do utility companies that rely heavily on nuclear power have such high rates?

And yet electric rates do not pay the whole bill for nuclear power? The nuclear industry would not exist without heavy subsidies from the federal government.

The government assumes liability for a nuclear accident (up to \$560 million) because no private company is willing to take the risk.

The government is supposed to monitor radiation from the plant.

The taxpayers pay for civil defense.

The taxpayers pay most of the cost of waste disposal.

And nobody has decided who will pay the cost of decommissioning a nuclear power plant.

MAKE MET ED PAY

ROLL BACK THE RECENT RATE INCREASE

FREEZE THE NET ENERGY CLAUSE

STOP THE PASS THROUGH OF CLEAN UP COSTS

END GOVERNMENT SUBSIDIES FOR NUCLEAR POWER

PENNSYLVANIA ALLIANCE

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POOR ORIGINAL

THE THREE MILE ISLAND INCIDENT: WHAT TO DO ABOUT IT

The accident at the Three Mile Island plant has aroused public concern and even many of those formerly advocating nuclear power are asking for a reappraisal. This will require a massive public education effort.

These recent events have also made this a particularly appropriate time to approach members of Congress with your concerns and specific suggestions for a safer and more economical energy policy, promoting more efficient use of energy and clean, renewable sources of power.

1. Repeal Price-Anderson

Although "worst-case scenarios" indicate that a meltdown could take thousands of lives, cause up to \$17 billion in property damages, and contaminate an area the size of the state of Pennsylvania, the Price-Anderson Act sets an extremely low ceiling on the liability of nuclear power plant owners and operators. The most that homeowners and others would receive in such instances is \$560 million, of which the majority would be paid by the federal government. Thus, the true costs of an accident would not be borne by the power companies, but by the taxpayers -- us. Incidentally, the recently repudiated Rasmussen report was used as a major justification for Price-Anderson.

2. Reform Siting & Licensing

It currently takes about 12 years to license and construct a nuclear power plant in the United States. Schlesinger and the Department of Energy are pushing to streamline procedures sufficiently to cut this time in half, although plants currently being built have over 30 unsolved generic safety problems.

3. Call for a Moratorium

Halt reactor construction until all safety questions, waste disposal methods, and other environmental problems are solved. Currently operating reactors should be gradually phased out.

4. Demand Safety Regulations

At this time, there are no established procedures which must be implemented in the event of a likely or actual accident. And, there are no provisions to protect the public from low-level radiation, partially because of the nuclear industry's loudly iterated claims that it is harmless.

Some Pointers on Writing Letters

Letters should be brief, usually one page or less. A concise representation of facts intermixed with your personal feelings will have impact.

Make a specific demand of the legislator. Do you simply want him/her to reconsider the nuclear option? Or, do you want him/her to introduce, cosponsor, or support specific legislation?

Then give reasons for your position in a reasonable manner. Explain how nuclear power affects your community. Examples of safety problems at a local nuclear plant would be especially pertinent in light of the recent accident.

The "sandwich technique" is often effective. Start your letter with something positive, use the middle for criticisms and/or complaints, and end with a positive proposal.

It is often more effective to write as an individual than as a member of a particular anti-nuclear group. Try to put yourself in the position of your elected representative, who is probably concerned about being re-elected, and providing jobs and security for his/her constituents.

Ask your Congressperson to make a clear, specific commitment on the nuclear issue.

If possible, know your Congressperson's past voting record on bills relating to nuclear power and conservation and alternative energy sources. Examples and insights concerning those votes can be included in your letter. Complement him/her on votes you felt were positive.

Offer to supply more information on the issue. Clip and send relevant newspaper articles and references.

Multiply Your Efforts!

Ten letters and calls are better than one, and more are better still. By following these recommendations, one person can help generate a great deal of Congressional outreach, which, particularly at this time, could have a tremendous impact:

- 1) Write a letter, call, or visit all of your representatives. This includes not only the two Senators from your state, the Representative from your district, and President Carter, but your state senators and representatives as well.
- 2) Ask 7 friends and relatives to do the same. Check back with each to offer encouragement for the effort involved. Ask each of them to involve 7 more people. One effective way of organizing is to hold a letter-writing party.
- 3) Take a stack of paper and envelopes to every meeting or gathering you attend in the near future. Request 15 or 20 minutes of the agenda to write letters. Be sure to provide appropriate information (especially the names and addresses of those to whom you are writing!).
- 4) Form a letter-writing workgroup to continue this work, and join the CONNECT network. Organizing handbooks are \$5.00, and a \$12.00 contribution is requested for a subscription to the monthly legislative update.
- 5) Make copies of this sheet for others who might become involved.

POOR ORIGINAL

The medical literature has reported a striking increased incidence of cancers, leukemias, and genetic defects in individuals exposed to radiation while the nuclear industry exposes us daily to increasing amounts of low level radiation.

The association of low dose prenatal x-ray exposure and leukemia has been known for years, and it is clear that the developing fetus may be particularly sensitive to ionizing radiation.¹ Irradiation to young women for benign menstrual disorders increased their risk of leukemias.² Children irradiated for ring-worm of the scalp and enlarged thymus glands have had an increased incidence of leukemia as well as higher numbers of thyroid cancers even with doses as low as 6 rads while 5 rems is the allowable exposure for radiation workers.³⁻⁷ Both rads and rems are units of radiation exposure and are identical for gamma or x-ray radiation. An excess leukemia and myeloma incidence was noted amongst radiologists practicing 1920-1949 who worked with low level radiation for prolonged time periods.⁸

Keeping in mind the strong correlation between radiation exposure and cancers and genetic defects, we examine the health effects of nuclear power production and nuclear weapons which depend upon ionizing radiation and increase the amount of radiation to which each of us is exposed.

In 1965, Wagoner reported in the New England Journal of Medicine an increase death rate from lung cancers in uranium miners which correlated with the amount of airborne radiation the workers inhaled.⁹ In 1972, the New England Journal of Medicine published Bross' study that children irradiated in utero who also had allergies, had a ten-fold increased incidence of leukemia demonstrating that individuals have varying thresholds for disease occurrence when exposed to low levels of radiation.¹⁰ Since 1974, we have been aware of the increased development of leukemias, lymphomas, and cancers affecting

thyroid, breast, lung, esophagus, stomach, and bladder in Hiroshima survivors.¹¹ In 1977, Mancuso and Stewart reported on the largest study of nuclear workers ever undertaken demonstrating an increase of cancer of the pancreas and myeloma in Hanford nuclear plant workers.¹² In May, 1978, the Lancet published Najarian's study reporting the nuclear submarine workers at Portsmouth Nuclear Shipyard were alleged to have radiation exposures well within the national limit per year had a six-fold excess leukemia and a two-fold excess cancer mortality rate as compared with nonnuclear workers who performed the same daily jobs but without nuclear radiation exposure.¹³ Evans has recently reported that dockworkers exposed to radiation well within the acceptable maximum permissible level of 5 rems/year had a significant increase in chromosomal damage which increases proportionately with dose, thus confirming our fears that even low dose radiation is associated with changes in our genetic makeup.¹⁴

The evidence is solid for an association between radiation exposure and disease. The already deceased of Hiroshima, the leukemic children of Utah, and the young adults with cancer have told us something. Let us listen. We cannot allow our society, that is the inhabitants of Plymouth, or Portsmouth, or Boston, or Pennsylvania to be the study grounds demonstrating what we have already seen. Radiation exposures can cause cancers and genetic defects. No level of radiation is so low that it is free of risks.

- Katherine L. Kahn, M.D.
Department of Medicine
Newton-Wellesley Hospital
Newton, Massachusetts

(Material reprinted from Physicians for Social Responsibility)

NEW CUMBERLAND ENERGY ALLIANCE

NUCLEAR FACT SHEET

For years, the nuclear industry, the utilities and the U.S. government has been telling us that nuclear power is clean, safe and inexpensive. We feel that you should know the other side to these arguments. Here are a few random facts that will help you make up your own mind about nuclear power. Did you know that:

1. By the end of the century, government estimates there will be one billion (1,000,000,000) cubic feet of nuclear waste in the U.S.
2. No method for long-term storage or disposal of these wastes has been proven (two recent studies by federal task forces indicate that storage in underground salt beds is not the answer).
3. In June 1973, 115,000 gallons of high-level radioactive waste had leaked from a tank at the federal waste storage facility. A number of scientists studying the Hanford, Washington facility, say that the plume of this discharge is beginning to approach the water table.
4. A particle of plutonium the size of a grain of pollen causes lung cancer if inhaled.
5. A typical nuclear power plant produces several hundred pounds of plutonium each year.
6. It takes plutonium half a million years to lose its killing power (half-life of 24,000 years x 20).
7. It will cost at least 40 million dollars to clean up TMI Unit 2. It is still not determined whether the ratopayers and citizens of Central Pennsylvania will be asked to pick up this cost. It will take 2 - 4 years to accomplish the cleanup.
8. It is more economical to save energy, by using it more efficiently, than it is to build new facilities to produce more power.
9. Northern Europe (including West Germany) uses 40 per cent less energy than the United States (per person) yet maintains an equal standard of living with ours.
10. Nuclear power plants have construction costs that are typically 20 per cent more than those of fossil fuel plants.

Nader report doubts figures on radiation

POOR ORIGINAL

GPU tied to analyst at 3 Mile

WASHINGTON — A Philadelphia firm that is owned by six utilities and has close ties to the operator of the Three Mile Island nuclear power plant was hired by the government to analyze radiation data during the emergency that began March 28 at the plant.

That information was disclosed in a report released today by anti-nuclear and health groups under the direction of consumer activist Ralph Nader.

The report concluded that its findings demonstrate a "potential" conflict of interest, illustrate that the federal Nuclear Regulatory Commission (NRC) continues to rely on information furnished by the utilities, and cast doubt on the announced levels of radiation exposure in the vicinity of Three Mile Island. The plant is about 10 miles southeast of Harrisburg, Pa.

An NRC spokesman acknowledged that the agency had hired Radiation Management Corp. (RMC) of Philadelphia, which was founded by a group of utilities that included General Public Utilities Corp.

General Public Utilities (GPU) is the parent company of Metropolitan Edison Co., Pennsylvania Electric Co. and Jersey Central Power & Light Co., owners of the Three Mile Island plant.

However, the NRC spokesman said that the Philadelphia firm's radiation work was checked with government and private organizations and was proved accurate. He said his agency hired RMC to get fast, accurate results.

"We are now considering whether we should build up our own capability so we can respond more rapidly," he said.

While GPU does not hold an equity interest in RMC, the Nader report included a chart obtained from RMC sources entitled "Non-nuclear owner assessments," which showed that General Public Utilities made a \$12,500 "capital investment equivalent" in RMC and a "total contribution" to RMC of \$571,129 from 1969 through 1974.

Only one of RMC's eight founding utilities made a larger "total contribution."

Stephen Kim, executive vice president of RMC, said that the \$571,129

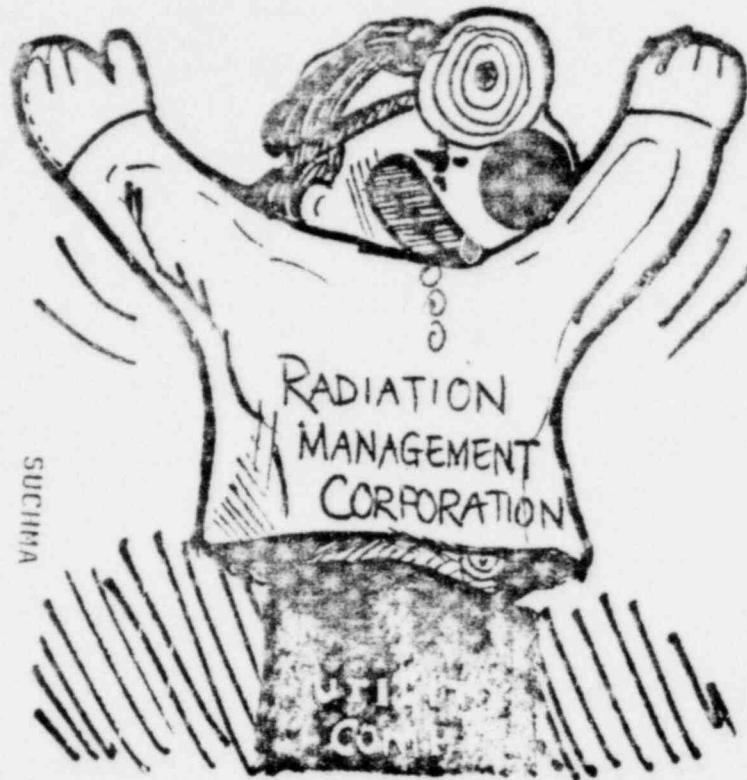


figure should have been characterized as "fees for service."

He described General Public Utilities as a customer that sends a non-voting representative to RMC board meetings and owns no stock in RMC.

Nader investigators insisted, however, that GPU had "a vested interest" in RMC, which has headquarters in the University City Science Center near the University of Pennsylvania campus.

Moreover, the Nader report says, a 1975 internal RMC report shows that RMC and its six utility stockholders were aware of a mounting conflict-of-interest problem four years ago.

"It is no longer feasible for operating utilities to have any ownership in advisory service companies which must render objective judgments about ecological and safety factors in the utilities' economic processes," the internal document said.

Continued ownership by the utilities, the document noted, "subjects the utility officers who sit on the RMC board of directors to increasing conflict-of-interest pressures."

Kim said he could not remember

seeing the document and did not see any problem.

"It's immaterial who owns us," he said. "We have the most precise, most accurate system and that's why they (the NRC) came to us."

In a press release issued by the Critical Mass Energy Project, one of the Nader groups, General Public Utilities was described incorrectly as an RMC owner.

Richard Pollock, project director, said he was "embarrassed" by the error. Nevertheless, he said, "discussions with our sources (in RMC)" disclosed that General Public Utilities is "an influence" on RMC policies.

Pollock noted that the NRC's "lack of independence" has been a subject of debate for years. Studies by the U. S. General Accounting Office, an NRC consultant and the Union of Concerned Scientists, an anti-nuclear group, have charged that the government agency leans too heavily on information supplied by manufacturers and utilities in the nuclear power industry.

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THREE MILE ISLAND ALERT
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The Philadelphia
Inquirer

Danger in Pennsylvania

Exxon Moves to Mine Uranium in State

URANIUM MINING AND MILLING ARE THE MOST SIGNIFICANT SOURCES OF RADIATION TO THE PUBLIC FROM THE ENTIRE NUCLEAR FUEL CYCLE -- FAR SURPASSING NUCLEAR REACTORS AND HIGH LEVEL RADIOACTIVE WASTE DISPOSAL

- Nuclear Regulatory Commission

"... OUR RESEARCH INDICATED THAT TWELVE FEET OF CLAY ARE REQUIRED TO REDUCE RADON EXHALATION BY 99% AND THE REMAINING 1% IS STILL ABOUT FOUR TIMES THE TYPICAL SOIL RADON EXHALATION RATE. PERHAPS THE SOLUTION TO THE RADON PROBLEM IS TO ZONE THE LAND IN URANIUM MINING AND MILLING DISTRICTS SO AS TO FORBID HUMAN HABITATION."



- from the Los Alamos Scientific Laboratory Mini Review February 1978

THE DEPARTMENT OF ENERGY ESTIMATES THAT THOSE PERSONS LIVING WITHIN ONE MILE OF URANIUM MILL TAILINGS HAVE A 100% GREATER RISK OF BECOMING AFFLICTED WITH RADIATION INDUCED LUNG CANCER THAN THE GENERAL POPULATION.

DURANGO, COLORADO - 1.6 million tons of tailings piled 230 feet high and spread over 146 acres. The edge of the pile is about 600 feet from Main Street. According to an article in The Bulletin of the Atomic Scientist (September, 1975), Radon 222 will continue to be produced from a tailings pile for more than a million years.

FALL RIVER COUNTY, SOUTH DAKOTA - Because of uranium mining and milling in the 50's and 60's near Edgemont, S.D., Fall River County has a 50% higher cancer rate than the rest of the counties in the state.

SHIPROCK, NEW MEXICO - Until the 1970's Kerr-McGee, a major uranium producer, operated a series of uranium mines and a uranium mill in the Navajo nation. After the mines ran dry, Kerr-McGee moved out, abandoning mine shafts and a highly radioactive uranium mill. In 1974, it was learned that 18 of 100 Navajo uranium miners employed at the mines had contracted and died from radiation-induced lung cancer. According to the National Indian Youth Council, as of 1978, 25 had died and 45 more now have radiation-induced lung cancer.

CANONSBURG, PENNSYLVANIA - (Fifteen miles from Pittsburgh)
There is a controversy at the present regarding who will purchase an industrial park that was found to be built on top of 17 acres of old mill tailings. According to Public Law 95-604, Uranium Mill Tailings Radiation Control Act, the federal government is responsible for 70% of clean up and state government is responsible for 10% of such clean up (taxpayers. . .Not the previous operators of milling operations!!) There is disagreement on who should purchase the area from the private owner. In 1977, ERDA discovered that the site was releasing radon gas. What was a 14 industry area has dwindled to 3 companies and 2 tenants. The others have moved. The DOE has discovered off-site contamination from times when the property was vacant and people took boards, bricks, etc. and used them in their homes. In certain areas, on-site radiation levels run higher than NRC safe standards for uranium miners inside mines!

CARBON, LUZERNE, MONROE COUNTIES, PENNSYLVANIA - EXXON Corporation is presently exploring 50,000 acres of privately owned land for deposits of usable uranium.

We can not tolerate the mining and/or milling of uranium in Pennsylvania! Since there are no state laws requiring a company to report their findings, we won't know what EXXON has discovered until they request a license from the Nuclear Regulatory Commission to mine and mill uranium in Pennsylvania. Tailings from such operations are NOT confined to the immediate area. They are easily carried by wind and washed into water supplies of the entire region. There is no satisfactory way to dispose of tailings. The isotopes of Radon emitted from tailings have properties that cause them to be deposited in bronchial tissue - where they continue to emit radiation in high doses to the area of the lung most likely to become cancerous.

WE MUST BAN MINING AND MILLING OF URANIUM FROM PENNSYLVANIA

Write your State Congressman and Senator immediately letting them know how you feel on this issue.

Write the NRC insisting they not issue a license for anyone to mine/mill uranium in Pennsylvania:

Nuclear Regulatory Commission
Region I
631 Park Avenue
King of Prussia, PA 19406

FOR MORE INFORMATION CONTACT: Three Mile Island Alert, Inc.
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Insurance companies find the risks of
atomic energy too hot to handle

POOR ORIGINAL

Nuclear Power: Uninsurable

HERBERT S. DENENBERG

Is the present state of nuclear power technology safe? One way to answer this basic question is to analyze the scientific dispute about possible nuclear accidents and their consequences. But there is an easier way, and that is to examine the willingness of the nuclear establishment itself to assume financial responsibility for accidents and their consequences. This is a good measure of the safety and reliability of the technology. If there is inadequate evidence and experience on which to base a firm judgment on the insurance and economic risk of nuclear accidents, is there enough evidence and experience to justify putting human life at risk?

The Price-Anderson Act, enacted by Congress in 1957, limits liability for any one nuclear accident to \$60 million dollars regardless of the number of victims or the dollar value of the loss. This liability is paid by private insurance to the extent of its availability, and the balance is the responsibility of the Federal Government. The Act promises to make payment of its liability in an indemnity agreement with each nuclear power plant owner, for a premium much lower than that which would be charged by a commercial insurance company. In 1957 the private insurance industry made \$60 million in liability insurance available for each incident, thus leaving \$500 million in liability for the Federal Government. The amount of insurance has been gradually increased to \$110 million, leaving \$450 million in Federal liability at the present time.

Thus, since 1957 the nuclear establishment has been

Herbert S. Denenberg, former Insurance Commissioner of Pennsylvania and professor of insurance at the Wharton School of Finance and Commerce, is now chief counsel to the Pennsylvania Public Utility Commission.

protected from any liability to the public in accordance with the Price-Anderson Act. It buys whatever insurance is available, pays another premium for the indemnity agreement, and then has no further financial responsibility for losses suffered by the public. If a nuclear catastrophe were to cause damage beyond this limit, there would be no legal responsibility on the part of anyone for payment to those who suffered death, injury, or property loss.

The Price-Anderson Act, according to its proponents, is designed to protect the public as well as the nuclear industry. This claim is based more on public relations rhetoric than on actual financial analysis. It would have been possible to protect the public without limiting the responsibility for nuclear losses inflicted on the public. In fact, this must be considered a strange method of protecting the public, since its main thrust is to limit the amount of money available to the public and to shield the nuclear industry from legal responsibility.

The Price-Anderson Act is continuous proof that our present nuclear technology is not safe enough to permit those who control it to be financially responsible for its consequences. This was dramatically illustrated at hearings of the Pennsylvania Insurance Department in August 1973. The engineer of one nuclear manufacturer claimed that the technology was perfectly safe. The lawyer of the same firm insisted on a limitation of liability as contained in the Price-Anderson Act. Thus, the nuclear establishment seems to be talking out of both sides of its mouth at the same time: The public relations side said nuclear power is safe, while the economic side said that nuclear power is unsafe.

The \$60 million dollar limit of Price-Anderson protection may seem like a lot of money, but in the face of a

nuclear accident it could be peanuts. Several studies conducted by the Atomic Energy Commission (AEC) and by other experts have indicated that the damage from one nuclear accident could run to \$17 billion or more.

The people who build and run nuclear reactors are telling the American people that they do not trust their own creation. There is no reason why the American people should have more confidence in nuclear reactors than the experts who build and own and run them.

The insurance industry shares the fear of the nuclear establishment. It would not pay more than \$10 million for such incidents in liability work, even though it will go on the line for far greater amounts for other risks. In fact, the insurance industry grows more fearful of nuclear power as the technology "matures." During the Pennsylvania hearings in 1973 on nuclear safety, it was pointed out that the commitment of the insurance industry to cover nuclear reactors had decreased since 1957 as a percentage of industry-wide surplus and assets. And the real value of the \$60 million dollar limit had been dramatically reduced by inflation.

Even the Federal Government, with its immense financial resources, is unwilling to assume full responsibility for nuclear accidents; it limits its liability under the Price-Anderson Act as surely as the nuclear industry itself. Since the passage of the legislation, the Government has been lessening its liability rather than assuming more.

Under the 1974 amendments to the Act, the Government's responsibility will be further decreased, and will eventually be phased out altogether. If the chances of major nuclear catastrophes are small, why is Congress so slow to assume full responsibility and so quick to get out of even limited liability?

The answer seems to be that even the Government does not have the financial capacity and willingness to compensate for the billion-dollar catastrophes that might be generated by our nuclear technology. This is why we must conclude that nobody could write the insurance policy we need on nuclear power plants.

Even if the Government were to remove the present limit on liability, it would still not be assuming full responsibility for nuclear accidents. There are potential losses due to nuclear radiation that cannot be properly or adequately compensated because of the difficulty of proving a causal link between a nuclear incident and delayed radiation injury. There is also the unsolved legal problem of compensating for genetic injury and life shortening caused by radiation from nuclear power plants. In addition, claims for delayed radiation injuries may be precluded because of the statute of limitations. Only in the case of an "extraordinary nuclear occurrence," as restrictively defined by law, does no-fault responsibility exist for nuclear damages. And the AEC's determination of whether or not an "extraordinary" occurrence existed is *not* subject to judicial review.

Finally, even if there were no limits of responsibility and even if the Government were willing to assume full responsibility for all kinds of nuclear related accidents and damages, there could not and would not be full protection to the public because no one knows what damage has already been wrought by the operation of nuclear power plants.

The nuclear industry has not adequately monitored low-level radiation releases, and neither the industry nor scientists have adequate information about the harmful effects of such radiation. This was recently affirmed by a blue-ribbon committee appointed to the governor of Pennsylvania on the Shippingport Nuclear Power Station. The committee concluded: "During the course of the investigation it became apparent that current, as well as past, environmental radiation monitoring programs are inadequately designed and carried out for determining the impact of radioactive releases on the environment. Environmental monitoring programs conducted in the vicinity of the reactor have not been properly reviewed by a qualified health physicist on a timely basis. Apparently, no qualified health physicist was in the employ of the Duquesne Light Company."

Despite claims, therefore, that no member of the public has been injured by a nuclear incident, the fact is that the nuclear industry does not even know what it is doing to the public. It has had about twenty years to work on this problem, and it has not even begun to handle it properly. This outrageous failure to protect the public was not uncovered by Congress or by the AEC, but was left to be documented by an ad hoc committee at the state level. At this late date, there has been no full-scale public health review of the impact of various kinds of nuclear facilities.

This kind of failure is all too typical of the performance of the nuclear establishment. On August 15, 1974, *The Wall Street Journal* reported that Consumers Power Co. of Michigan had been fined \$19,000 for violations that included failure to control radioactive releases and to perform required safety review functions. A front page story in *The New York Times* on August 25, 1974, reported that AEC inspections of nuclear facilities uncovered deficiencies in more than one of three cases. During the year ending on June 30, 1974, the AEC inspected 3,047 facilities and found 3,333 violations in 1,288 of them. Ninety-eight of these were in the most serious of three categories of violations. The AEC imposed punishment on only eight occasions.

A 1957 AEC study known as WASH-740 estimated the consequences of a major nuclear disaster to be 3,400 deaths, 43,000 injuries, and billions in property damage. In 1965, an updating of that study raised the estimate to 45,000 deaths, 100,000 injuries, long-term contamination of an area the size of Pennsylvania, and property damage of 17 to 280 billion dollars.

The AEC attempted to discredit its 1957 study by claiming it was unduly pessimistic, reflecting only the "worst possible" combination of events. In analyzing

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Foreword by:

Richard Pollock, Director,
Critical Mass Energy Project,
Nader Consumer Group



"The hours of tension these innocent people have had to endure never should have happened in our commonwealth. They never should have happened in this world today. The remainder of my term as governor will be dedicated from this moment to the proposition that it must not happen again."

Governor Richard Thornburgh
Pennsylvania

Televised address, 6 April 1979

"The accident at the Three Mile Island nuclear generating station will haunt this country for a long time. Bill Keisling, a Harrisburg native, has conveyed not only the events as they occurred, but also the sense of what happened to the nuclear industry. The road to recovery will be difficult, the future of nuclear power will hang in the balance."

William W. Scranton, III

Lt. Governor, Pennsylvania

"Democracy rises or falls on an informed citizenry. *Three Mile Island, Turning Point* is a case in point. We must know the story in depth, including its human emotions, because national policy and human destiny are at stake."

David L. McKenna, Ph. D.

President, Seattle Pacific University

"We have arrived at the crossroads of decision. We are not sheep. We can insist that the search for safe power be diversified so that we can make choices that will keep our children's future open."

Margaret Mead, Ph. D.

Reithook, March 1974



Afterword by

Ernest J. Sternglass, Ph. D.

Professor of Radiological Physics
University of Pittsburgh

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THREE MILE ISLAND ALERT

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BILL KEISLING

Three Mile Island

TURNING POINT

Introduction

BUCKMINSTER FULLER

Part I Flashback -- a descriptive, detailed account of the events on the day of the accident at Three Mile Island.

Part II Keisling, in an unbiased manner, presents the case for business, for government and for the public. The atomic age comes to Middletown, Pennsylvania as it will everywhere if the public continues to be poorly informed.

Part III The author pieces together the drama, fear and frustrations felt by all participants in, and potential victims of, the nuclear industry. Keisling clearly differentiates the idealized "blue print reactor" -- the kind which the industry has sold to the public -- and the "real world" reactor which is fraught with real world limitations.

Appendices.

Notes.

Epilogue.

COVER: 4-color process from a commissioned oil painting of the Three Mile Island nuclear complex, by a well known Northwest artist. 10 pt. CIS, varnished. Cover art wraps around onto back. Unique!

FORMAT: 9x6 in. Perfect Bound. PAGES: 176. ILLUSTRATIONS: 30+ Halftones and Line.

PUBLICATION: approx. 15 January 1980.

AUTHOR: the former editor of the magazine which forecast an accident at Three Mile Island; that magazine and the prophetic feature was mentioned frequently in national media (including TV) during the frantic days immediately following the accident. Pleasant, narrative style.

COMPETITION: none to date; this is the only book to thoroughly examine the human, mechanical, engineering and computer errors and malfunctions which nearly caused a disaster. Note too: the damage has not been corrected, and the NRC has just admitted that cleanup cannot be accomplished in less than two or three years if ever.

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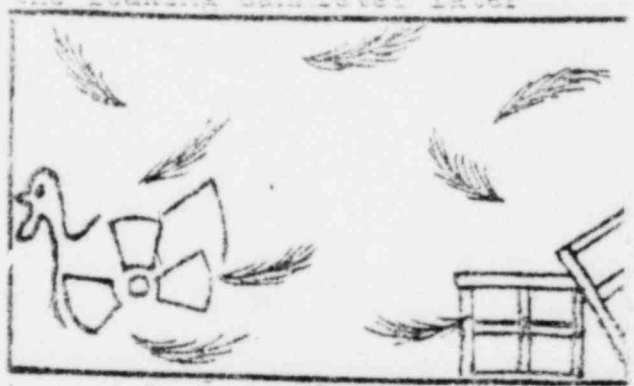
Cobalt & Turkeys Collide

By Mike Klinger

Late Sunday evening, January 10, on I-80 north of Pittsburgh, a tractor trailer carrying radioactive cobalt pellets destined for use in a NYC hospital collided with a trailer load of turkeys. On Monday morning WHP news initially reported a broken canister was emitting substantial amounts of radiation, .65 Rem/hr. to 4.0 Rem/hr.--"a major health hazard," according to Warren Bassett, administrator of nearby Brockville Hospital. WHP's coverage of the accident decreased and by mid-morning, the story was no longer broadcast. A fifteen-mile stretch of I-80 was closed off as state police waited for a DER radiation expert before getting close to the truck. The DER expert was stranded due to bad weather and didn't get to the scene until later in the day. The initial dangerous readings of .65 R/hr. to 4.0 R/hr. was supposedly taken by non-specified "authorities"; civil defense personnel later measured the radiation at less than 2 millirems/hr. I called Margaret Reilly, Chief of Environmental Resources--Bureau of Radiological Health, on Monday afternoon and she explained that the initial readings were inaccurate because the unnamed authority had to be "convinced" on how to properly read the instrument. Ms. Reilly said also that newspapers in the area were reporting persons coming in for

treatment of radiation exposure. These reports, she assured me, were inaccurate.

A lot of questions remain unanswered. Why was the story played down so quickly? Why did the leaking canister later



become "a crack in the trailer compartment"? Why was there such a large discrepancy in the figures? Why and how did a "major health hazard" in the morning become "slight" by the time it hit the Evening News? What if the accident had been worse? And finally when will DER, Civil Defense and State Police authorities provide for precise management and an escort for the shipment of radioactive substances and prohibit shipment of those potentially deadly substances in dangerous weather conditions?

In this case the cobalt was to be used beneficially for the treatment of disease. But there are thousands of pounds of much more deadly plutonium and other

capacities will be needed each year by this time. The operating nuclear reactors waste an amount of radioactive scientific technology that will not be able to date how to safely store it for thousands of years ahead. Expanding of on-site storage facilities like that which has been done at the West Point Station, Pennsylvania, is hardly a satisfactory answer. In the West Point case, the PUC, and even if they did not know how to handle it, they And yet "experts" suggest to try and sell as the power and safe. Nuclear should look at the tanks on the

GPU's Shell Game

by: Jim Jenkins
General Public Utilities, parent of Met-Ed, Pennelco, and Jersey Central Power and Light, is resorting to fancy footwork to stave off the lingering shocks of last March 23rd's "normal aberration." Its latest move involves creation of a subsidiary (GPU Nuclear Corp.) to operate and maintain its nuclear plants at TMI and Oyster Creek, NJ. Simultaneously, GPU merged the management of Pennelco and Met-Ed. The surprise announcement was made at the PUC investigation of Met-Ed's fitness to retain its operating license and the continuation of the TMI-1 reactor in the ratebase. Commissioner Johnson chastised Met-Ed a week earlier for failing to apprise the PUC of the impending merger. The move was characteristic of GPU/Met-Ed abruptness and penchant for surprise.

Met-Ed (33% TMI owner) and Pennelco (25% TMI owner) serve a combined total of over 800,000 customers. Nearly twice Met-Ed's current number of ratepayers will be affected by the merger. The management merger leaves the financial structure of both GPU subsidiaries unchanged. However, future merger developments may arise which would combine the

service areas and ratepayers under a new corporate entity. Pennelco is currently working to meet its financial obligations, leaving the cash flow dramatically impaired by the TMI-1 accident.

A PUC ruling on Met-Ed's request for an additional \$43 million in rate relief will follow the PUC's investigation and the TMI-1 decision. If such ruling goes against Met-Ed, likely the PUC will instruct Jersey Central and Pennelco to pay the PUC. It will be unfortunate for Met-Ed to lose, they have the stalwart ratebase of GPU's first in Johnston to turn to.

The American Nuclear Insurers Co. reports having paid over 1.3 million dollars so far to TMI families for expenses and wage losses. Eligible families were those within a 3-mile radius who evacuated after Governor Thornburgh's advice to pregnant women and pre-school children. This comes nowhere near compensating all affected area residents or local municipalities. But still we can't help wondering how the \$1.3 million in insurable liabilities affects the industry's "clean, safe and economical" formula.

Krypton Update

In recent issues of "The Alert", we reported on the threatened release of 2 million cubic feet of Krypton 85 gas from TMI 2's containment building into the atmosphere.

Met Ed submitted a proposal to vent the gas into the atmosphere under controlled conditions to the NRC in mid-December. The NRC has requested additional data in response to the company's proposal. The information requested is (1) Whether Met Ed has considered other alternatives (2) A cost and schedule for the alternatives and (3) Specific design features of both the venting operation and alternatives. (cont.)

PUC Input

In late December, Met Ed announced that small amounts of the Argonne gas are leaking from the containment building into the crippled reactor's non-nuclear system. When contacted by this reporter, Sandy Pollon, Met Ed's public relations representative, stated that as of now about enough to fill a nail polish bottle has leaked out. He also added that at the present rate of leakage, it would take about 2,000 years for all the gas to leak out of the containment building.

When Robert Arnold announced this leakage, he said, "I consider it to be of no consequence. The only mention is to point out the tremendous sensitivity of our instruments."

By announcing this small leakage, I think Met Ed is trying to pressure the NRC into a prompt, favorable and cheap decision for Met Ed--venting the gas into the atmosphere.

In late November, Joel Roth of IMIA, wrote a letter to President Carter opposing this venting. We ask you to do the same. Also contact your representatives and senators.



In early January Governor Thornburgh appointed Susan Shanahan to chair the PUC. Many of you will recall that Shanahan's appointment to the PUC in December, 1979 was opposed by a number of anti-nuke and consumer groups. Shortly after the January appointment, the Patriot reported that one of Shanahan's goals included developing "energy independent policies." The mentioned article, deal with anti alternative energy sources as well as be addressed and said the PUC will work closely with federal and state government consumers and utilities to develop the energy plans.

It's up to us to make the anti-nuke consumer heard in this planning process. Write to Shanahan today. Her address is:

Susan Shanahan, Chair
Public Utility Commission
P.O. Box 3265
Harrisburg, PA 17120

Legislation

Presidential commissions generally have about as much effect as a temperance union member at a brewery picnic.

The U.S. House of Representatives drove that message home once again as they voted for passage of the NRC authorization bill without any changes in the NRC structure or without any moratorium to keep the commission from acting until such changes were made.

In the most publicized of all the moratorium measures, the Markey Amendment which would have called a halt to licensing of new plants for a six month period, went down to a heavy defeat 135-254. The Pennsylvania delegation split was a little less overwhelming, 10-12 (with 3 non-voters).

Local congressmen voted unanimously for the Markey Amend-

(cont.)

ment. The nearest legislator to vote "nay" on Markey was conservative Congressman Bud Shuster, representing Perry and parts of Cumberland counties.

Congress did pass, however, an amendment which requires the NRC to evaluate all operating nukes within 180 days to see how well they conform to NRC safety-related regulations. Also, it requires the NRC to identify all generic safety problems within the same period.

This bill, sponsored by N.Y. congressman Jeremiah Singman, was overruled by both pro and anti-nuclear lobbyists. It passed the House 217-181. Once again, the Pennsylvania delegation voted more anti-nuclear than the national average (14-7, with 3 no-votes). Locally, Ertel and Goodling voted in favor; Shuster and Walker voted against.

The Pennsylvania legislature continued its course of action on nuclear issues - members kept their heads buried in the sand. Bills requiring a moratorium and clearing financing issues remained mired in the quagmire of the Republican-controlled House committees.

The Select Committee on TMI 1 announced that it will require such sweeping changes as a statewide bank record depository so that we can get out money when we evacuate. Also, homeowners may be able to get insurance for nuclear accidents. Somehow, we might have hoped for more "sweeping" changes. Instead, they seem to be sweeping the accident under the rug.

Dickinson College will hold a public symposium called "Our Nuclear World and Welcome To It" on February 10 - 13 in Carlisle.

The keynote address on Sunday, Feb. 10th will be given by Dr. Barry Commoner.

Panel discussions will take

place on the 11th, 12th and 13th.

The closing address will be given by Sam Love, writer-activist, co-founder of Environmental Action and one of the principal organizers of Earth Day.

Additionally, there will be a series of films shown during the three days. Included are "Dr. Sarangelove," "Fail-safe," and "Hiroshima, Non Amour."

For more information about the four-day events, contact Dickinson College's Office of Information Services at 245-1243 or the Office of Student Services at 245-1535.

The public is invited without charge.

Nuke Victim

In 1952 Sergeant Orville Kelly of the U.S. Army was stationed on Japtan Island in the South Pacific. He was in charge of a squad working on "Operation Hardtack"--a series of 22 atmospheric nuclear detonations in nearby lagoons and on nearby islands. Sixteen years later Kelly learned that he had malignant cancer of the lymph glands in an advanced stage. Kelly is convinced that his cancer was caused by the radiation he was exposed to on Japtan, but he has been unable to convince the Feds.

Along with his work with other cancer patients and their families, Kelly in 1978 founded the National Association of Atomic Veterans. The 750-member organization collects data for Veterans Administration claims, serves as an information clearinghouse, and publishes a monthly newsletter. In April Kelly will testify in Washington at a national conference of radiation victims, civilian as well as military. Those who are interested can contact Kelly at 1109 Franklin St., Burlington, Iowa 52601 (319) 753-6112. (Information from Parade Magazine, January 13, 1980).

Intervention

A U.S. Nuclear Regulatory Commission Administrative Law panel approved the participation of nine groups and individuals, including TWIA, as intervenors in the Atomic Safety and Licensing Board hearings on Met Ed's proposal to restart Unit 1. The other intervenors are as follows: Marjorie Kamodt, Coatesville; ANSAP (Anti-Nuclear Group Representing Park); Chesapeake Energy Alliance; EONP (Environmental Coalition on Nuclear Power); Marvin I. Lewis, Pella; Newberry Twp. Steering Comm.; Steven Sholly, Mechanicsburg; and Union of Concerned Scientists. The Board rejected two petitions and deferred a decision on whether PANE may participate.

The Licensing Board stated that the proceedings may include any issues which can be related to the TMI accident and whether Unit 1 can be operated safely. However, the Board rejected the suggestion that issues raised need not be related to the accident.

The Board will not allow intervenors to raise issues on unspecified theoretical Class 9 accidents. The intervenors may raise issues on specific hypothetical Class 9 accidents if they can be related to TMI.

The Board deferred ruling on contentions involving Met Ed's emergency plans and on psychological stress issues.

It is obvious the Board is trying to keep the scope of the hearings narrowly focused on TMI and Met Ed and away from the total failure of the NRC and the entire nuclear industry.

Knake Complaint

Jack Knake of Heidlersburg, Pa first refused to pay part of his electric bill last August. He did the same thing in September. When Met. Ed. threatened to cut off his power by Oct. 1, he filed an informal complaint with the PUC which was denied. He was in-

formed that he would have to pay the bill even though he would file a formal complaint. He did and filed his formal complaint.

The complaint charges that since radiation given off by the nuclear fuel cycle causes cancer, leukemia, and other defects, Met. Ed. is contributing to the random murder of human beings, babies and future generations. Knake contends that as a taxpayer and a company with a nuclear plant, he is indirectly contributing to the random murder, and this is causing him mental anguish since he is morally opposed to murder. Knake had asked for \$100 a month to help compensate for the mental anguish.

On November 16, the attorney for Metropolitan Edison filed a motion to dismiss the complaint stating that the Pennsylvania Public Utility Commission lacks the legal power to award monetary damages. Administrative Law Judge William Shane agreed that the authority to award damages was in the hands of the Court of Common Pleas. Since Knake can't afford to hire a lawyer to take his complaint to Common Pleas Court, he has decided to sue Met. Ed. himself in small claims court of \$1,200. He urges others who have suffered mental anguish to file similar charges against their electric company in an effort to force an end to the murders caused by the nuclear industry. He can be reached at #528-8265.

Bonnie McCormick, a resident of Montgomery County, was recently scolded by District Judge Charles Dasch of Pottstown for being "irresponsible and misleading" as a parent. Ms. McCormick had let her daughter take part in an illegal demonstration at a nuclear plant construction site (presumably Limerick). In addition to the scolding, Ms. McCormick drew a four-day prison sentence.

No mention was made of Mr. McCormick, who was presumably watching a football game at the time.

Community Notes

Many Community groups have not been submitting reports to the ALMKT. Things have slowed down over the holidays, but now we're gearing up again for 1980. Please let the rest of us know what you've been doing. It may not seem "important" to you, but it'll give other groups some ideas.

Adams County Community Group has had significant success with its outreach effort. Group leader Wayne James and his wife Sue have promoted scheduling of anti-nuclear messages to church groups throughout the county using the group's own copy of "The Last Slide Show" (a copy is also available at 315 Peffer St. Office). Churches have responded eagerly, as if they have just been waiting for us to drop into their laps. Wayne has challenged the group to form a local teach-in panel to address the church groups and to build a back-up capability.

Wayne James is responsible for technology of nuclear power and alternative energy, Patricia Hammann has economics of nuclear power, Bob Stoner has political implications, Dorothy Lambert has health effects, and Mac Albright has moral implications.

Using the excellent model of the main TMIA Teach-In Panel, we have really gotten rolling on this effort. We recommend it highly to other groups.

Group member (ex-leader, present TMIA Steering Committee member and secretary) Mac Albright delivered a sermon to the congregation at Fairfield Mennonite Church entitled, "If



nuclear power is the answer, what is the question? - A moral response to the nuclear challenge Reaction was overwhelmingly positive and provoked lively debate in the adult Sunday School sessions for the next several Sundays.

The group invited Bill Vastina to introduce Last Resort non-violent civil disobedience training in December and decided to proceed with the training in February. Marge Clement and Bill Vastina are scheduled to carry out the training.

Now is the time to set new goals, reorganize our groups and begin anew. There is hope for a better 1980. The Mechanicsburg group was one of the few groups that was able to show the film, "Nuclear Wastes." After our showing, Mr. John Khanlian contacted the superintendent of Mechanicsburg schools and arranged showing the film to 350 senior high students. We then donated two books to the high school for further background. We are now in the process of reorganizing our telephone committee, to incorporate many of the 1600 petition signers who expressed an interest in TMIA. We have made initial contacts with the ten churches in the area, but now want to expand with personal contact. We are using church bulletins now to announce our meetings. We will be assigning 2 churches to our various members for initial contact and follow-up. Steve Picks will begin a discussion group to review various books on the nuclear issue and other pertinent topics. Many of us have let our self education program slide. The West Shore Public Library and the Mechanicsburg Chamber of Commerce have agreed to put our literature in their information centers.

Our surveys have been sent to 4,000 Mechanicsburg Borough residents in sewer and refuse bills. The survey question is:

Do you wish for the permanent shutdown of Three Mile Island as a nuclear facility? Yes or no. Mike Jones and Tim Lyng put an incredible amount of work and perseverance into finally accomplishing this survey. Mr. and Mrs. Irs Heckart were also staunch supporters at Borough Council meetings. One member of Borough Council confided, "You know, this subject never would have been discussed if you hadn't approached Borough Council." We are now notifying 1,000 apartment dwellers via flyers that the surveys will either be mailed out on request or may be picked up. The deadline is January 31st, so we will be helping tally the final results.

Several of our members are covering the PUC hearings for January. It really is extremely interesting and informative. Joe Bard will be looking for help the next few months. Give it a try!

We also will be helping Fred Girondi, a graduate research associate in environmental education from Ohio State University by completing an attitude questionnaire. The purpose of the study: to improve understandings and communications between the pro-nuclear and anti-nuclear groups in Pennsylvania and Ohio.

Wishing each of you renewed success in 1980. A beautiful thought I received via a thank you note from Carlisle's Paula Prober: "It will be a great day when our schools get all the money they need and the air force has to hold a bake sale to buy a bomber." For more information, call Mary Hartnett at 766-0592.

Contact People

ADAMS COUNTY - Mac Albright -
761-6280 (W)
BOX HUCKLEBERRY - Anne Miller -
582-2875

CARLISLE - Mike Kline -
242-4143
HACC'S STUDENTS FOR PEACE -
Brian Downey - 236-9533 or
238-6486
HERSHEY BAY ALLIANCE - Georgia
Lockingbill - 666-6180
LEBANON VALLEY ALLIANCE - Jim and
Maggi Hummel - 865-6232
LONGBORO TWP. - Pat Street -
842-8334
LOWER MERION - Lee Garland -
561-0701
MCCONNERSBURG - Mary Hartnett -
766-0592
NEW CUMBERLAND AREA ALLIANCE -
Al Miranda - 774-7215
TWP. (CHAMBERSBURG) - Michael Kohler -
264-4729
SWATARA TWP./STRELTON - Nancy Baumgardner
939-7330
TOWNSHIP/GUSQUENAWA - Suzanne Patton -
238-6329

TASK FORCE:

ECONOMICS - Jim Gornley -
944-7011
EDUCATION - Louise Bradford -
232-3070
HEALTH - Mike Klinger -
921-8618
LAST RESORT - Matthew Magda -
545-6320
LEGAL - Joe Bard -
238-0004
LEGISLATIVE - Chris Sayer -
233-7897
MARCH 28th COALITION - Bill Vastine -
774-6711
NEWSLETTER - Terry Roth -
763-1835 (H) - 236-9486 (W)
NON-RELIGIOUS - Marge Clement -
774-5767
STAFF - Chris Sayer -
233-7897

Island Updates is a new TMIA publication, designed to keep national activist groups abreast of the latest news of the accident. We print every third Wednesday. Anyone interested in helping out and learning a few skills should call Andrea Chesman (232-3070 or 234-5091, ext. 162) or the office (233-3072).

1979-1980

by Chris Silver

As we enter a new year, we can look back on 1979 with a feeling of pride for our many accomplishments. Many, many of you have worked long hours to bring about these successes.

Immediately following the accident, a handful of people organized the first rally on the Capitol grounds. More than 1,800 people showed up.

Next, we organized a busload of people to take thousands of people to the rally by car to go to the May 3rd rally in D.C. Harrisburg has never before mobilized so many people for anything short of a flood.

On May 28th, TMIA hosted the Women and Children's March on Mead at the Reading headquarters. Several thousand people travelled to Mead from up and down the East Coast.

Berwick, another Capitol rally and the concert in Halifax kept the ball rolling during the summer.

In September, more than a thousand people turned out to see Jane Fonda and Tom Hayden at the Penn Harris. Hundreds more were turned away.

And in November, several hundred area residents got an education on nuclear power as TMIA and NPIRG hosted a major national teach-in.

But it was not all events during the year. Robert Bloom found out that he couldn't advocate nukes and get renominated to the PUC. Joseph Cossetti learned that you could not duck the issue. Both nominations went down to overwhelming defeat.

The PUC became one of the focuses of our effort. On June 15th, the commission ruled that the cost of cleanup could not be passed on to the rate-payers, a landmark decision.

Finally, and most importantly, TMI is still closed. The gas has not been released; the

water has not been dumped into the Susquehanna. And while MetEd complains, the NRC has now required a full environmental impact study before the utility can go ahead with any cleanup activities.

What lies ahead? Well, we are rapidly approaching the first anniversary of the accident. A major effort to organize people must be made for the 28-1980 actions.

The PUC and NRC hearings will continue through the midpoint of the year. Our attorneys will represent TMIA in both sets of hearings.

April 28th will see another large gathering of people in Washington. Already, national and local organizing is proceeding to increase our participation over last year.

We need to be looking for ways of involving new people in each of these efforts.

The fundraising effort now underway will serve as an organizing tool. We need to increase the number of public forums so that new people become involved in TMIA. Regular meetings of TMIA should be scheduled by the Planning Council.

Everything we do must carry one single message. W., the people of Central Pennsylvania, will not allow our lives to be put in jeopardy once again - we will not allow TMI to reopen as a nuclear facility.

And that effort will take money, time and energy. I urge you to give as much of each as you possibly can. We must guarantee a non-nuclear future for Central Pennsylvania.

Staff this issue: Jerry Roth (ed.) Nancy Baumgardner Sue Eason Debbie Fetterman Doug Grier Maggie & Jim Hummel Sue Shetrom The Williams Family
--

Edward and Patti Kilco are convinced their stillborn baby died because of radiation emitted during the TMI accident, and filed suit against Met-Ed, CPU and Babcock & Wilcox in federal court in December.

The York County couple, who live in Manchester, 3.2 miles from TMI, contend that the utilities and the builder knew at the time of the accident that the radiation would directly and adversely affect the vital organs of any child in the womb.

The suit also contends that Met-Ed violated federal safety regulations; did not train its employees properly and failed to take safeguards to prevent a radiation leak.

The judge in the case, Sylvia Rambo, has placed a gag order, or a halt to further discussion, on the case until it comes to trial.

No Nuke No Smoke

Hardly anyone, smoker or non-smoker, is unaware of the irrefutable evidence that smoking causes cancer and other serious health problems. Somewhat less well-known are the hazards to the passive smoker: the innocent bystander who cannot avoid breathing what the U.S. Surgeon General has called "side stream smoke", which is even more harmful than what the smoker inhales directly. At least two-thirds of smoke from a cigarette is "sidestream".

These effects are well-documented. The exact cause of the problem could be any of the gaseous poisons identified in tobacco smoke: tar, nicotine, 3-4 benzpyrene, carbon monoxide, ammonia, cadmium, nitrogen dioxide, formaldehyde, hydrogen cyanide, hydrogen sulphide. There are dozens of others, each of which is bad news by itself, but many of these substances work in consort with each other and other substances in the environment to harm the body. Some researchers are convinced that radioactive substances in

tobacco are also responsible. In industrialized nations, tobacco smoking is the greatest single cause of excess death from lung and other cancer, from heart attacks, and from emphysema in both men and women.

Within the anti-nuclear movement, we are all well aware of the real and the potential dangers from radiation exposure. We are concerned about our own health and that of countless others who are being unwillingly jeopardized by proponents of nuclear power. If we care about our own health in terms of the nuclear threat, how can we continue to smoke? Even more to the point, if we care about others' health, how can we continue to smoke where others have no choice but to breathe the toxic and carcinogenic fumes we generate as we smoke? If we endanger the health of others by smoking in the air they have no choice but to breathe, how are we different from nuclear power advocates?

We have a good opportunity to be consistent on this issue. Let's not blow it.

by Mac Albright

---On Monday, December 3, 1979, Mary Douglas, Betty Sue Lentz & Milton Lowenthal met with four foreign students from Liberia, France, India and Czechoslovakia, who represented the International Union of Students. The main topics of discussion were concerns about the proliferation of nuclear weaponry, its connection with nuclear power and the need for the SALT II agreement to attain disarmament.

Apparently foreign students are more aware of the connection between nuclear weapons and nuclear power and their dangers than U.S. students. To help alleviate this problem, arrangements were made to provide speakers and literature, through the Commonwealth Students Assoc., for student groups in area colleges.

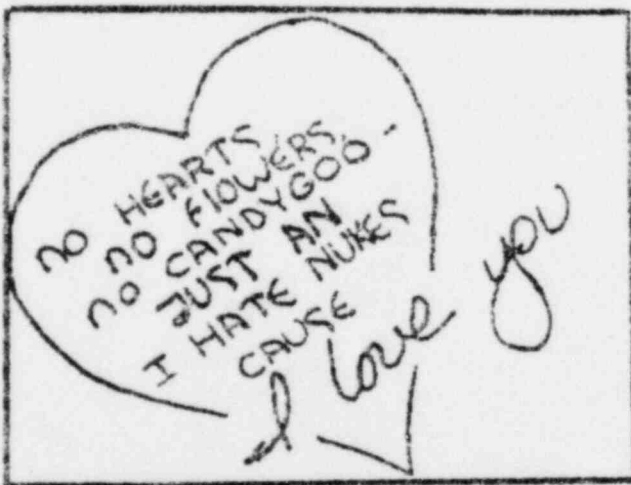
Grants

Three Mile Island Alert was recently awarded a \$3,000 grant by the MUSE (Musicians United for Safe Energy) Foundation.

The grant, which comes from proceeds of the September concerts at New York's Madison Square Garden, is for general support and/or litigation against Three Mile Island.

Other large grants received during the past few months include \$100 from the Bread and Roses Fund (for the Teach-in), \$3,000 (\$2,500 for litigation and \$500 for general support) from the United Methodist Church, and \$2,000 from the May 6th Coalition (for the publication of a national newsletter).

Despite this infusion of capital into the organization, costs have outrun income. The legal effort has suffered from an inability to hire the sort of expert witnesses that will be necessary.



Fundraising

Three Mile Island Alert will begin on February 1, 1980 a massive direct mail campaign in an effort to raise funds and to enroll new members.

Lee Garland, chairperson of the Lower Paxton Twp. TMIA has agreed to head the effort.

Over the next several months, letters will go to 25,000 or

more residents of Central Pennsylvania asking for support.

Paul Makurath, also of the Lower Paxton Twp. group, will head up the workforce who will actually get the mailings out.

The money raised will go both to fund the legal efforts and to increase our educational and organizational outreach within Central Pennsylvania.

The letters will go to area residents who have attended TMIA events or who have signed petitions calling for the closing of Three Mile Island as a nuclear power plant.

Anyone willing to help in this effort should call the TMIA office at 233-7897. Workdays for the mailings are generally held Saturdays (from 10:00 AM to 5:00 PM) at the Friends Meeting House, 6th and Herr Streets, Harrisburg.

We are former York residents who left because of the disaster at Three Mile Island. In our travels, looking for work and a place to live, we have spoken to many people about what happened. We have found them to be interested but entirely unaware of what all of us have gone through. Despite all the commissions, studies, and official recommendations, few of the people around Three Mile Island have a chance to express their personal viewpoints.

We are gathering statements from residents and former residents of the Three Mile Island region, with the idea of collecting these statements into a book. Hopefully, the book will find a publisher so that the public can hear our story. If you are interested in writing a statement or participating in this project, please write to us soon and we will send you further information. Also, if you or your friends know of anyone who has left the area since the accident, let us know so that we can get in touch with him or her.

Thank you for your help.

Susan Mills
Russell Mills
129 E. Irvin Ave.
State College, Pa.
16801

Ed Panel

Met Ed has a new propaganda tool: They call it the "truth force," and they are sending public relations people into private citizens' homes to explain to them the "truth" about nuclear power. Since October 1979, TMIA has had a "truth force" of its own, and we call ourselves the Education Panel.

Composed of Casey Zaleski, Bill Sheff, John Murdoch, and myself (Anirea Chesman), the panel speaks on four aspects of nuclear power: government regulation and response, health and safety, economics, and alternatives to nuclear power. Our format is flexible; generally we each speak for fifteen to eighteen minutes and answer questions from the audience after each speaker. Our concluding remarks always let people know what they can do to keep TMI closed.

Panels such as ours can be highly effective organizing tools for bringing the facts and options concerning nuclear power to people. Panels can also keep people aware of what TMIA is doing and how they can become involved with TMIA. Thus far, the response to our panel has been good. Because Met Ed is now competing with us, we would like to intensify our efforts.

First, we would like to invite all TMIA members to consider gathering their neighbors and friends into their homes to hear a panel. This kind of "kaffee klatch" organizing can bring out people who would never dare come to a rally or a public meeting. We would also like to urge any members who belong to other organizations to see if they can schedule us for one of their meetings. Anyone who would like to hold a panel meeting should contact Casey Zaleski (534-8595) or the TMIA office (233-3072) to the clear

the date.

But there are hundreds of TMIA members, and there is just one panel--so far. We believe that education should be a major goal of TMIA. In order to accomplish that, we really need additional panels. Our panel has evolved a style of working together as a team, and we would like to see additional teams formed. And one doesn't have to be an expert to be an effective panelist--one has to care about teaching others (and themselves) about the dangers of nuclear power. Anyone interested in working on a panel, or helping to organize, schedule and promote the panels should contact the office or Casey at the numbers listed above.

Zirconium

by Dr. Daniel M. Pisello, from
Greenpeace Chronicles, Sept, 1979

Most nuclear reactors in the world are operating with a fatal design flaw, brought to light by the recent accident at Three Mile Island. Fuel rods in these reactors consist of uranium oxide fuel pellets held in thin metal tubes called cladding, in all water-cooled reactors is in an alloy of the metal zirconium which reacts violently with air or water, under a variety of conditions likely to occur.

No viable alternative to the highly dangerous zirconium exists. Because of the zirconium cladding, water cooled nuclear reactors run a high risk of violent chemical explosion and catastrophic release of radioactivity. All but one of the 72 reactors in the U.S. are water-cooled, as are 95 percent of all the nuclear plants in the world outside Great Britain, which uses gas-cooled reactors.

At Three Mile Island, mechanical difficulties led to a partial loss of coolant, and a partial meltdown of the reactor core. As an emergency measure, reserve cooling water was sprayed onto the dangerously exposed and overheated core. Hydrogen explosions occurred in the (con-

containment and later a huge bubble interfered with efficient cooling of the damaged core, presenting the possibility of a hydrogen explosion inside the reactor vessel.

Spokesmen for the utility company and the Nuclear Regulatory Commission (NRC) claimed ignorance on the subject of the origin of the hydrogen bubble, referring to it as a "new twist," and "something that had not been foreseen when the reactor was designed." The next day the bubble shrank and disappeared.

The claims of ignorance by the utility companies and federal experts about the appearance and disappearance of the hydrogen are lies. Explanations for these occurrences are commonly available in the literature on nuclear engineering and safety, and concern the use of zirconium alloy cladding.

Experts agree that the hydrogen was produced by the reaction of tons of zirconium cladding with steam formed in the reactor vessel during the early stages of the accident. But weeks after the event the only public reference to the role of zirconium in the production of the hydrogen bubble was in the British press, in the only nuclear nation that has no water-cooled reactors.

Sir Martin Ryle of the Cavendish laboratory in Cambridge stated in a letter to "THE GUARDIAN" (London) that a highly dangerous hydrogen bubble should have been predicted as a matter of "A-level textbook knowledge." The following is taken from a standard text on reactor safety:

The chemical reaction of the cladding with steam...has three important effects. First, it furnishes energy, which can increase the heating rate of the core. Second, hydrogen, a reaction product, is released to the containment structure. Third, the reaction also changes the character of the cladding (i.e., the metal cladding is converted to an oxide), which can affect the behavior on quenching.

The nuclear industry and the NRC know full well the hazards of zirconium in water-cooled reactors. The NRC is therefore emphasizing poor operator performance and mechanical failures in their analysis of the accident in order to divert attention from the more fundamental problem of the chemical activity of the cladding.

The state's Welfare Department has received a \$275,000 grant from the National Institute of Mental Health to study the mental health impact of the TMI accident on residents in a 10-mile radius of the plant.

The study will focus on young mothers, workers at the plant and persons already receiving mental health treatment, as groups who may have experienced greater stress during the crisis. 700 persons will be interviewed in an operation devised and directed by Evelyn J. Bromette, a psychiatrist from the University of Pittsburgh.

A comparison will be made to determine any differences in mental health characteristics of the population group which has experienced an accident and one which has not, people living near the Shippingport plant in Beaver County. Follow-up interviews will be conducted during the first anniversary of the accident at TMI, a time which Welfare officials expect to be particularly stressful for residents of the area.

The 1977 U.S. Equal Employment Opportunity Report shows that in 1975, electric utilities ranked 140th of 142 industries when it came to the proportion of officials and managers who are minorities. Only the paper and coal companies ranked lower. 1.9% of officials and managers were minorities in electric utilities while minorities made up 16.2% of the work force.

(The electric utilities were 122nd out of the 142 industries in hiring women as officials and managers, with 2.9% being female, compared to a 14.2% average for all industries and to 37.1% of the workforce being female.) (cont.)

The electric utilities fared only slightly better for professional and technical workers, with 5.4% of these employees being minorities (and 6.7% being female).

From Up Against the Wall
Street Journal

Reporters Committee for Freedom of the Press, described Box's ruling as outlandish. He said it would tell utilities "they can stage the news, and if the reporters wander off the set they're going to be arrested."

Nine reporters and television camera operators were convicted last month of criminal trespass charges growing out of their coverage of an anti-nuclear protest at a power plant construction site last June.

Similar charges against 70 protesters also arrested at the Oklahoma Black Fox site had earlier been dismissed after a jury had been unable to reach a decision.

The convictions come at a time of mounting opposition to nuclear power plants.

The action by Judge David Allen Box drew immediate fire from groups protecting the rights of reporters.

The reporters' group said that the decision will have a "chilling effect" on their coverage of anti-nuclear events.

Jack Landau, director of the

In November Daniel Berrigan, activist Roman Catholic priest and 14 others were arrested and charged with disorderly conduct and trespass after chaining themselves to a fence at the Riverside Nuclear Research Institute in New York. On December 26, the judge granted the District Attorney's request to dismiss the charges. It was clear that this was not a demonstration of Christmas spirit when the D.A. explained the reason for dropping charges. "We want to prevent these defendants from using the Criminal Courts as a forum for their views," he said. Berrigan told reporters later, "They are so determined to keep that stuff (the research) classified they would rather dismiss the charges than have a public trial."

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315 Peffer Street
Harrisburg, Pennsylvania 17102

March 28 Coalition

The March 28th Coalition now has an office at 1037 Madley St. (across from the Farm Show) staffed by Gail Bradford (phone 333-4478). An interfaith service is planned for Friday night the 28th followed by a WITF sponsored forum and/or a candlelight vigil. There'll be a rally on Saturday afternoon with displays and local and national speakers and entertainment. Since the eyes of the world will be on us, we need to get General AI people who are anti-race but do

not come to rallies or participate. This is our time to remember the accident and to make our statement that AI must never happen.

The next Coalition meeting is Sunday, Feb. 3 at 6 pm at 1037 Madley. We really need money and help with planning events - phone calling, making armbands and displays, arranging parking and logistics, doing media and publicity, getting out mailings, etc. Call 333-4478 for further details and/or come to the next meeting.

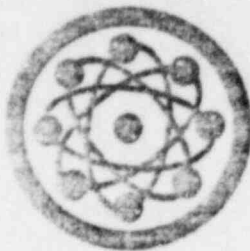


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Three Mile Island Alert

Island Updates

News Watch on the Harrisburg Area

Vol 1 No 3

Feb. 1980

The Patriot, Harrisburg, Pa., Tuesday, January 29, 1980

Start Cleanup of TMI

By RICHARD ROBERTS
Staff Writer

Three Mile Island Nuclear Generating Station is "on its way to becoming one of the most dangerous radioactive waste storage sites in the world," and cleanup of the contaminated plant should be expedited, according to the secretary of the state Department of Environmental Resources.

Clifford L. Jones said in an interview Monday that highly radioactive materials inside the Unit 2 reactor containment building present a "long-term threat" because they must be kept under control with equipment that "cannot be serviced and therefore cannot be considered reliable over the long run."

A delay or failure to act by the U.S. Nuclear Regulatory Commission in allowing the plant to be cleaned up could "lead to needless

public exposure of uncontrolled radiation," he said.

The dangerous materials include millions of curies of damaged uranium fuel inside the Unit 2 reactor core, more than 50,000 curies of radioactive krypton 85 gas in the containment building and more than 600,000 gallons of radioactive water on the floor of the structure, he said.

"None of these potential sources of radiation exposure to the public presents an immediate danger," Jones said. But he added that he is worried about the possibility of an "uncontrolled leak" of radioactive materials from the containment building.

The structure currently is being maintained at negative atmospheric pressure with the aid of large cooling fans to prevent radioactive materials from escaping. A potential problem exists because those fans

are inaccessible and cannot be serviced, he said.

"If negative pressure is lost and the hot summer months cause a major rise in containment pressure, there could very well be an uncontrolled leak from the containment building," he said.

Jones warned that another "serious problem" is posed by Metropolitan Edison Co.'s disposal of radioactive wastes on the island.

Met-Ed, with the approval of the NRC, is storing concentrated radioactive wastes produced by the Epicor II decontamination unit in containers on the island. Epicor II is being used to filter thousands of gallons of moderately contaminated water.

Met-Ed has said it eventually plans to solidify Epicor II's radioac-

Cont. p. 6

NRC Staff Fines Met-Ed \$155,000 On Safety Counts

WASHINGTON (AP) — The staff of the Nuclear Regulatory Commission ordered the operator of the Three Mile Island nuclear power plant Wednesday to pay a \$155,000 fine on violating federal safety standards.

The NRC staff gave Metropolitan Edison Co. of Reading, Pa., 20 days to pay the fine or request a hearing on the matter. The agency staff charged that management controls at the Three Mile Island plant were inadequate.

The staff had first proposed the fine last Oct. 25 and the power company had responded in December seeking reconsideration. However, after considering the company's argument, the NRC staff stood by its earlier decision.

Company officials have said that the deficiencies arose because Met Ed, the nuclear industry and the NRC itself were unaware of how the plant would respond under the conditions of the March 28 accident.

Report Says TMI Crisis Hurt Real Estate Sales

Real Estate sales and values apparently were more adversely affected than other areas of the economy by the short-term impact of the accident at Three Mile Island, according to a preliminary report released Wednesday by a special study group appointed by Gov. Dick Thornburgh.

According to Lt. Gov. William W. Scranton III, who headed the Pennsylvania Commission on Three Mile Island, there was a definite short-term impact on the economy of a seven-county area surrounding the plant, and in some cases there may be a long-term effect.

Scranton said a broader report will be issued within a few weeks by the study group, which included experts from state government and the private sector.

Scranton said that while the economy of the area returned to near normal levels shortly after the crisis had ended, some adverse economic impacts persist.

The accident had a negative impact on property sales and property values within a five-mile radius of the plant, the report said. According to a study by the Department of Community Affairs, the volume of property sales in the areas has decreased over last year's sales, and unsold properties have remained on the market longer than in the past. In addition, housing sales prices in the area have not appreciated at the same level as have those in the surrounding areas.

The preliminary report highlights these effects:

— Manufacturing and non-manufacturing interests sustained short-term revenue losses but were able to recover by late May 1979. Manufacturing lost \$7.7 million in production, or \$6.725 per establishment, according to the Department of Commerce. Also, \$1.5 million was lost in wages or an average of \$15 per manufacturing plant employee. Nonmanufacturing losses were placed at \$74.2 million, or an

average of \$3,763 per establishment, with \$5.5 million lost in wages, or an average of \$21 per employee.

— The local agricultural industry suffered some financial losses, but the overall impact was not pervasive since, according to a study by the Department of Agriculture, more than 96 percent of the farms within a 25-mile radius of the plant said they suffered no losses.

— Government agencies at the state and local level incurred additional expenses, especially in increased personnel costs. Three counties and 34 municipalities reported TMI-related expenditures of \$113,000. To date, Metropolitan Edison Co., operators of the plant,

has repaid \$41,761 to 21 municipalities within a 10-mile radius. Increased state government costs totaled \$630,000.

— State tax revenues (personal income taxes, corporate net income taxes, sales taxes and realty transfer taxes) did not appear to have suffered, according to a survey by the Department of Revenue.

— The tourism industry of Central Pennsylvania sustained an estimated short-term loss of \$5 million, according to the Department of Commerce. The tourism industry, in general, has been below previous years' levels, but local tourism officials cite increased gasoline prices and the summer fuel shortage as the major causes of the decline.

REALTOR DISPUTES STUDY

By RICHARD ROBERTS
Staff Writer

The Greater Harrisburg Board of Realtors on Thursday challenged the substance and conclusion of a state study that claims the March 28 accident at Three Mile Island Nuclear Generating Station had a "negative impact" on area property sales and values.

"There is no evidence whatsoever that the Three Mile Island accident caused any harm to the real estate market during 1979," said Don Paul Shearer, chairman of the board's legislative and political affairs committee.

Shearer said the "preliminary" study, conducted by the Pennsylvania Commission on Three Mile Island and issued Wednesday by its

chairman, Lt. Gov. William W. Scranton III, is based on inconclusive data and draws an erroneous conclusion.

The study's section on housing and property values was prepared by the state Department of Community Affairs.

"Despite Three Mile Island, high mortgage costs, the lack of mortgage money, rising house prices and increases in the cost of gasoline, there are still house sales and there are still a substantial number of people willing to buy in the Harrisburg area," he said.

However, the study itself might have the effect of reducing property values by discouraging potential buyers, he said.

POOR ORIGINAL

Harrisburg, Pa., TUESDAY, January 29, 1980

Met-Ed Probers To Enter Unit 2 In Mid-March

By RICHARD ROBERTS
Staff Writer

A Metropolitan Edison Co. official Tuesday said the utility intends to send an inspection team into the Unit 2 reactor containment building at Three Mile Island Nuclear Generating Station before the structure is purged of radioactive gas.

Met-Ed Senior Vice President Robert C. Arnold told a briefing session at the Forum of the Education Building that the utility plans to send men into the structure in mid-March to check and make any necessary repairs to vital equipment that keeps radioactivity from leaking out.

Company officials had hoped the NRC would approve a plan for disposing of approximately 50,000 curies of radioactive krypton 85 gas inside the structure before there was any need for human entry. But NRC officials said a final decision on the gas-disposal plan probably won't be made until late spring or early summer.

Met-Ed has proposed venting the gas, which has a half-life of 10.4 years (meaning it loses half its radioactivity in that time), into the atmosphere in "controlled amounts" and in concentrations within federal limits.

The utility maintains that venting is the safest of four methods under consideration for disposing of the gas. Met-Ed officials proposed the idea in mid-August 1979.

In an interview after the briefing, Arnold said the entry team will check cooling fans and other devices that keep the containment at negative atmospheric pressure — and thus leakproof — and obtain samples of surface contamination.

"With the length of time since the accident, we're experiencing an increasing degree of uneasiness about not having gotten inside the building to look around," he said. "Just the passage of time increases the priority of getting inside."

The men who enter the building will be exposed to higher levels of radiation than they would have

faced if the krypton gas had been removed, Arnold said. But he added that the entry is being planned to minimize the workers' exposure.

IN ABOUT 10 days, technicians will enter the airlock that leads into the containment to check radiation levels, he said. In mid-March, the team will enter the building.

The initial entry will be brief because little is known about what protection is necessary for humans working in an atmosphere of radioactive krypton gas, Arnold said.

In another development, Arnold said the Epicor II decontamination system is operating less efficiently than planned and that only 95,000 of an estimated 400,000 gallons of moderately radioactive water in the auxiliary building have been processed since the unit became operational in October 1979.

The Epicor II unit is having difficulty removing suspended radioactive particles from the water, he said. The \$5 million device performs well in removing dissolved particles, but suspended particles must be circulated through the machine a number of times before they are removed.

Met-Ed officials have asked scientists at the Oak Ridge National Laboratory in Tennessee to help improve Epicor II's operation, he said.

The utility had hoped that all of the water would be processed as early as the end of this month. Arnold said it will take "several" additional months to complete the task if a solution to the problem is not found.

Arnold said a tentative settlement has been reached between the utility, the Nuclear Regulatory Commission, and the City of Lancaster concerning Lancaster's suit against the NRC to prevent discharge of processed water into the Susquehanna River.

The settlement "has been agreed to but not signed by all parties," Arnold said. However, he added, he did not anticipate "any difficulties" in the final settlement.

Settlement was reached with Met-Ed agreed to the following two commitments:

— Not to request permission from the NRC to discharge into the Susquehanna River any processed water generated by the Unit 2 accident before the completion of the NRC's environmental impact statement on the cleanup or before Jan. 1, 1982.

— To provide Lancaster with analytical equipment so the city can monitor the river water at the intake of its treatment plant.

Lancaster draws its drinking water from the Susquehanna River.

During the next two weeks, Met-Ed intends to furlough up to 250 contractor employees involved in construction or maintenance work because of the utility's tight financial situation, he said. The layoffs are expected to save about \$800,000 a month.

Meanwhile, Met-Ed's parent company, General Public Utilities Corp., is recruiting new employees for its cleanup and recovery operations, he said.

Engineering work is under way on a system to decontaminate about 700,000 gallons of highly radioactive water in the containment, and equipment associated with the project will begin arriving at the plant in April, according to Arnold.

THE DEVICE, called a submerged demineralizer system, will be installed in a pool designed to store spent reactor fuel, and it will be submerged during operation, he said. The machine will cost up to \$30 million to install and operate and it will complete the processing of the water within about six months.

In a meeting that followed Met-Ed's presentation, the NRC staff unveiled a tentative outline of an environmental impact statement they are preparing on the full range of decontamination work under way and planned for Three Mile Island.

Cont. p. 6

Within '30 to 60 Minutes,' Inquiry Group Says

Close to Meltdown

WASHINGTON (AP) — Last year's accident at the Three Mile Island nuclear power plant came within "30 to 60 minutes" of a meltdown that would have required evacuation of thousands of people in the area, a special investigating team reported Thursday.

The Special Inquiry Group, headed by private attorney Mitchell Rogovin, recommended to the government that future nuclear power plants be located 10 miles or more away from population centers. It said some existing plants too close to cities might have to be shut down.

But the group left it up to the Nuclear Regulatory Commission to figure out how local circumstances should influence those decisions.

After release of the report, Rogovin briefed NRC commissioners on the findings and was harshly critical of the agency.

Rogovin said the NRC "has provided neither leadership nor management" in safety programs for nuclear plants. He said some of the members of his staff described the agency as "non-management, a mess, and a situation in which nobody is minding the store."

But the Rogovin report noted improvements made by the NRC and the nuclear industry and said "an accident identical to that at Three Mile Island is not going to happen again."

But it warned that unless more fundamental changes are made, "similar accidents — perhaps with the potentially serious consequences to public health and safety that were only narrowly averted at Three Mile Island — are likely to recur."

The group rejected the idea of a moratorium on operating reactors or the licensing of reactors already under construction, but it urged that the NRC not process future construction applications until changes in licensing procedures are considered.

Although established by the NRC, the Rogovin group agreed with a separate presidential panel

that concluded the five-member NRC should be replaced by a single administrator — a recommendation rejected earlier by both the NRC and President Jimmy Carter.

The Rogovin group also recommended that a consortium of utility companies or a public corporation take over operation of nuclear plants whose owner-utilities can't meet new, tougher safety requirements on their own.

The NRC selected Rogovin last June 14 to head the commission's investigation of the accident that severely damaged the Three Mile Island power plant near Harrisburg, Pa., on March 28, 1979.

The commission said the Rogovin study was not to duplicate that of the Kemeny Commission appointed by the president, but to help the NRC improve its accident prevention and response activities.

Rogovin's group spelled out just how narrowly the most serious of nuclear accidents — a meltdown — was averted last year.

As had been previously reported, a valve had stuck open allowing vital cooling water to bleed out of the reactor of Three Mile Island Unit 2 for more than two hours after another malfunction shut the reactor down. The previous reports said plant operators overlooked mounting clues to the danger.

A valve was available to halt the leak of cooling water, but was not checked until a technical consultant from the reactor manufacturer, in a telephone conversation from his home, asked about it and the operators closed it.

"If the valve had remained open and the TMI operators had done nothing, water and steam would have continued to escape," the Rogovin report said.

"Engineering calculations . . . show that within 30 to 60 minutes, a substantial portion of the fuel in the core — certainly the center of the top half of the core, and perhaps as much as half of all the fuel — would have melted."

The report estimated that "an eventual fuel core meltdown proba-

bly would have occurred, especially if the operators, who did not recognize the danger at the time, continued to cut off additional cooling water — a move which was already getting them into deep trouble.

A meltdown would have released large amounts of radioactive material within the reactor building.

The Rogovin group said the reactor building would probably — but not certainly — have contained the radioactivity, posing only a small chance of a public health catastrophe.

But it said a meltdown would have required "at least the precautionary evacuation of thousands of people living near the plant, and potentially serious public health and safety consequences for the immediate area."

The report agreed with earlier assessments that the accident, in fact, "did not result in radioactive release levels that posed any threat to public health, even in the long run" and that safety systems worked well enough to bring the plant, although damaged, under control.

But it concluded that public evacuation "within a 10-mile radius of a commercial nuclear power plant, or beyond, needs to be considered a realistic precautionary measure," even when radioactive releases seem low.

"Distance should be regarded as the ultimate defense-in-depth barrier protecting those who live near nuclear plants," the report said.

At his briefing for the commissioners, Rogovin said emergency plans for dealing with a possible nuclear accident should be strengthened and that it might be necessary to close a power plant if a previously determined evacuation plan could not be carried out.

For instance, he said, if a blizzard blocked roads that would be needed for evacuation in the event of a power plant accident, it might be necessary to shut the plant down until the roads were cleared.

In Unit 2 Termination

POOR ORIGINAL

Met-Ed Would Prefer 'Mothballing' Option

By CARMEN BRUTTO
Staff Writer

The preferred method in any government-ordered decommissioning of Three Mile Island Unit 2 would be to "mothball" the damaged nuclear facility for 30 years and then dismantle it, a Metropolitan Edison Co. official told the Public Utility Commission on Tuesday.

The preference was enunciated by Robert Arnold, vice president, who is in charge of cleanup operations on TMI, in answer to a question from Craig R. Burgraff, of the Consumer Advocate's office, as the PUC continued hearings into Met-Ed's \$55 million rate request and whether its license to operate should be revoked.

In any event, Arnold said, the present cleanup activities would have to be completed, at an estimated cost of \$275 million, regardless of whether a final decision is made by government to permit the damaged unit's return to operation or to direct it be shut down permanently.

Arnold said putting the facility in a 30-year "caretaking stage" would allow for natural dissipation of certain short-life radioactive products.

Arnold put the dismantling cost at \$101 million in 1978 dollars, but said inflation has added at least 20 percent to that figure. The unit could be mothballed for \$7 million, but Arnold said that method also would mean permanent closing down, because deterioration inside the facility would preclude future operation.

A third method of decommissioning would be entombment — placing the facility under a concrete blanket — at a cost of \$38.2 million.

Arnold said that "not cleaning up the plant" is not an option that is open to the company. Any perma-

HARRISBURG, Pa., (UPI) — MET-ED WOULD PREFER

GPU Earmarks \$13 Million Toward Unit 2 Replacement

By CARMEN BRUTTO
Staff Writer

General Public Utilities has earmarked \$13 million this year toward the eventual replacement cost of the damaged nuclear core in Three Mile Island Unit 2, the Public Utility Commission was told Monday.

Complete replacement of a nuclear core, similar to those in the damaged Unit 2 and in Unit 1, would cost about \$75 million, according to testimony given the PUC during the series of hearings coming in the aftermath of the TMI accident last March 28.

The \$13 million figure is contained in an overall \$103 million budgeted this year for restoration costs at TMI, according to John Graham, GPU treasurer, who testified Monday at the hearings into a rate increase request of \$55 million by Metropolitan Edison Co., operators of the nuclear facility.

Graham said that half the \$13 million would be credited to Met-

Ed. and one quarter each to Pennsylvania Electric Co., and GPU, which is the parent company of the other two. The ratio is equal to their ownership of the nuclear generating facilities.

In a related move, the PUC authorized Met-Ed to sell \$13 million in first mortgage bonds to a group of banks lending money to the utility since the accident.

MET-ED SAID \$6 million will be used to repay short-term debt, replacing a \$12 million issue approved last month that Met-Ed was unable to sell.

The other \$7 million will go to retire first mortgage bonds due Feb. 1. They will have an Oct. 1, 1981, maturity date.

The matter of the purchase of the nuclear fuel was brought up by David Barasch, attorney in the Office of Consumer Advocate, who asked Graham why, in view of the financial problems claimed by Met

Cont. p. 6

nent closing would require decontamination of the site, as well as removal of nuclear fuel.

A PLUS in any cleanup of TMI-2, Arnold indicated, is the fact that the unit has not been in operation for any significant length of time and, therefore, that there has not been a buildup of radiation. Such plants, he said, have a normal life of about 30 years before a "natural" decommissioning is required.

Arnold also told reporters that a final decommissioning by disman-

ting should result in the entire plant being leveled.

Under cross examination by PUC staff attorney Joseph Malatesta, Arnold said that by early summer Met-Ed will have fulfilled all Nuclear Regulatory Commission requirements to place the undamaged TMI-1 unit into operation. However, he said, procedural matters now before the NRC will "control the matter" and "all matters within the control of the company" would be resolved by mid-June.

Clean-Up (from 1)

five filter beds and ship the wastes to the state of Washington. But equipment to solidify the wastes has not been constructed, and Gov. Dlay Lee Ray of Washington has threatened to close down the burial site.

If she makes good on her threat, "the present TMI II waste must be kept on the job," Jones said. "No one in his right mind would put a permanent waste storage area in the middle of a river. The waste would be disposed of in a properly protected or selected burial site."

Jones said the NRC should "act as soon as possible to permit the cleanup of that area so we can bring the wastes that are entombed there under permanent, safe control."

The most pressing problem requiring a decision by the nuclear regulatory commissioners is the hazard posed by the krypton gas, Jones said. "If they don't make a decision on that, they can't make other decisions (affecting decontamination)."

Met-Ed has proposed venting the krypton gas, which has a half-life of about 10.4 years (meaning it loses half its potency in that time), into the atmosphere "in controlled amounts" and in concentrations within federal limits.

The utility maintains that venting is the safest of four methods under consideration for disposing of the gas.

The three alternatives are com-

pressing the gas and storing it in tanks; cooling the gas to minus 300 degrees, then liquefying it and storing it at low temperatures; and adsorbing the gas with charcoal filters cooled to very low temperatures.

All of these alternatives require storage of the compressed or liquefied gas for years at the site. There is risk that the gas might be discharged rapidly and uncontrollably if a problem occurred, according to Met-Ed. And, it must take six to seven years to construct processing equipment.

Jones said DER's Bureau of Radiation Protection has reviewed Met-Ed's plan to vent the gas and found it "technically feasible." However, the department will not take a position on the different proposals until the NRC completes its own review, he said.

If the NRC fails to reach a decision promptly on the gas-disposal issue, then the risk increases that the gas might leak from the containment building and that equipment might break down, causing "uncontrolled releases" of radiation, he said.

Asked when a problem might develop, Jones said: "We really don't know, and I don't think anybody really knows what kind of time you have before equipment breaks down. But what I'm pointing out is, why delay?"

"We'd better clean it up. We've got a problem there, it's been there

(nearly) a year. Let's get it over with."

The nuclear regulatory commissioners, however, are not likely to make a decision soon on the gas disposal. They have ordered the NRC staff to prepare an "environmental assessment" on Met-Ed's proposal, and members of the public may submit comments and request that hearings be held before a final decision is rendered.

John T. Dallas, deputy director of NRC support operations at TMI, said last week that the environmental assessment probably would not be completed until mid-February.

Jones said he fears Met-Ed will lose its best personnel at Three Mile Island if decisions are not made promptly. "If you don't make some decisions on this, the very technically skilled people that Met-Ed has out there are simply going to go ahead and find better jobs," he said.

The NRC's decision to prepare an environmental impact statement covering all activities related to the plant cleanup may worsen the delays, he said. "If we're talking about years or more or even months or more (to prepare the statement), then I think you're losing valuable time."

Jones attributed delays in getting the plant cleaned up to "very genuine, real concerns" expressed by the public, and he said he shares and appreciates those concerns.

UNIT 2 (from 3)

The impact statement will address 11 main issues, including decontamination alternatives, cleanup of the containment, damage assessment, shipment of the ruined fuel and solid waste to disposal sites and the environmental consequences of decontamination and waste processing.

Donald E. Seils, acting chief of the NRC's Environmental Projects Branch No. 2, said a draft impact statement should be completed by June.

The nuclear regulatory commissioners have reserved the right to allow certain cleanup activities to proceed prior to completion of the impact statement.

GPU (from 5)

Ed, the purchase of nuclear fuel is not being delayed.

Graham said the purchase is contained in a contract with Anaconda Corp., which supplies the uranium product, at a rate averaging \$11 per pound. On today's market, Graham said, similar nuclear products sell for about \$40 per pound.

With the four-to-one ratio of contract price to market value, Graham said Met Ed is able to use the uranium as security in dealing with financial institutions lending funds to the money-strapped utility.

Should the utility decide either to sell or discontinue buying the uranium at present, it would only mean that Met Ed would have to go into the market sometime in the future and make purchases at higher

costs of at least \$40 a pound, Graham said.

Monday's hearing before the PUC was the 10th in a series of sessions that began December 11 on three issues: whether Met Ed should get the \$55 million increase to replace power lost because of the TMI accident; whether Met Ed's operating certificate should be lifted, and whether the undamaged TMI-1, closed down for refueling and ordered closed until all public hearings are concluded, should be continued in the base rate computations for utility charges.

Much of Monday's cross-examination of GPU and Met-Ed officials covered the area of fuel replacement, plant depreciation and tax problems, and company efforts to hold down costs.

POOR ORIGINAL

IF YOU'D LIKE US TO KEEP SENDING YOUR ISLAND UPDATES,

Please let us know!

Thanks to some help from our friends, our mailing list for this third issue of ISLAND UPDATES has grown to over 800 groups. We'd like to be sure that everyone who receives this publication really wants it. So we're asking that you fill out the tearsheet below and send it to ISLAND UPDATES, 315 Pfeffer Street, Harrisburg, PA 17102, if you want to stay on the mailing list.

TMI is not the only nuclear tragedy that has gripped our country during this grisly nuclear age. But there are many lessons to be had in following the on-going accident, and that is why all of you have made this newsletter possible via a grant from the May 6th Coalition.

In this issue of ISLAND UPDATES, we report on the costs of both the accident and the clean-up. We report on real estate values. In previous issues, we profiled the 144,000 people who evacuated from what the NRC called "Not an Extraordinary Nuclear Event." We pointed out that TMI was a Class 9 Accident, but that the NRC was rethinking its accident categories. We described the legal suits intervening against the reopening of Unit 1.

Taken as a sum, this information becomes a portrait, not of a single accident, but of the entire nuclear industry. We learn from TMI how people, government, industry and financial institutions react to a nuclear accident. From this information comes power.

Would you like to keep receiving ISLAND UPDATES? Just let us know. We'd be glad to keep them coming until our money runs out.

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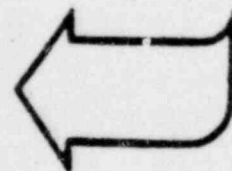
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**SUPPORT LOCAL
ACTIONS MARCH 28**



Message from the 28th Coalition

The suffering of the people of Three Mile Island is the suffering of all nuclear victims -- those exposed to uranium mining, nuclear facilities, and atomic weapons. We call for national and international efforts to end the nuclear nightmare. We call on you to demand the permanent shutdown of Three Mile Island by supporting local actions on March 28-30, 1980, and to participate in the national actions on April 26-28 in Washington and elsewhere. Support the movement for a NUCLEAR FREE FUTURE.

The people of the Three Mile Island area will hold a service and commemorative vigil in Harrisburg on March 28. On March 29 there will be a demonstration near the TMI facility. We invite people of central Pennsylvania to attend the action at TMI.

The March 28th Coalition is selling armbands with the message "TMI-- NEVER AGAIN." Cost per armband is \$1.00 (1-9), \$.80 (10-49), and \$.60 (50+). We are asking people world wide to order these armbands and wear them on the weekend of March 28.

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SUSQUEHANNA VALLEY ALLIANCE'S
COMMENTS ON NUCLEAR REGULATORY COMMISSION'S
ENVIRONMENTAL ASSESSMENT
USE OF EPICOR - II
AT
THREE MILE ISLAND, UNIT 2

Susquehanna Valley Alliance

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OUTLINE

- I. Introduction
- II. EAS is illegally defective in that the process used is segmented in violation of NEPA
- III. Section-by-section analysis
- IV. Technical comments
- V. Conclusion

I. INTRODUCTION

The Susquehanna Valley Alliance is comprised of private citizens who reside in the Susquehanna River Valley and who rely on the Susquehanna for drinking water, fishing, swimming, boating, and other recreational and life-sustaining uses. These citizens are deeply concerned with the continuing assault on their environment by the accident at, as well as the planned decontamination and restart of, Three Mile Island Unit # 2. They have already expressed their concern by bringing suit in the Federal Court for the Middle District of Pennsylvania (Civil Action Number 79-658) to prohibit the violations of the Constitution, the Atomic Energy Act, the Clean Water Act, and the National Environmental Policy Act which are occurring at Three Mile Island.

As the comments that follow will clearly demonstrate, the Environmental Assessment Study to which reference is made here is deficient in nearly every aspect and represents a further violation of the NEPA as well.

II. EAS IS ILLEGALLY DEFECTIVE IN THAT THE PROCESS USED
IS SEGMENTED IN VIOLATION OF NEPA

The EAS process being followed by the NRC staff violates the National Environmental Policy Act with which it purports to comply. The NRC staff along with Metropolitan Edison (Met-Ed) and its parent company, General Public Utilities (GPU) have announced that the environmental aspects of the attempts to decontaminate and restart Three Mile Island # 2 will be assessed in small increments in order to comply with NEPA. The instant assessment (on the use of EPICOR -II) is to be followed by an assessment of the disposal of water processed through EPICOR -II. Subsequent assessments would address other phases of the project.

This alleged compliance with the requirements of the National Environmental Policy Act is in fact a total subversion of those requirements, designed to avoid the obvious need to do a complete, cohesive and comprehensive Environmental Impact Statement regarding the entire project of decontamination and restart.

For example, the NRC staff and the GPU have already divided the cleanup operation into the following steps:

1. Adding an EPICOR I unit for the cleaning of low-level waste.
2. Building, without permit, the entire EPICOR II system.

3. Processing water through EPICOR II. (Environmental Assesment-NUREG 0591.)
4. Disposing of water processed through EPICOR II. (Environmental Assessment -NUREG- 0591.)
5. Removal of krypton gas from the reactor containment building.
6. Preparations for the construction of a system to treat highly radioactive water.
7. Building and operating a system for the treatment of highly radioactive wastes. This segment may or may not include disposing of the water treated by the high-level cleanup system.
8. Removal of damaged fuel rods and decontamination and refurbishment of the reactor containment building in preparation for restart.

Depending on the steps used in Number 7 above, these are only the minimum segments currently identified of one comprehensive, continuing program being undertaken by the NRC staff and GPU designed to decontaminate and restart TMI # 2. This segmentation is intended to create the illusion that no single segment has any potentially significant environmental impact, thereby negating the requirement of preparing a full environmental impact statement (EIS) covering the entire program before the program commences. However, NEPA, as

repeatedly interpreted by the courts across the country, does not permit such a tactic to thwart the clear intent of the Act.

The case law on "segmentation" is consistent, as summarized by the Court in Sierra Club vs. Bergland, 451 F. Suppl. 120, 129 (N.D. Miss., 1978) (involving the dredging of a watershed) quoting City of Rochester vs. U.S. Postal Service, 541 F. 2d 967, 972 (2 Cir. 1976):

In ascertaining the significance of a major federal action, the project must be assessed with a view to the overall cumulative impact of the action proposed, related federal action and the projects in the area and further actions contemplated.

As the Court reasoned in Bergland, id:

... such a statement (EIS), however, is absolutely required where the proposed action may fairly be said to have a potentially significant adverse effect.

The Court concluded its reasoning as to the need for an EIS by stating that:

Considerations of environmental factors "to the fullest extent possible", and "beginning at the earliest possible point" are necessary. 38 Fed. Reg. 10856, 19865 (1973). As recognized by the Second Circuit, in Conservation Society of Southern Vermont, Inc. vs. Sec. of Transportation, 508 F. 2d 927, (2 Cir. 1974) Congress was quite aware that incremental effects of small, but repetitive projects, could have major long-term effects.

Footnote 37 of the Conservation Society was highlighted in Footnote 3 of the Bergland case.

³ Footnote 37 of this case discloses an important aspect of NEPA's legislative history in these words:

The Senate report accompanying NEPA states expressly that one function of the Act is to prevent decision-making that affects the environment to take place "in small but steady increments which perpetuate rather than avoid the recognized mistake of previous decades." S. Rep. No. 91 296 91st Cong., 1st Sess. 5 (1969).

The segmentation issue was also addressed in Sierra Club vs. Morton, cited above, which involved the failure of the Departments of the Interior, Army and Agriculture to issue a comprehensive environmental impact statement on the development of coal resources in the Northern Great Plains, even though individual EIS's were done in conjunction with the approval of specific mines. Pages 870 through 873 of that decision contain a thorough analysis of the background of the segmentation problem and of the rationale for not allowing NEPA to be circumvented by the division of large projects into smaller pieces and assessing the environmental effects of each of the small pieces alone. Quoting Jones vs. Lynn, 477 F. 2d 885 at 891 (1 Cir. 1973), the segmentation approach is " ... an approach akin to equating an appraisal of each tree to one of the forest."

The Court in Sierra Club vs. Morton cites 40 CFR, Section 1500. 6 (a) (1974) and no less than six other cases which support the conclusion that the goals of NEPA cannot be

allowed to be abandoned by the actions of an agency in dividing the project into its less noxious components so that the whole project can be accomplished sans an EIS. In assessing the Council on Environmental Quality's view of this question, which is in accord with that of the Susquehanna Valley Alliance, the Court said:

This interpretation of the statutory term is eminently reasonable, both because NEPA plainly mandates comprehensive consideration of the effects of all federal actions, 42 U.S. C. Section 4332 (2) (A), which consideration would be defeated if impact statements were required only for individual projects of "major" size, and because any other interpretation would provide an escape hatch, through agency subdivision of "major" projects, from the impact statement requirement.

Almost every project can be divided into smaller parts, some of which might not have any appreciable effect on the environment. The court would be forced to take each project apart piece by piece *** *People of Enewetak vs. Laird, D. Hawaii, 53 F. Supp. 811, 821 (1973)*. Thus the courts have had no difficulty in requiring impact statements for "major Federal actions" that were no more than the cumulative effect of related minor federal actions. See, e.g., *Natural Resources Defense Council, Inc. vs. Grant, E.D.N.C., 341 F. Supp. 356, 367 (1972)*; *People of Enewetak vs. Laird, supra*; *Minnesota PIRG vs. Butz, D. Minn., 358 F. Supp. 584, 622 (1973)*; *SCRAP vs. United States, D.D.C., 346 F. Supp. 189, 200 (1972)* (three-judge court), reversed on other grounds, 412 U.S. 669, 93 S. Ct. 2405, 37 L. Ed. 2d 254 (1973) ("the necessity of preparing an impact statement cannot be avoided or postponed *** by breaking (the action) into minute component parts"). Cf. *Named Individual Members of San Antonio Conservation Society*

vs. Texas Highway Department, 5 Cir. , 446 F. 2d 1013, 1022-1023, cert. denied, 403 U.S. 932, 91 S. Ct. 2257, 29 L. Ed. 2d 711 (1971).

The same result was reached in Scientists' Institute for Public Information Inc. vs. Atomic Energy Commission, 156 U.S. App. D.C. 3895, 481 F. 2d 1079 (1973) in which the AEC was required to provide a comprehensive EIS for the Liquid Metal Fast Breeder Reactor program even though an EIS had been done for the only plant built and it had planned to do one for each plant subsequently built.

Another context in which the segmentation issue is commonly addressed is that of highway construction. The case of Indian Lookout Alliance vs. Volpe, 484 F. 2d 11 (1973) is only one of a series of cases on highway construction wherein the Courts have addressed the size of the project to be made a part of the EIS. The test to be applied is whether the project has the "requisite independent utility" (ibid, at 20) to be the segment covered by the EIS. It is submitted that the attempted cleanup of TMI is one project and that the eight or more segments enumerated above each lack independent utility to accomplish the aim of the cleanup, i.e., the restart of TMI # 2.

In addition, the problems attendant to such segmented environmental review are highlighted by any reasonable attempt

to assess the use of EPICOR II. Time and again, as detailed in the sections that follow, a complete appraisal of the possible environmental effects and their severity can only be accomplished in relation to other parts of the attempted decontamination and instant project, including the restart of TMI # 1, for which no environmental assessment study has yet been done.

It is therefore submitted that any attempts to assess the significance of the environmental effects of the use of EPICOR II without a simultaneous comprehensive assessment of the entire plan to decontaminate and re-start TMI # 2 is unlawful and that the partial assessment of the use of EPICOR II, to which these comments are submitted, is wholly without merit or legal foundation.

III. SECTION BY SECTION ANALYSIS

1.0 Proposed Action

Above we have referred to the argument that the EAS is illegally segmented and under these circumstances the NRC should not limit the EAS to clean-up and storage of the contaminated wastes. Furthermore, the EAS does not evaluate the impact of temporary storage, packaging, handling, transportation, and burial of solid waste generated from the clean-up.

The illegally segmented EAS does not fully evaluate alternatives, including, discharge alternatives, thereby may preclude development of a more sophisticated system capable of dealing with all the wastes, including the high-level waste water. Such a system may be more cost effective and present fewer hazards to public health and safety.

Although the EAS allegedly does not include the disposal of the decontaminated waste, in fact, projected "discharge" (into the Susquehanna River) underlies the Assessment. On page 22 of the Assessment, under Section 6.0, Subpart 1, the NRC states:

TMI Unit 2 water can be processed in the existing TMI Unit 1 or 2 radwaste systems. However, since these systems are not specifically designed for handling intermediate-level wastes, the systems are not capable of producing water of sufficient quality for discharge.

Although the EAS purports to be in evaluation of the effect of the proposed action on public health and safety,

in fact, by its failure to include an adequate treatment and "waste case" analysis, the NRC has not accurately estimated the impact on human health from radiation doses which may occur. Furthermore, ecological impacts have received no consideration whatsoever. The NRC, while it discusses dosage from releases of Xe-133 and I-131, does not translate the dosage into health impact.

This EAS is in the context of the nation's worst commercial nuclear accident. The accident at TMI has and continues to exert great psychological stress on the residents of central Pennsylvania. The population has been sensitized to the danger of radioactive releases from the damaged reactor and the treatment processes. The NRC has ignored this serious problem of the psychological effects of its proposed action.

2.0 Introduction

The NRC labels Cesium 137 as the "dominant isotopic contributor", but fails to discuss the effect of C 137 in human and biological systems. Furthermore, the NRC fails to discuss what other isotopes may be vented to the air (though the EAS does provide for a vent filtration system) or pass through the system, such as tritium. Further, the Assessment fails to treat in any way the chemical interactions of the isotopes in the ion-exchange system. (See Part IV, Technical Comments)

The Assessment should state which radioactive isotopes will be vented, at what concentration, in what amounts and should report the calculations and figures upon which such statements are made. The Assessment should describe the solubility and volatility of each isotope.

2.1 Need for Decontamination

The NRC has not made a clear case to justify the risks of decontamination. The Assessment states but does not explain why decontamination is necessary to maintain safe shutdown.

It appears that EPICOR II was chosen as a relatively quick method to treat the intermediate waste. Because delay in this case will only make wastewater safer due to decay of radioactive isotopes into stable isotopes, we cannot understand why the NRC staff and Met Ed wish to rush the decontamination of the stored water.

As a second rationale for speedy decontamination, the NRC staff cites undue exposure. The Assessment does not describe how the workers are exposed nor do they discuss how worker exposure can be mitigated without processing the wastewater. Extra-shielding and cleaning of contaminated surfaces should be evaluated. It is our understanding that 50% of undue exposure is due to contaminated surfaces and that such contamination is now

being removed.

In the EAS a comparison is made between the occupational exposures to be encountered if the EPICOR system is not used and the occupational exposures from operation of the EPICOR system. The comparison, however, is not adequate in that the entire process from beginning operation of the EPICOR system to end disposal is not evaluated. Furthermore, operating procedures have not been defined to such a level that the number of employees needed in the transfer of spent resins is specified. In order to make the threshold determination concerning the need for the operation of the EPICOR II system, this further clarification is needed to compare the man/reams of exposure in both cases.

Nowhere does the EAS discuss the availability of additional shielding to protect workers while they maintain the Reactor in a safe shut-down mode. It is possible that this additional shielding would obviate the need for the use of EPICOR II and would allow the agency and the company to let the radioactivity decay naturally while they study in greater depth the alternatives available.

It is not at all clear that sufficient storage capacity exists for the 245,000 gallons to be processed in the TMI II auxiliary building. It is clear that some of this waste will have to be re-circulated back through tanks from which it came.

These tanks are contaminated with radioactivity, and some of that radioactivity would be transferred back to the cleaned up water.

3.2 Modification of EPICOR II

The construction, installation, and use of EPICOR I after the March 28, 1979 accident constituted a violation of the Atomic Energy Act in that application for and issuance of a construction permit are required under the Act.

Although the financial interests of the licensee would be served by a fast decontamination method, the NRC staff must under NEPA explore alternatives such as isolating the plant, biologically, from the environment.

3.3 Design of EPICOR II System

EPICOR II has no record of operational experience. Bold assurances that it will do the job the NRC staff says it will do are not enough. Ion-exchange is not the best available technology, and it does not provide the protection of the environment which would exist if a combination of evaporation, ion-exchange and carbon absorption were used. (See Technical Comments)

3.3.1 Description of EPICOR II System

The NRC staff states the ion-exchange resins will result in 90% removal efficiency for radio-nuclides. The staff fails to state, however, the basis for that assertion. Further,

it fails to report data on flow rate and resin capacity which would enable independent analysts to evaluate NRC's assertions. Data on the capacity of resin beds is essential because the filtering function terminates when the bed is exhausted. Data on disintegration of the resin beds is equally essential because the resins disintegrate when bonded to radioactive isotopes.

The NRC bases its plan for storage of processed water on the use of tanks from Unit 1. Because this assessment is legally segmented, no plan for Unit 1 is presented, although proceedings for re-opening Unit 1 are going forward. What will happen to water processed through EPICOR II if Unit 1 is re-opened? We believe that the NRC staff plans to discharge this water into the Susquehanna River. No other alternative is provided in this Assessment.

3.4 Design Features of Spill Prevention

The EAS is extremely sketchy on a "worst case" analysis. The EAS totally fails to put the radiologic risks of operation of the EPICOR II system into context. The cation demineralizer spent resin will have a radioactivity such that it would give a dose of 400 rems per hour, a nearly lethal dose. The important factor here is timing. Nowhere in the EAS does it differentiate between or put in context the levels of radiation involved in the operation of EPICOR II and compare it to not operating the

system. It is not clear from the EAS all the number of steps that will be required to move the radioactivity out of the water and to its final resting point. We have estimated preliminarily that there would be over 200 individual handling steps for each of the resins. This creates the risk of substantial human exposure.

The only "worst case" discussed is a "worst case pipe break", explained as "a break in the liquid waste inlet pipe to the EPICOR II prefilter/demineralizer." (Assessment, p.11)

On page 12 of the Assessment, the NRC staff refers to the HEPA filter and charcoal absorber system and estimates the thyroid dose from normal air ventilation through the filter. But the NRC fails to mention the serious risk of spontaneous combustion and fire in this filter system. In the NRC's Answer to the Susquehanna Valley Alliance's Interrogatories, the risk of fire is described as follows:

3.5.4 Fire

3.5.4.1 Ventilation System

Should they become too hot, the charcoal absorber beds in the ventilation unit could ignite. Upon indication of ignition of the charcoal bed, the manually actuated fire protection sprays should be cut in.

A fire in the filter vent system would result in serious releases of Iodine 131 to the public. This risk should be thoroughly reviewed in a complete worst-case analysis.

3.5 Design Features to Minimize Gaseous Releases

The HEPA filter and charcoal absorber system as described by the NRC staff has only one radiation monitor. The lack of backup monitors is a problem which permeates this treatment system. If one monitor malfunctions, another one would continue to do the job. Even in the absence of malfunctioning, double monitoring provides a constant check for validating radiation readings.

The NRC staff states that "Iodine fixing chemicals" will be added to minimize gaseous releases. Nowhere does the Assessment say what these chemicals are. Most importantly, the Assessment does not describe the effect such chemical additives will have on the ion-exchange resins' ability to clean the water. (See Technical Comments)

4.0 Occupational Exposure

This section of the Assessment is defective, surprisingly since occupational safety is put forth as the major reason for proceeding with treatment of the radioactive water. Although shielding of the EPICOR II processing area is described in detail, there is little data given as to what kinds of jobs will be performed inside the processing area, what normal maintenance tasks are necessary, what emergency maintenance can be anticipated and

what protective measures will be taken.

Further, numerous transfers of the concentrated radioactive resins in casks are clearly anticipated but no data is given as to worker exposure or protection during these transfers.

Transport to off-site disposal facilities is not discussed at all. What protective measures will be taken to eliminate exposures to workers and the public during transport?

Again this section refers to "... off-site disposal in an approved facility." Many critical questions are left unanswered here. What kind of disposal site? Where is the facility? Has disposal in a facility received necessary governmental approvals?

In its discussion of estimated radiation dose rates, the NRC staff never takes the necessary second step- the analysis of the dose and translation into health effects. Clarification and substantiating data are necessary to give the conclusory statements regarding dosage credibility.

5.2.1 The Interim Storage Facility

In order to monitor potential contamination of groundwater from on-site storage of concentrated radioactive resin beds, the NRC staff proposes that a well be drilled in the vicinity of the buried beds from which samples can be

taken. If such a well is an accurate monitor, more than one should be drilled. The Assessment provides no discussion regarding contamination of the Susquehanna River from the "groundwater" under the island.

Complete geological data is necessary before on-site storage of these high-level radioactive wastes can proceed. The perfunctory treatment of the construction of this on-site radiation-waste storage facility is shocking.

IV. TECHNICAL COMMENTS (LOUIS J. KOSAREK)

This document is in response to a public request by the United States Nuclear Regulatory Commission concerning any comments regarding the preliminary environmental assessment of the EPICOR-II water treatment system at the Three Mile Island nuclear power plant - Unit 2 (TMI-2) facility. The environmental assessment was issued by USNRC on August 14, 1979 and retains the designation, NUREG-0591. The evaluation herein is provided on behalf of the Susquehanna Valley Alliance.

The prime motivation of this group, which has retained my services, is to constructively review the post-accident activities which are presently being conducted at TMI-2. The basis of their review is to maintain a posture which emphasizes that "all activities which are conducted to clean up the present problems related to the March 28, 1979 accident" are carried out in a manner which maximizes and assures the health and safety of persons in the area of TMI and the Susquehanna River Valley.

This evaluation is an unbiased discussion of the text of NUREG-0591 entitled Environmental Assessment: Use of EPICOR-II at Three Mile Island, Unit 2. The term unbiased refers to the fact that the proposed system EPICOR-II is objectively evaluated regarding 1) performance or non-performance, 2) previous performance of similar systems as extrapolated to the unprecedented quality of water which is specified by NUREG-0591, and 3) the designation of a feasible abatement technology (ies) as based upon prudent scientific thought. Prime emphasis is placed on the capability of EPICOR-II to produce an effluent concurrent with CFR Title 10, Part 20, Appendix B, Table 2, alternate technologies which will produce a compliant effluent, and the characteristics of the water which requires treatment.

The purpose of NUREG-0591 is best defined within its own text by these cited statements:

"This assessment is an evaluation of the effect that the proposed action will have on the public health and safety and on the environment including a consideration of occupational exposures and the risk of accidental releases and a discussion of alternatives to the EPICOR-II system." --- "This assessment....deals with the proposed decontamination of the intermediate level (waste)"

Simply, the basis of NUREG-0591 is to establish the decontamination capability of EPICOR-II on intermediate level waste-water and the effect that this decontamination system will have on a) occupational exposures, b) the environment within which the decontaminated water is to go with respect to public health and safety, c) the possibility of accidental releases, and d) alternative methods.

Preliminary Evaluation

The water which contains intermediate levels of radiation (<40 micro curies per milliliter) and requires treatment has been obtained from the following sources.

- existing contaminated water prior to the accident
- contaminated water from the reactor containment sump
- reactor coolant system letdown (purge)
- leakage from system components

This water of a volume of 288,000 gallons is contained in the auxilliary building tanks and only the clean-up of these tanks is presently proposed in NUREG-0591. The various tanks holding this liquid are defined with regards to levels of I-131, Cs-134, Cs-136, Cs-137, Ba-140 and H-3.

Since the basis of defining a treatment technology to decontaminate this water is established by the characteristics of the water which requires treatment, an extensive review of the nature of the water's constituents should be conducted prior to equipment implementation. Because of the various sources

of the water and an unclear idea of the integrity of the reactor and cooling system which includes the integrity of the fuel rods, portion of spent fuel in the rods, severity of rod damage, structural integrity of cooling system components and the leaching characteristics within the fuel rods, the fission products usually associated with nuclear reactors are of prime concern as well as activation/corrosion products, dissolved gasses, suspended solids (crud) and salinity (dissolved solids). The radionuclides usually associated with fission product contamination are listed in Table 1.

The original quantity of the various fission products which could be present are a function of their fission yield. The present quantity of the various fission products that exist are a function of their individual radioactive half-lives and the equilibria established between daughter and descendant isotopes. Because of the 171 days which has elapsed from March 28, 1979 to September 15, 1979, most of the beta and/or gamma emitters have dissipated because of radioactive decay. The '% remaining' column in Table 1 defines the persistent fission nuclides which might possibly be contained within the intermediate level water in significant quantities. Hence, to effectively establish a design basis for the decontamination system, analyses should be conducted to check the levels of these persistent fission products which may possibly be present in contaminated water.

In addition to the fission and equilibrated nuclides which are present, the possibility exists for the water to contain various radioactive corrosion/activation products. These products are listed in Table 2. The products are formed by the addition of a neutron from the reactor core to the nucleus of a stable isotope and sometimes results in the formation of a radionuclide. These species, be they radioactive or stable at the time, are corroded from the structural components of the system by the action of the water which is present. Again, the radioactive half-life of the isotope will define the persistent species and those which will require treatment. The '% remaining'

Table 1. Radionuclides associated with fission product contamination

Isotope	Half-life	Mode of decay	Major energy level (Mev)	Source	State	% Remaining at 9/15/79
Barium - 137m	2.6m	γ	0.662	daughter Cs-136	solid	<0.0001
- 139	84m	β/γ	2.3/0.166	fission		<0.0001
- 140	12.8d	β/γ	1.02/0.537	fission		<0.009
Bromine - 82	35.1hr	β/γ	0.444/0.554, 0.619	n-capture, Br-81	volatile	<0.0001
- 83	2.41hr	β/γ	0.93/0.53	n-capture, Se-82		<0.0001
- 84	31.8m	β/γ	4.68/0.88	fission		<0.0001
- 85	3.0m	β	2.5	fission		<0.0001
Cerium - 141	32.5d	β/γ	0.581/0.145	n-capture, Ce-140	solid	2.6
- 143	34.0hr	β/γ	0.293	n-capture, Ce-142		<0.0001
- 144	285d	β/γ	0.31/0.134	fission		66.0
Cesium - 134	2.05y	β/γ	0.662/0.605	n-capture, Cs-133	solid	85.4
- 136	13.5d	β/γ	0.657, 0.341/ 0.818	Ba-138		0.015
- 137	30.0y	β/γ	1.176, 0.514/ 0.662	fission		98.9
- 138	32.1m	β/γ	0.340/1.426	fission		<0.0001
- 139	9.5m	γ	1.65	fission		<0.0001
Iodine - 129	1.7×10^7 y	β/γ	0.15/0.04	fission	volatile	99.99
- 130	12.5hr	β/γ	1.04/0.7	n-capture, I-129		<0.0001
- 131	8.06d	β/γ	0.806/0.364	fission		<0.0001
- 132	2.3hr	β/γ	2.12/0.773	daughter Te-132, fission		<0.0001
- 133	20.8hr	β/γ	1.27/0.53	fission		<0.0001
- 134	52.4m	β/γ	2.43/0.89	fission		<0.0001
- 135	6.7hr	β/γ	1.4/1.28	fission		<0.0001
Krypton - 83m	1.86hr	γ	0.009	daughter Rb-83	gas	<0.0001
- 85m	4.4hr	β/γ	0.82/0.134	fission		<0.0001
- 85	10.3y	β/γ	0.67/0.514	fission		96.9
- 87	75m	β/γ	3.8/0.403	fission		<0.0001
- 88	2.8hr	β/γ	2.8/0.191, 2.40	fission		<0.0001
- 89	3.2m	β/γ	4.0/complex	fission		<0.0001
- 90	33s	β/γ	2.8/0.536	fission		<0.0001
Lanthanum - 140	40.3hr	β/γ	1.69/1.57	daughter Ba-140, fission	solid	<0.001
- 142	92.5m	β/γ	4.51/0.65	fission		<0.0001
Molybdenum - 99	66hr	β/γ	1.23/0.181, 0.760	n-capture, Mo-98 fission	solid	<0.0001
Neodymium - 147	11.1d	β/γ	0.81/0.091	fission	solid	0.23
Niobium - 95	35d	β/γ	0.160/0.765	daughter Zr-95	solid	equilibrium
- 97m	1.0m	γ	0.747	daughter Zr-97		<0.0001
- 97	74m	β/γ	127/0.665	descendant Zr-97		<0.0001

Table 1. Continued

Isotope	Half-life	Mode of decay	Major energy level (MeV)	Source	State	% Remaining at 9/15/79
Praseodymium - 143	13.6d	β	0.933	fission	solid	0.016 equilibrium
- 144	17.3m	β/γ	2.99/0.695	daughter Ce-144		
Rhodium- 103m	57m	γ	0.04	daughter Ru-103	solid	<0.0001 <0.0001 equilibrium
- 105	36.2hr	β/γ	0.57/0.32	n-capture, Ru-104		
- 106	303 ^s	β/γ	3.54/0.512	daughter, Ru-106		
Rubidium - 83	100d	γ	0.53	Br-83	solid	30.6 <0.0001 <0.0001
- 88	17.7m	β/γ	5.3/1.86	daughter, Kr-88		
- 89	15.4m	β/γ	3.92/1.05	fission		
Ruthenium - 103	37.5d	β/γ	0.7/0.497	fission	volatile	4.98 72.5
- 106	369d	β	0.039	fission		
Strontium - 89	50.6d	β/γ	1.463/0.91	daughter Rb-89	solid	9.61 98.84 <0.0001 <0.0001
- 90	28.0y	β/γ	0.546	fission		
- 91	9.7hr	β/γ	2.67/102	fission		
- 92	2.7hr	β/γ	1.5/1.37	fission		
Technetium - 99m	6.0hr	γ	0.14	daughter Mo-99	solid	<0.0001 equilibrium
- 99	2.1x10 ⁵ y	β	0.292	daughter Mo-99 fission		
Tellurium - 127m	109d	β/γ	0.73/0.06	fission	solid	33.7 <0.0001 2.76 <0.0001 <0.0001 <0.0001 <0.0001 <0.0001 <0.0001
- 127	9.4hr	β/γ	0.7/0.36	fission		
- 129m	33d	β/γ	1.6/0.69	fission		
- 129	67m	β/γ	1.45/0.03	fission		
- 131m	30hr	β/γ	2.46/0.78	fission		
- 131	24.8m	β/γ	2.14/0.15	daughter Te-131m		
- 132	78hr	β/γ	0.22/0.230	fission		
- 134	43m	γ	0.204	fission		
Tritium	12.26y	β	0.0186	n-capture, H-1		
Xenon - 131m	11.80d	γ	0.164	daughter I-131	gas	equilibrium <0.0001 <0.0001 <0.0001 <0.0001 <0.0001 <0.0001 <0.0001
- 133m	2.26d	γ	0.233	fission		
- 133	5.4d	β/γ	0.346/0.081	fission		
- 135m	15.8m	γ	0.527	daughter I-135		
- 135	9.14hr	β/γ	0.92/0.250	fission		
- 137	3.80m	β/γ	4.1/0.455	fission		
- 138	17m	β/γ	2.4/complex	fission		
- 139	43s	γ	0.22	fission		

Table 1. Continued

Isotope	Half-life	Mode of decay	Major energy level (Mev)	Source	State	% Remaining at 9/15/79
Yttrium - 90	64.5hr	β	2.27	daughter Sr-90	solid	<0.0001
- 91	58.3d	β/γ	1.505/1.21	fission		13.1
- 92	3.5hr	β/γ	3.63/0.5, 0.934	daughter Sr-92		<0.0001
				fission		<0.0001
- 93	10.1hr	β/γ	2.89/0.267	fission		<0.0001
Zirconium - 95	65d	β/γ	0.89, 0.396/0.74	fission	solid	16.15
- 97	17hr	β/γ	1.91/0.747	fission		<0.0001

*Information obtained from references 1-8

Table 2. Radioactive corrosion/activation products associated with nuclear reactors*

Isotope	Half-life	Mode of decay	Major energy level (Mev)	Source	State	% Remaining
Chromium - 51	27.8d	γ	0.32	activation	solid	1.4
Cobalt	- 58	β/γ	0.474/0.18	activation	solid	19.0
	- 60	β/γ	155/0.06	activation		93.9
Iron	- 55	γ	0.23	activation	solid	88.3
	- 59	β/γ	0.48/1.095	activation		7.4
Manganese	- 54	γ	0.835	activation	solid	67.6
	- 56	β/γ	2.85/0.85	activation		<0.0001
Neptunium - 239	2.14x10 ⁶ y	α/γ	4.78/0.086	daughter u-237	solid	equilibrium
Nickel - 63	92y	β	0.067	activation	solid	99.6
Niobium - 92m	10.16d	γ	0.934	activation	solid	0.0009
Phosphorous	- 32	β	1.71	activation	solid	0.03
	- 33	β	0.248	activation		0.9
Sodium - 24	15hr	β/γ	1.39/1.37	activation	solid	<0.0001
Tin - 117m	14d	γ	0.158	activation	solid	0.02
Tungsten	- 185	β	0.429	activation	solid	20.6
	- 187	β/γ	1.31/0.686	activation		<0.0001
Uranium - 237	6.75d	β/γ	0.248/0.06	activation	solid	<0.0001

*references are 1-8

column in Table 2 defines the persistent activation type nuclides which might be contained in the water at significant levels.

An important parameter which is required in defining the treatment system that will effectively decontaminate a stream such as this is the physical form of the radionuclide. The various physical forms are: gas, liquid, and solid. There are two types of solids, dissolved solids and suspended solids which have been termed 'crud'. Radionuclides can be volatile which means that their physical form can change from solid to gas depending on the physio-chemical environment. The importance in knowing a complete profile of species that may require removal (Tables 1 and 2) is related to the use of different functional components within a system. Emphasis on the dominant state may define a requirement for addition of stabilizing compounds, a gas stripper, liquid purification component, demineralizer or filtration system or a combination thereof. The water characteristics define the most applicable decontamination technology:

A characteristic which is a result of the elemental radionuclide alone or with other elements to form a compound, is valence. Valence is the charge which the radionuclide retains as its given form in solution. Valence can change with pH, oxidation state, the conversion of the elemental form to the compounded form, and chemical reaction with other constituents. The predominant valence of a specific isotope or group of isotopes plays a critical part in the design of a decontamination system. Table 3 lists the long lived radionuclides associated with fission reactors and the valence of these nuclides in their elemental and compounded forms.

Solubility is another important factor in designing a decontamination system. The physiochemical environment of the water and the modifications to the water concurrent with specific treatment components will in some cases affect the solubility of radioactive species. If a constituent changes from a soluble to insoluble species (or visa-versa) the physical form has been

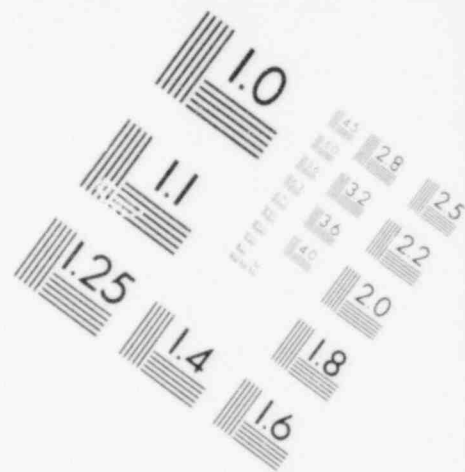
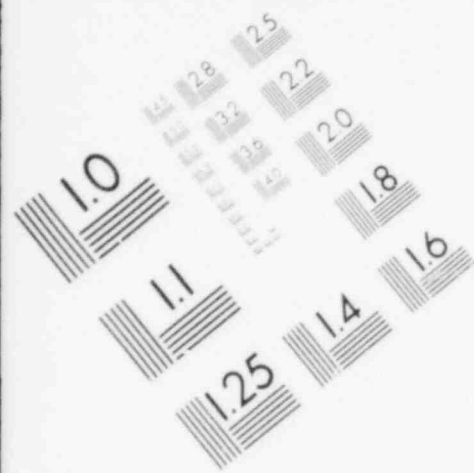
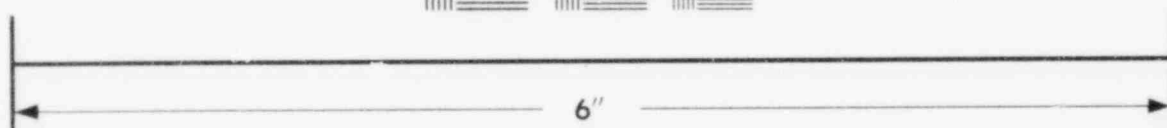
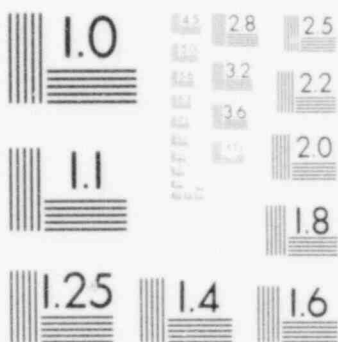
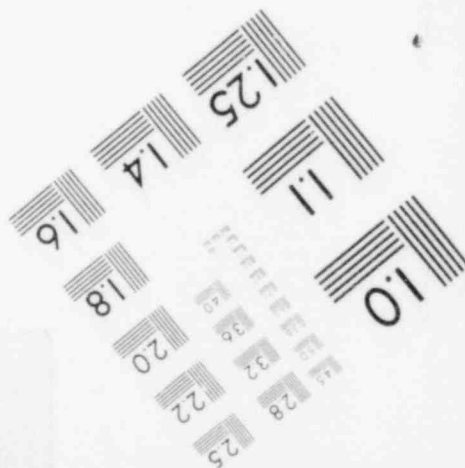
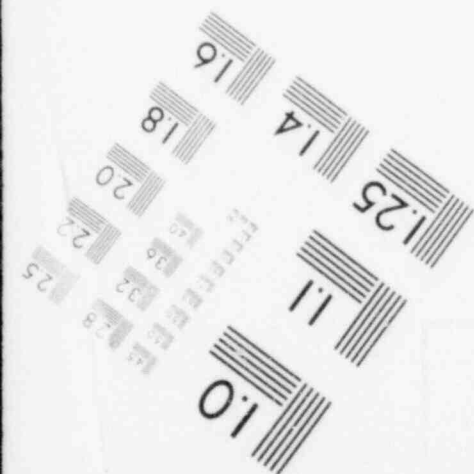
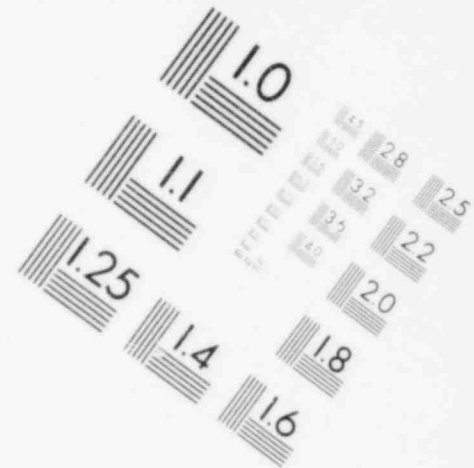
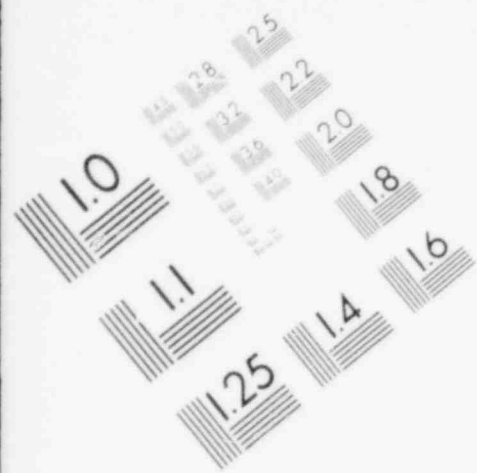


IMAGE EVALUATION
TEST TARGET (MT-3)

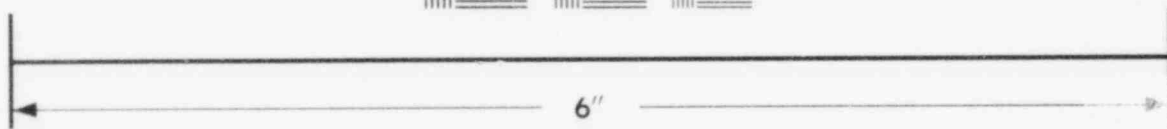
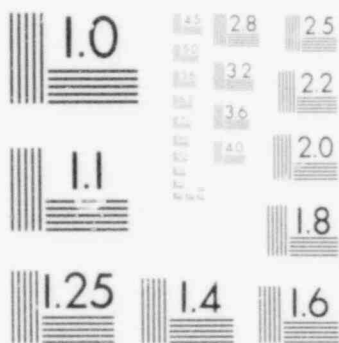


MICROCOPY RESOLUTION TEST CHART





**IMAGE EVALUATION
TEST TARGET (MT-3)**



MICROCOPY RESOLUTION TEST CHART

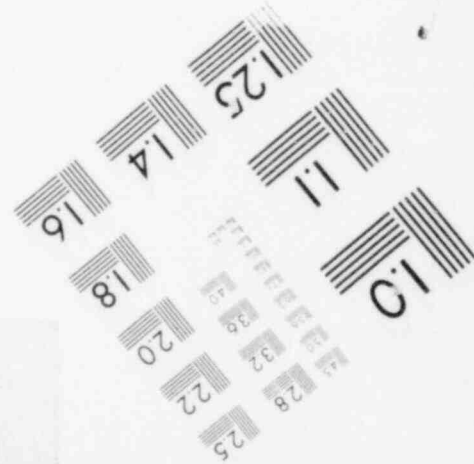
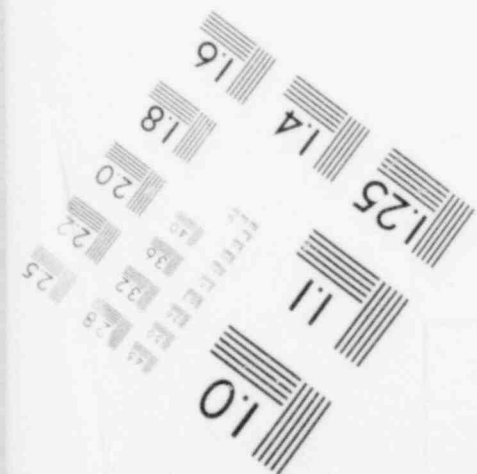


Table 3. Long-lived radionuclides associated with fission reactors

Isotope	Half-life	Valence	Highest Measured Level ($\mu\text{Ci/ml}$)*	Required OF (9/15/79)
Barium - 140	12.8d	+2	0.006	0.8
Cerium - 141	32.5d	+3,+4	NM	I
- 144	285d	+1	NM	I
Cesium - 134	2.05y	+1	7.1	3.2×10^5
- 136	13.5d		0.024	1.07
- 137	30y		34.8	6960
Chromium - 51	27.8d	+2,+3,+6,-1,-2	NM	I
Cobalt - 58	71.3d	+2,+3		
60	5.2y		NM	I
Iodine - 129	1.7×10^7 y	+1,+5,+7,-1	NM	I
- 131	8.06d		0.0013	17.3
Iron - 55	2.6y	+2,+3	NM	I
- 59	45.6		NM	I
Krypton- 85	10.3y		NM	I
Manganese - 54	303d	+2,+3,+4,+6,+7	NM	I
Neptunium - 239	2.14×10^6 y	+3,+4,+5,+6	NM	I
Nickel - 63	92y	+2,+3	NM	I
Phosphorous - 32	14.3d	+3,+5,+2,+3	NM	I
- 33	25d		NM	I
Rubidium - 83	100d	+1	NM	I
Ruthenium - 103	39.5d	+3,+4,+6,+8	NM	I
Strontium - 89	50.6d	+2	NM	I
- 90	28y		NM	I
Technetium - 99	2.1×10^5 y	+7,-1,-2	NM	I
Tellurium - 127m	109d	+4,+6,-2	NM	I
- 129m	33d		NM	I
Tin - 117m	14d	+2,+4	NM	I

Table 3. Continued

Isotope	Half-Life	Valence	Highest Measured Level ($\mu\text{Ci/ml}$)*	Required DF (9/15/79)
Tritium - 3	12.26y	+1	0.966	1.29
Tungsten - 185	75d	+6,-1,-2	NM	I
Yttrium - 91	58.3d	+3	NM	I
Zirconium - 95	65d	+4	NM	I

NM - not measured

I - insufficient data

* - level calculated to 9/15/79

altered and an alternate decontamination technology may be required.

The aforementioned parameters designate that an extensive analytical effort is required to: 1) determine all of the radionuclides which require decontamination, 2) the percentages of various radionuclides which designate the predominate physical forms, 3) establish the valence and solubility of the nuclides to be cognizant of suggested design requirements and 4) establish the presence and capability of other non-radioactive species that may interfere or disrupt the operation of a proposed decontamination component or system.

The environmental assessment, NUREG-0591 does not reflect an extensive analytical effort nor testing program which was aimed at fully defining the nature of the water which requires decontamination. A more complete analysis should involve a characterization of suspended solids, non-radioactive dissolved solids, a material balance of all nuclides present and the nature plus quantity of dissolved gasses. Granted, several significant radioactive species were defined, but in view of the previously discussed complexities which could arise, additional information is required prior to the selection of a abatement system. More importantly, additional data is required to assess the feasibility of a successful, efficient technology.

Decontamination Factors

The radioactive constituents Iodine-131 and Cesium-137 are defined as the principle radionuclides present in the waste-water for radiological dose considerations with Cesium-137 being the major isotopic contributor due to the 30 year half-life. The additional isotopes: Cesium-134, Cesium-136, Barium-140 and Tritium are also defined as to their level in the intermediate level waste-water. The accepted terminology which defines the extent to which a contaminated entity can be decontaminated by a treatment technology or should be decontaminated is termed the decontamination factor (DF). The decontamination factor

is calculated by dividing the numerical value of the influent entity by the numerical value of the effluent entity (9). The characteristics of any unrestricted discharged effluent stream must be within the limits established by CFR Title 10, Part 20, Appendix B, Table 2 concurrent with the limits established in the license, which in this case realizes a dilution factor of 250.

The decontamination factors which are required for a discharge to be in compliance can be calculated if the influent level is known. NUREG-0591 designates influent levels for I-131, Cs-134, Cs-136, Cs-137, Ba-140 and tritium. If any of the long lived isotopes in Table 3 are contained in the intermediate level waste-water and a high probability does exist, it is impossible to calculate a required DF with the data given in NUREG-0591 unless additional analyses are conducted or reported. Referring to Table 3, NM represents the possible influent species which were not delineated in NUREG-0591 and I represents insufficient data to make the DF calculation on a specific isotope.

Utilizing the data which is provided in NUREG-0591, a dilution factor of 250, and 171 days of radioactive decay, the required DF values can be calculated. As indicated in Table 3, the DF required for the removal of Barium-140 from the auxiliary building tanks is 0.8 as of 9/15/79. The DF value of 0.8 for Barium-140 designates that there is no treatment requirement associated with this isotope. The treatment requirement does not exist for Barium-140 because the levels of this isotope are below the regulated value for discharge. The level of Barium-140 has been significantly reduced by radioactive decay because of its 12.8 day radioactive half-life.

The DF required for Cesium-134 as based upon the operating license DPR-73, a dilution factor of 250, NUREG-0591, and 171 days of radioactive decay is 315,555 or 3.2×10^5 . In relative terms, this DF is extremely high. The usual range for a DF is 10 to 1000 and in special cases as high as 10,000 (10). This value is 31.5 times higher than 10,000. The DF requirement for Cesium-134 is

specified in Table 3 and very little advantage can be gained by radioactive decay because the half-life of Cesium-134 is 2.05 years. The time requirement for the Cesium-134 to be at a DF of 1000 because of radioactive decay is approximately 17 years.

The radionuclide Cesium-136 was specified in NUREG-0591 as being contained in the liquid presently stored in the auxiliary building tanks. Applying a 250 dilution factor, the DF requirement as of 9/15/79 is 1.07. This DF is relatively low and is such because due to the 13.5 day half-life of this isotope, over 99+ $\frac{1}{2}$ of this isotope has dissipated. The DF value of 1.07 is listed in Table 3.

An additional isotope of cesium which was delineated in NUREG-0591 was Cesium-137. Comparing the regulated levels of this isotope with the level of Cesium-137 actually present, the required DF is 6960 to produce an acceptable effluent. In relative terms, this DF is somewhat high. The amount of Cesium-137 which has dissipated because of radioactive decay is negligible since this isotope has a half-life of 30 years. Very little advantage can be gained by allowing this isotope to decay because of the long half-life.

Another isotope which was identified by NUREG-0591 as far as actual levels in the auxiliary building tanks was Iodine-131. Since iodine is volatile, a certain amount will be contained as a gas, and the remainder will be as a dissolved solid. The variability of volatility can be minimized by proper pre-treatment of the water. Assuming all of the Iodine-131 exists as a dissolved solid, and incorporating a dilution factor of 250, the DF requirement is 17.3 as of 9/15/79. A significant portion of this fission product has dissipated due to its 8.06 day half-life and has thus decreased the required DF.

The levels of tritium were measured in the auxiliary tanks and the levels of this isotope which is usually associated with nuclear power facilities is designated in NUREG-0591. Utilizing the dilution factor of 250, with negligible decay because of a 12.26 year half-life, the required decontamination factor

is listed in Table 3. This DF is relatively low.

The required DF values as based upon the analytical data specified in NUREG-0591 range from 315,555 to 0.8. As the isotope(s) which retain the highest DF value are the limiting nuclides which delineate the basis of a water treatment system's design, emphasis must be placed on removing Cesium-134. However, NUREG-0591 places the primary emphasis regarding decontamination on Cesium-137 and Iodine-131. Since the isotopic form of the nuclides are iso-electronic, their chemical properties are alike and thus the final decontamination system should emphasize the removal of cesium and retain a DF of 315,555 for Cesium-134. Because the design of EPICOR II is based upon a value of less than 100 $\mu\text{ci/ml}$ of Cesium-137, this limiting value should be stated regarding Cesium-134 as this is the most critical radionuclide.

Of the nuclides present in the auxilliary tank building, the levels of Barium-140, Cesium-136 and Iodine-131 have dissipated solely due to radioactive decay. This radioactive decay has significantly reduced or eliminated the required DF for these isotopes. Reviewing the long-lived isotopes, Cesium-134, Cesium-137 and Tritium, radioactive decay has not significantly altered the levels of these nuclides present and subsequently has not reduced the required DF values. The review of additional fission products which have been proven to exist at nuclear power facilities (Tables 1 and 2) and the summary of long-lived isotopes which may be present in the auxilliary building tanks (Table 3) but have not been addressed in NUREG-0591; designates that if any of these isotopes are contained in the auxilliary building tanks that they will be retained at the levels near their original amounts of radioactivity. Because the isotopic contribution by these nuclides, which was not addressed in NUREG-0591, might be significant and their required DF values will not significantly decrease due to radioactive decay, this is another justification for additional radioanalytical work to be conducted on the water contained in the auxilliary building tanks. Again, the emphasis of these analyses is placed upon more fully

characterizing the liquid so that a design engineering format can be established to substantiate a treatment technology (ies) to facilitate radioactive decontamination.

Decontamination Technologies

The document NUREG-0591 has justified the requirement for a new processing system for intermediate waste decontamination. As there is an established need for a new system, this system should be defined by the operational requirements placed upon it as well as the decontamination system's compatibility with the water which requires treatment. Since the only criteria established in NUREG-0591 regarding operational requirements is to properly decontaminate the water contained in the auxiliary building tanks, emphasis is placed upon required DF values. The present range for specific DF values as based upon nuclide levels specified in NUREG-0591 is 315,555 to less than 1.0.

Although the DF values associated with treatment technologies retain levels of variability associated with operation, water chemistry, DF for specific isotopes and on-site parameters, an alignment of DF versus technology is available from published documents. This alignment of DF versus technology is one basis for establishing the most appropriate technology for decontaminating the liquid contained in the auxiliary building holding tanks. The technology of (distillation) evaporation has an average DF range of 1000 to 100,000 (6, 11, 12, 13) for a single effect system without a non-volatile solute. The operation of an evaporator can be significantly affected by: entrainment, splash over, foam and volatilization of solute (12).

The technology of ion exchange has an average DF range of 2 to 1000 (2, 3, 6, 7, 14) and the efficiency of operation is modified by the composition of waste liquid, background constituents, the type of exchanger, regeneration methods, undesirable oils and suspended solids. The technology of reverse osmosis has an average DF range of 10 to 100 (6, 15) and is disrupted by

membrane hydrolysis due to excessive pressure or temperature, chemical deterioration and fouling from suspended material. Precipitation is used but the efficiency of this physiochemical is related to the solubility of the radionuclide and is specific to certain elements (10).

As based upon current state-of-the-art technology, published data, and prudent scientific thought in the area of water treatment, the technology of evaporation is designated to be the best alternative for achieving the required DF for Cesium-134 as well as for the other isotopes. NUREG-0591 specifies that "EPICOR II...represents the best alternative for desired decontamination." However, there is no basis presented nor data contained in this document which justifies such a statement. The design basis upon which this quote and EPICOR II is based upon is cited as both NUREG/CR-0141(16) and NUREG/CR-0143(7).

NUREG/CR-0141 discusses the present use of various types of filters to remove both radioactive and non-radioactive suspended solids from streams associated with nuclear power reactors. These filters when combined with ion exchange retain a DF of 1.1 to 10.0 for suspended gross beta and gamma activity and 1.6 to 2.5 for specific suspended nuclides (16). The document NUREG/CR-0143 is a state-of-the-art review of the uses of ion exchange to decontaminate streams associated with nuclear power plants. The decontamination factors designated in this document for ion exchange, with regard to the specific isotopes defined in NUREG-0591 as being present in the auxiliary building tank, range from 11.1 to 1000. The technology of ion exchange will not remove isotopes that are dissolved gasses nor will it remove radioactivity in the form of suspended solids except by filtration (7, 14). Therefore, it is suggested that an extensive explanation by NRC be directed to NUREG-0591 which verifies how EPICOR-II is so advanced past the present state of the art in filtration/ion exchange to retain a decontamination factor of over 6000 for Cesium-137 and the operating data which substantiate this claim.

The citation of NUREG/CR-0141 in NUREG-0591 also substantiates various

unaddressed questions in NUREG-0591 regarding the use of filtration as part of EPICOR-II. NUREG/CR-0141 specifies that various parameters such as: weight-volume-particulate size distribution of the solids concentration, chemical compatibility of the filter medium with the slurry, oils present, and the actual radioactive content of the suspended solids in the slurry should be well defined prior to filter selection. These parameters are not addressed in NUREG-0591 and therefore again designate that a more extensive analysis of the water in the auxilliary building tanks be conducted before a treatment system is designed, built or implemented.

As the decontamination technology of evaporation is defined as the technology which is incorporated when intermediate levels of radioactivity are encountered (13) the basis of incorporating EPICOR II (filtration + ion exchange) is unclear. The basis of incorporating EPICOR II is also unclear in light of the fact that a water profile which is probably incomplete is being utilized and that a DF of 315,555 is required. The alternative to EPICOR II which is specified in NUREG-0591 is evaporation but this alternative is dismissed because of: a long lead time to make the system available and an unreliability which could be mitigated by special design provisions. A justification of this dismissal in NUREG-0591 should be given by NRC in light of the fact that NUREG/CR-0143 designates that principals associated with TMI have submitted information to NRC delineating that both TMI units one and two presently have a waste-water evaporator and ion exchange system operating in complimentary roles (7, Table 28-#18, Table 34-#18).

Process Design of EPICOR II

The process design of EPICOR II as defined in NUREG-0591 consists of a prefilter, cationic ion exchange bed, mixed bed ion exchange, a resin trap, and associated interconnecting piping, pump and tankage. In addition to the EPICOR II system, a gas treatment system is supplied which consists of moisture

separators, HEPA filters, charcoal adsorbers, fans, and radiation monitoring equipment. This complete design was chosen as defined in NUREG-0591 to remove suspended solids concurrent with ion exchange, remove dissolved nuclides by ion exchange and remove radioactive gasses which have evolved to the ventilation system from the liquid stored in the auxilliary building tanks. *Neither the* design of EPICOR II nor NUREG-0591 address the removal of isotopes which are dissolved gasses within the liquor stored in the auxilliary building tanks. Since ion exchange or filtration will not remove dissolved radioactive gasses from the liquor (7, 14, 16), the potential exists for the discharge of radioactive gasses via the treated liquor which is the focus of NUREG-0591. Therefore, it is appropriate for NRC to direct attention to the quantity of radioactive gasses which are dissolved in the stored liquid and address a means to remove these dissolved gasses from solution prior to discharge. Again, an extensive characterization of the liquid stored in the auxilliary building holding tank is required to verify the treatment technology which is required to properly decontaminate the liquor.

Within the process design of EPICOR II, there exists a 'clean water receiving tank' and an 'off-spec water receiving tank' which will hold treated water which is not within acceptable limits. The flow schematic of EPICOR II is delineated in Figure 1 of NUREG-0591 and designates that all water which is effluent of EPICOR II enters the 'clean water receiving tank.' Water which has not been decontaminated to specifications will be transferred to the 'off-spec water receiving tank' to be retreated by EPICOR II. Two potential design errors are designated in the Figure 1 schematic. The first potential design error is that both the off-spec and clean water will enter the 'clean water receiving tank' and the second is that the off-spec water will be directly sent back to EPICOR II for reprocessing.

With all decontaminated streams entering the clean water receiving tank, the potential exists for the contamination of the acceptable quality water by

unacceptable quality water (cross-contamination) and additional water decontamination requirements. I respectfully suggest that NRC review this flow schematic to make modifications such that this potential contamination problem is circumvented. One means to circumvent this probable contamination problem is to utilize an additional tank as the 'clean water holding tank', utilize the present 'clean water receiving tank' as a distribution tank, and retain the present 'off-spec water receiving tank' with the same function. This will maximize the production of clean water because it minimizes cross-contamination. The clean water would be transferred from the distribution tank to the 'new' clean water holding tank only if the quality of the decontaminated water was within specifications.

The second potential error in Figure 1 of NUREG-0591 is the recycle of off-spec water for further decontamination by EPICOR II. The document ORNL-4792 (14) specifically addresses the error associated with the recycle of partially decontaminated water to a loaded or partially loaded ion exchange unit. The only means by which such a recycle system can be used is to operate the recycle loop only with virgin resin. It is obvious that the logistics of a recycle operation only on virgin resin is feasible, but such logistics were not specified in NUREG-0591. Hence, a potential error in such a recycle system does exist. Also, within the proper recycle logistics (use of virgin resin) the capacity of the off-spec water receiving tank must be re-assessed to be sure that all of the surge capacity is not used prior to resin change and that the off-spec water is treated only when virgin resin is present.

Additional Comment

Several comments which were contained in NUREG-0591 were nebulous in nature and should be addressed prior to the implementation of EPICOR II. One of these statements is, "the EPICOR II system...has been designed...with no adverse impact on the health and safety of the public." No demonstration nor definition

of the capability of EPICOR II to meet the regulations specified in CFR Title 10, Part 20, Appendix B, Table 2, has been established in NUREG-0591 nor has any previous successful operating experience been demonstrated in NUREG-0591.

Another such statement is "EPICOR II is specifically designed to handle intermediate waste." The design of the EPICOR II system as defined in NUREG-0591 is no more advanced nor different than designs which were discussed in NUREG/CR-0143 (7), OPM-4792 (14) or NUREG/CR-014 (16) and these data would not justify that a DF larger than 1000 was reliably obtainable from the EPICOR II system. A question which should be answered by NRC is 'what information justifies the fact that EPICOR II will operate as to have no adverse impact on the health and safety of the public which is exposed to unrestricted discharges?

The limits of radioactivity in the decontaminated water, air exhaust, and release of processed liquids from TMI 2 through TMI 1 are controlled by "predetermined limits (which) will be specified in the system operating procedures and in the plant radiological effluent technical specifications." As these limits of radioactivity govern the entire operation of EPICOR II and the release of effluent, they should have been addressed in NUREG-0591 because of their critical nature. Hence, these predetermined levels should be defined and made public prior to design or implementation of any decontamination technology because these levels are not governed by the technology such as EPICOR II but are governed by CFR Title 10, Part 20, Appendix B, Table 2, the operating license DPR-73, and NUREG-0432 (Appendix B). The law defines the levels to which the water must be treated, the quality of the water which requires decontamination in light of legal compliance defines the treatment technology that is best suited for the job and all of this should be known before any procurement takes place.

In addition, the statement unproven in NUREG-0591 is, "Therefore, we conclude that processing of the auxilliary building contaminated water through EPICOR II will have no adverse impact," is used as a conclusion. This

conclusion is not based upon a criteria nor definition in NUREG-0591 that EPICOR II will produce acceptable decontaminated water, hence, this conclusion has no basis for the environment which is external to TMI and unrestricted.

The quote, "Based upon our estimate...we conclude that the operation of this system (EPICOR II) does not constitute a significant environmental impact," plainly is just an estimate and NUREG-0591 presents no hard facts or data which refute the fact that the use of EPICOR II would not cause a significant environmental impact. Plainly, more information and data is required to make a more accurate estimate of the environmental impact of EPICOR II. Simply, this quoted conclusion has no basis because EPICOR II efficiency on intermediate radwaste water has not been demonstrated.

Summary

The comments regarding NUREG-0591 as discussed in the aforementioned text designate that additional data is required to establish the environmental assessment regarding the use of EPICOR II at TMI-2. The additional information required is a fuller characterization of the liquid in the auxilliary building holding tanks concerning:

- total radionuclides in the liquid
- physiochemical environment of the isotopes including valence and solubility
- unreported background constituents (salinity)
- suspended solids
- dissolved radioactive gasses

Before a decontamination system is finalized it is recommended that the following activities be conducted:

- 1/ re-evaluate flow schematic in Figure 1 to minimize cross-contamination

of treated water

- 2/ re-assess logistics of off-spec water recycle system
- 3/ further elucidate nebulous statements, predetermined operational limits and substantiate conclusions
- 4/ investigate on-site evaporator capacity as defined in NUREG/CR-0143

The conclusions of this comment regarding NUREG-0591 are:

- not enough data are specified concerning the quality of the auxilliary holding tank water to determine if EPICOR II will perform properly
- previous performance of similar systems designates that EPICOR-II will not perform within compliance on the stored stream as defined in NUREG-0591
- Evaporation is deemed the most appropriate proven abatement technology as based upon required decontamination factors (DF's).

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Commentary Affidavit

BEFORE ME, the undersigned authority, on this day personally appeared Louis J. Kosarek known by me to be a credible person who having been upon his oath deposes and says:

This affidavit was compiled in response to a public request by the United States Nuclear Regulatory Commission for comments concerning NUREG-0591 entitled "Environmental Assessment, Use of EPICOR II at Three Mile Island, Unit 2." This evaluation of NUREG-0591 was conducted on behalf of the Susquehanna Valley Alliance. This document focuses on the environmental impact of EPICOR II with respect to public health and safety, an assessment of the technology used in EPICOR II, and a review of the basis upon which the conclusions of NUREG-0591 are established. The motivation behind this document is to constructively, prudently, objectively and scientifically review NUREG-0591 and submit comments which affirm the public health and safety of the activities which are proposed to take place as defined in NUREG-0591.

Further deponent saith not.

Louis J. Kosarek
LOUIS J. KOSAREK

SUBSCRIBED and SWORN TO before me, the undersign authority, on this the 17 day of September, 1979 by JUDITH A. WARDEN to certify which, witness my hand and seal of office.

My commission expires:

10-25-79
date

Judith A. Warden
Notary Public
El Paso County, Texas

JUDITH A. WARDEN, Notary Public
In and for El Paso County, Texas
My Commission expires Oct 25 1979

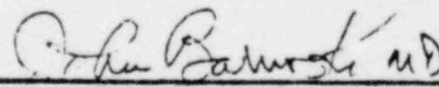
AFFIDAVIT

John F. Barnoski, being duly sworn, says the following:


I am a medical doctor who has maintained a family medical practice in Middletown, Pennsylvania, since 1976. Immediately following the accident at Three Mile Island, I treated, and continue to treat, a substantial number of patients who, along with their physical symptoms, expressed a heightened awareness of and anxiety concerning any other medical involvements they were experiencing or would experience in the future because of their exposures to the radiation emitted by TMI during and after the accident. In addition, these and other patients continue to consult me regarding the harm they and their children will experience from any additional exposures to radiation resulting from present and future activity at TMI. These concerns and fears of the residents of Middletown and nearby communities have also been expressed to me by other citizens who are not my patients.

The past and continuing psychological effects on the population around Three Mile Island are having negative consequences on the patients I have seen, ranging from the mild to the severe, and will continue to have such effects so long as the NRC and GPU continue to release radioactivity into the environment or announce that such is imminent or contemplated.

Any programs to treat or discharge any radioactive substances at TMI will, because of these psychological effects, have a negative impact on the human environment near TMI, which must be considered before such actions are taken.


John Barnoski, M.D.

Sworn to and subscribed before me
this 14th day of September, 1979.


Notary Public

Audrey C. Kehler, Notary Public
Camp Hill Borough, Cumberland County
My Commission Expires Jan. 18, 1982

My Commission Expires:

V. CONCLUSION

In addition to Louis Kosarek's summary of Technical Comments above, we conclude that Nureg-0591, the Environmental Assessment is completely unacceptable because:

1. The segmentation of the process invalidates the Assessment at every stage of the treatment process.
2. The construction of on-site storage facilities for radioactive resins represents a potentially lethal threat to area residents and aquatic life in the Susquehanna River and no processing of any water whatsoever should be allowed until alternate storage facilities are developed and clearly identified.
3. The NRC staff has failed to analyze the radioactive water properly and has proceeded, without adequate data, to select and construct EPICOR II, a treatment process which does not meet recognized state-of-the-art standards for decontamination.
4. The Assessment fails to provide substantiating, supportive data for the numerous claims made and conclusions drawn by the NRC staff regarding operations and health and safety factors relevant to the water treatment process.

5. The NRC completely ignores the serious psychological stress generated by the whole "clean-up" process and further, attempts to deceive the public with unsubstantiated performance and safety claims, which contributes to further stress and lack of confidence in the NRC.

Congress created the Nuclear Regulatory Commission to protect the public health and safety when fissionable materials were made available to utility companies for commercial use. The Commission, if it endorses the work of the NRC staff in this Assessment, will fail to uphold that sacred trust. This Assessment fails; it fails legally; it fails technically; and most importantly, it fails to demonstrate to us, the people of the Susquehanna River Valley, that the NRC will apply the best efforts possible to protect us in further action at Three Mile Island.