

The Waste Paper

Sierra Club Radioactive Waste Campaign

June/July 1979

Harrisburg Accident: Once in 17,000 Years?

EDITORS NOTE: Maybe you've read enough about the reactor accident at Three Mile Island. The news coverage has certainly been heavy. But we at The Waste Paper believe that the basic analysis of the accident, how it happened and what is still to come, has not yet been adequately presented. The news media cannot be entirely faulted, however. Reactors are complicated machines and not even the owners, Metropolitan Edison, nor the Nuclear Regulatory Commission, know what was happening. It was like the blind leading the blind. In the words of Walter Creitz, president of Met Ed, "When this thing occurred, none of us knew the extent of the accident at the very beginning. The unfortunate thing is, we didn't know the total extent of the accident until several days later. From what I understood, the situation was completely under control." They didn't know what was happening, yet the situation was completely under control. No wonder the news media was in the dark. But the readers of The Waste Paper, the public, and not the Walter Creitzes, are the energy decision-makers in this post Harrisburg era, and it is for you we have written this article. You need this information.

The Harrisburg accident, the most serious reactor accident to date, began eleven years ago sometime before April, 1968, the date on which Metropolitan Edison applied for a construction permit from the Atomic Energy Commission. An operating license was issued February, 1978, despite strong opposition by public interest environmental groups. The groups charged that "Three Mile Island is an accident waiting to happen." But by now, too much money had been poured into the plant to turn back. In March, 1978, the plant went "critical", and testing started. Despite failures in the cooling system which caused five shutdowns during the month of December alone, the company raced to full power production by December 30, 1978. The company wanted to claim a full year's depreciation on income tax returns. As the St. Louis Post Dispatch inquired, "What was Metropolitan Edison's principal concern in rushing the unit into service, profits or the public's safety and welfare?" Only two weeks after

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BUFFALO DEMONSTRATORS--

Over 500 marchers paraded down Main Street, Buffalo, New York, to the Marine Midland annual Board meeting, April 18, to protest the bank's support of nuclear power.

TELL IT

TO THE MARINE

About 500 people joined in a rally and march in Buffalo on April 18 to protest the strong financial ties between New York State's largest banking institution, Marine Midland, and the nuclear industry.

The rally was organized by CANCER, the Coalition Against Nuclear Contamination and Economic Recklessness, a new group that formed immediately after the Harrisburg accident.

After rallying in front of City Hall, the demonstrators marched down Buffalo's Main St., circled around the Niagara Mohawk Building and proceeded to Marine Midland headquarters.

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Larocca/Carey : Song/Dance

On March 21, 1979 Larocca, New York State's Energy Commissioner, announced that an "agreement in principle" had been reached between New York State and the U.S. Department of Energy regarding West Valley. In return for a promised federal "cleanup" of West Valley, the state had agreed to accept "interim storage" of an unspecified number of spent fuel rods in the plant's spent fuel pool. Under questioning from the press, Larocca admitted that "interim" would be until a federal repository was available and might be as long as 10-15 years. Since a federal repository might not be ready for decades, possibly never, the gloomy prospect for New Yorkers was interim storage turning into permanent storage of the toxic rods. Furthermore,

skeptics of the plan wondered what had happened to the "clean-up" part of the deal. More nuclear wastes - in the form of spent fuel rods and low-level wastes - were to come in, but when were existing wastes to be cleaned up and removed? When was the reprocessing building to be decontaminated? When would the low-level trenches be exhumed? When would the underground tanks containing 600,000 gallons of extremely toxic high-level liquid waste be decommissioned?

The "agreement in principle" provoked widespread protests, angry newspaper editorials and confusion in Albany. Governor Carey backpedaled

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Niagara Frontier Coalition

A new coalition of labor unions, church groups and environmentalists was formed on April 28. David Kopecke of UAW and Donna Ogg of the Lewiston Presbyterian Church are Chairman and Vice-Chairperson. The Sierra Club Radioactive Waste Campaign, West Valley Coalition on Nuclear Waste, Love Canal Homeowners Association and Operation Clean are on the steering committee. The coalition is the first organization to link the toxic chemical dumping and radioactive waste issues. The Niagara Frontier's first action will be a Don't Dump on Us demonstration on June 3. For further information call: 716/832-9100.

Master Energy Plan

Citizens of New York State will have a unique opportunity to express support for a nuclear or non-nuclear future at a series of State Energy Master Plan hearings in May. The hearings are being held in Albany (May 14), NYC (May 9), Long Island (May 10), Syracuse (May 17), Buffalo (May 15), Rochester (May 7). The hearings are all day, require no pre-registration, and involve no study documents other than utility and gas group forecast studies. These studies of long-range electric demands can be obtained from your local electric and gas companies or from Joe Boland, New York Power Pool, 3890 Carman Rd., Schenectady, N.Y. and Harold Walker, New York Gas Group, 500 Fifth Ave., New York City.

The legislation mandating the Master Plan calls for the taking into consideration of "energy conservation measures and new energy technologies," "indigenous energy resources," and "the impact of alternative energy sources and energy conservation upon the economy of the state, the health, safety and welfare of the people of the state, and the quality of the state's environment."

This legislative mandate opens the door for citizens and organizations to address such soft energy path issues as co-generation, retrofitting, mass transit, methane gas, solar hydro-electric and wind energy. Citizens in need of assistance in preparing testimony on these topics are urged to contact Solar Lobby Inc. (the follow-up organization to Sun Day) at 202-466-6880 or call 800-523-2929. Solar Lobby has published a Blueprint for a Solar America, which should be of particular interest to citizens anxious to initiate specific nuclear to non-nuclear conversion plans.

Citizens are urged to form local study groups and planning task forces on the subject of renewable energy so as to accelerate the transition to a benign energy society. If we wait for the legislators in Washington the transition will be unacceptably long.

Subsequent to the May hearings, a draft Master Energy Plan will be prepared by August 1st. Comments on the plan may be made by parties to the proceeding who must submit comments in writing by September 1st. Any "municipality or other interested person residing or doing

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Hoyt Bill

The Hoyt-Barclay bill to ban a federal repository (A 8137) pass the New York State Assembly unanimously on March 26. The identical bill in the Senate (S 3868) has as a prime sponsor Douglas Barclay and 29 other Senators. Despite the solid sponsorship, the bill is not headed for any easy victory in the Senate. S. 3868 has landed in the Energy Committee under the Chairmanship of Dale Volker, Republican from Depew.

Volker states he does not like the "anti-nuclear" language in the bill. Actually there is no anti-nuclear language in the bill or else you can be sure Senator Barclay never would have supported it! Volker is extremely reluctant to let the bill out of committee. Instead, the Senator has introduced his own federal depository legislation which is considerably weaker than S. 3868. The Volker Bill would only ban radioactive waste from outside of New York State being placed in a repository. In other words, the legislation would not give New Yorkers any protection from a repository built to accommodate waste from Indian Point, Ginna, Nine Mile Point or the Shoreham nuclear power plants. Furthermore, it is highly likely that the Volker

bill would be judged unconstitutional. Once a dump is opened, it would be illegal on interstate commerce grounds, to ban out of state waste from being dumped there.

Citizens should keep up the pressure on their Senators to assure that the original Hoyt-Barclay bill, S. 3868 is passed. Please let your Senator know that you do not feel that a partial, unconstitutional ban is enough. Write your Senators. Set up appointments with your Senator. Be relentless. The Campaign has available brochures on the bill. Call us today to get some.



'I repeat - there is no real cause for alarm ...'

Oliphant, The Washington Star, Los Angeles Times Syndicate

Marine

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Speakers from the People's Power Coalition and the Sierra Club Radioactive Waste Campaign urged Marine to re-assess its support of the nuclear industry. Some of the corporate ties pointed out during the rally:

Marine Midland owns \$47 million worth of Niagara Mohawk stock. NiMo is a part-owner of three nuclear plants in New York State and also owns a \$73 million uranium mining subsidiary.

Marine also owns \$38 million in the stock of W.R. Grace the company that built the now defunct Nuclear Fuel Services facility at West Valley in 1966 and then sold the plant to Getty Oil, in 1969.

One of Marine's Board of Directors is Felix Larkin who is chairman of the Board of W.R. Grace. Another Marine Director is William Kuhns, Chairman of Metropolitan Edison, the company responsible for the Three Mile Island disaster.

Marine Midland was served notice that it should make some move to sever its ties to the nuclear industry within the next thirty days. It was also suggested that anyone who has money deposited in Marine Midland Bank remove their money to another bank.

The April 18 rally marked the beginning of a concerted effort among New York State anti-nuclear groups to point out the ties between the nuclear power industry, the commercial banking institutions and the private corporations that are cooperating to cover Western New York with nuclear and chemical dump sites.

Worst Possible Accident More Possible Than Ever

New Yorkers were still livid over Carey's March announcement of his apparent willingness to truck in more radioactive waste to West Valley when Harrisburg hit the headlines. The possibility of a meltdown at a safe, redundantly safe Three Mile Island reverberated close to home of New Yorkers long used to bland assurances regarding the safety of the West Valley site. For *Waste Paper* readers who missed the importance of Report 290, a report calculating hazards of a spent fuel pool meltdown (reviewed in the Spring 1979 edition), we strongly recommend you order this important study from us. The study, a translation of a German Nuclear Industry examination of a "worst possible" accident at a spent fuel pool is available for \$4.00. Since worst possible accidents are no longer remote theoretical possibilities, Report 290 takes on an added urgency.



Citizen Network

To help set up a state-wide citizen network on the problems of radioactive waste, we are listing citizens who are active, informed and willing to help plan activities in different regions. If you are bewildered, concerned, and angry and want to do something but don't know what, call your local contact person. If you know of additional contact persons who should be on this list, let us know.

Syracuse

Glenda Neff
Syracuse Peace Council
924 Burnett Ave.
Syracuse, N.Y.
315-472-5478

Rochester

Ray Stiefel
Peace & Justice Center
713 Monroe Ave.
Rochester, N.Y.
716-244-7191

Hudson

Dick Herman
Box 495
Millerton, N.Y. 12546
518-789-3797 (w)

Albany

Rezsini Adams
112 Chestnut St.
Albany, N.Y.
518-462-0891 (B)

West Valley

Jan Pyles
Whitney Road
Holland, N.Y. 14080
716-537-9718 (H)

Binghamton

Mike Rubin
Citizen Action
320 Chenango St.
Binghamton, N.Y. 13901
607-798-4971 (B)

Oswego

Ruth Caplan
278 Washington Blvd.
Oswego, N.Y. 13126
315-343-2412

Jamestown

Keith Holdsworth
W. Lake Rd.
Portland, N.Y. 14769
716-792-9343 (H)

Finger Lakes

Peggy Moran
25 Pine Street
Geneva, N.Y. 14456
315-789-8396

Jewel Fire
R.D. 1, Box 110
Alpine, N.Y. 14805
607-594-3536

Gregory Belanger
People's Campaign
Campus Center
Alfred U.
Alfred, N.Y. 10482
607-871-2286

Mike Zansitis
R.D. 2
Prattsburg, N.Y.
607-522-4362 (H)
607-776-2125 (O)

Dick Smith
R.D. 2
Wayland, N.Y. 14572

Chip Hoogland
R.D. 2
Canisteo, N.Y. 14823
607-698-2674

Bill Griffin
R.D. 3
Tully, N.Y. 13159
315-696-8184 (H)
607-749-3482 (H)

Ecology Action of
Tompkins County
140 West State St.
Ithaca, N.Y. 14850
607-272-3040 (B)

Yve Zinaman
R.D. 1
Branchport, N.Y. 14418
315-595-2835

Long Island

Warren Liebold
412 Cross St.
Long Island, N.Y.
516-333-9152
Sierra Club
800 2nd Avenue
N.Y.C., N.Y.
202-687-5559

John Proios
1523 Main St.
Port Jefferson, N.Y.
11776
516-928-8173 (H)
516-473-9200 (B)

Bob Horn
Box 224
Garden City, N.Y. 11530
516-285-9312 (H)

Jane Schumsky
17 Tildean Lake
Bayville, N.Y. 11709
516-628-8363 (H)

Al Kirby
Steve Latham
P.O. Box 398
Riverhead, N.Y. 11901
516-727-2180 (B)

Safe Energy Resource
Center
Box 972
Smithtown, N.Y. 11787
516-360-0045 (B)

Catherine Synan
People's Resource Ctr.
217 Wall St.
Huntington, L.I. 11746
516-271-8436 (H)

Susan Blake
90 Pennsylvania Ave.
Massapequa, L.I. 11758
516-785-8836 (H)
516-798-0778 (B)

West Valley Quiz

Try this quiz. Nine correct answers and you replace our staff scientist. However, there is no passing or failing this quiz. If we don't get West Valley cleaned up, we all fail.

- How many gallons of high-level neutralized liquid waste are stored at West Valley?
 - 24,000
 - 3 million
 - 561,000
 - 600,000
- The number of regular employees at the NFS plant on an annual basis was:
 - 3,000
 - 69
 - 264
 - 164
- The number of "supplemental" employees - workers brought in to work temporarily who were given a full quarter's dose of radiation and then released - was at the peak of this practice in 1971:
 - 25
 - 991
 - 450
 - 696
- The amount of plutonium recovered at NFS was: (2 Kg can make a small atomic bomb, 6-7 Kg can make a Hiroshima-sized bomb)
 - 3Kg
 - 3454 Kg
 - 44 Kg
 - 1883 Kg
- During construction of the underground waste tanks in 1966, water got into the construction pit and the tanks floated _____ inches or feet?
 - 5 ft.
 - 4 in.
 - 3-4 ft.
- The high level waste tanks have an anticipated life span of _____ more years?
 - 27
 - 3
 - 44
 - 190
- The high level waste tank sits on top of a saucer inside a concrete vault. The concrete vault is buried 8 feet underground. There is a defect in the:
 - concrete vault
 - carbon steel saucer
 - carbon steel tank
- The NRC-licensed waste burial ground contains how many ruptured spent fuel elements from the Hanford reactor?
 - 3
 - 400
 - 42
- How many supporting columns are inside the high level waste tank?
 - 12
 - 88
 - 6

Answers on page 6



Ecology Action Victory

Citizens in Oswego have won a major victory against Niagara Mohawk (NiMo). The utility's plan to build a radioactive waste incinerator at the Nine Mile Point Unit One nuclear reactor has been postponed for a year. Construction of the incinerator-calciner which would burn radioactively contaminated filters, rags, workmen's clothing, resins and calcine sludges was originally to commence in Spring 1979. Now, NiMo is talking of initiating construction Spring 1980. Although the incinerator has not been approved by the Nuclear Regulatory Commission and the Public Service Commission has not yet approved any addition to NiMo's rate base, the company spent \$2,187,000 for research and development on a proto-type incinerator in 1978.

Thus far, the Nuclear Regulatory Commission has not yet decided whether to require public hearings and/or the preparation of an environmental impact statement on what would be the nation's first commercial nuclear waste incinerator-calciner. For more information contact Ecology Action of Oswego, C.O Ruth Caplan, 278 Washington Blvd., Oswego, N.Y. 13126.

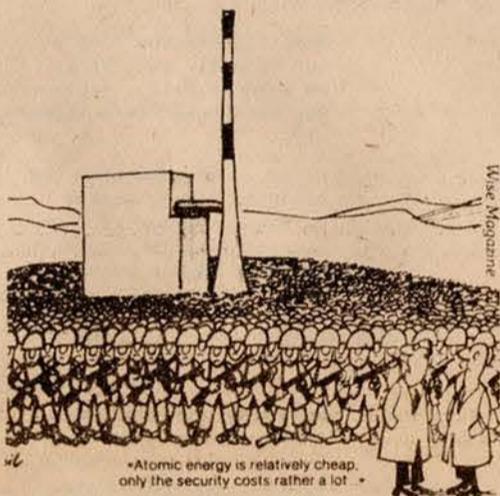
Larocca/Carey

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vigorously on April 3rd and announced that there was no "agreement in principle." Larocca retorted the only disagreement with the Governor was a matter of "semantics." Carey seemed to be happy to use Larocca for a policy that had met with more opposition than originally anticipated.

On April 10, the Sierra Club Radioactive Waste Campaign asked the Governor to clarify his remarkably unclear position on West Valley and Larocca. Either state your support of Larocca or ask him to resign, said the Campaign. The Governor obliged. A spokesperson for the Governor stated on April 17 that Carey had "confidence" in Larocca and felt that there might be a need to re-open West Valley.

Meanwhile, in Washington, D.C., DOE officials disclaimed specific interest in the West Valley AFR (see glossary) site. A Washington source claimed that DOE was only promoting the West Valley AFR in order to sweeten the AFR pill for the Governor of South Carolina. The Department of Energy is pushing for an AFR at Barnwell, S.C. and the Governor, apparently, does not want his state as the only state targeted for the receipt of spent fuel rods.



Recommended . . .

The Nugget File edited by Robert Pollard published by The Union of Concerned Scientists (UCS). This 90-page book contains excerpts from the government's special file on nuclear power plant accidents. The "nuggets" were obtained under a Freedom of Information Act sent by the UCS. The Nugget File should be required reading, particularly after the Three Mile Island (TMI) accident. The book details dozens of minor malfunctions -- misplaced and blown fuses, incorrect wiring, plugged roof drains, frozen pipes, bad welds. What is so alarming is that each of these malfunctions could all too easily escalate into the type of run-away situation that has probably permanently destroyed TMI. One of our favorite "nuggets": Water flow was obstructed at the Quad City Unit 2 plant. An investigation revealed that "an entire welding outfit (tanks, hoses, etc.) had been left inside the reactor." The Nugget File is available from UCS, 1025 15th Street N.W., Washington, D.C. 20005 for \$4.95.

No Nukes: Everyone's Guide to Nuclear Power by Anna Gyorgy and Friends, South End Press, \$8.00. An absolutely excellent review of the nuclear power issue. Even if you feel you have read all you need to know about nuclear energy get No Nukes. Packed with information, remarkably easy to read and accurate. Utterly delightful graphics. Covers the fuel cycle, economics of nuclear power, alternatives and the international story. Retail at \$8.00 - available to anti-nuke groups at 40% discount. Write South End Press, Box 68, Astor Station, Boston, MA. 02123 for more information.

Calendar

See Master Energy Plan article for dates of Energy Hearings.

May 12, 1:00 p.m. East Park, Oswego. Stop Nuclear Power rally with George Wald, Nobel Laureate of Harvard University and Joe Frantz, United Steelworkers of America - Local 1010. Sponsored by Lakeshore Alliance. For more information call: 716/244-7191; 607/272-3040; 315/472-5478.

May 12, 11:00-12:00 a.m. St's Home Church of God in Christ, West Ferry and Norwood, Buffalo. Dennis Kucinich, Mayor of Cleveland. Urban Populism and Municipal Utilities. Sponsored by People's Power Coalition and United Auto Workers.

May 13, 2:00 p.m. 56 Buffalo Avenue, Niagara Falls. Clean Mother Earth Walk around Love Canal site. Sponsored by Love Canal Homeowner's Association. Call: Lois Gibbs 716/283-5129.

May 15, 9:00-10:00 p.m. Master Energy Plan hearing in Buffalo, 65 Court st., first floor, Part IV. Call: Tom Lehman, 518/474-8183.

May 17, 9:30 a.m. to midnight. End of the Nuclear Age. WBAI program. Music, panels, debates. 99.5 FM.

May 20, 2:00 p.m. Keuka College near Penn Yaa benefit for Citizens Concerned About Nuclear Waste. Call Yve Zinamar, 315/595-2835.

May 31, 9:30 p.m. New York State Attorney General hearing on Waste Repository Issues. Two World Trade Center, 47th floor. Call: John Sheay 212/488-4141.

June 2, 8:00 p.m. Unitarian Church at West Ferry and Elmwood. People's Power Coalition benefit. Call: Bill Nowak 883-0211.

June 3, Rally and non-violent occupation of the Shoreham Long Island Nuclear Power plant. People planning to participate in the occupation are urged to arrive June 2 and to participate in non-violent training. Call: 516/360-0045; 212/533-0796; 914/682-0488.

June 3, Don't Dump on Us or We Will Dump You Rally in Buffalo. Sponsored by Niagara Frontier Coalition. Call: 716/832-9100.

Next Waste Paper

We want to let folks know about all the exciting events, projects, fairs, forums and films that will help educate and organize citizens in the next few months about radioactive waste. Send us items for a Calendar of Events in our next issue which will be a large press run edition. Also, Letters to the Editor, less than 300 words and signed, are encouraged.



FRIENDLY ORGANIZER HAMILTON -- Sierra Club Organizer Hamilton, in one of her friendlier poses, says here, "Hello. Can I help you?" Her smile is disarming. In fact, several volunteers have lost their arms.

HARRISBURG

start-up, on January 15, 1979, the plant was shut down two weeks because of mechanical malfunctions. Then, on March 28, 1978, the most serious reactor accident to date occurred, putting the reactor out of operation for several years, perhaps forever. How long will not be known until the reactor can be opened and inspected. One billion dollars and ten years after the issuance of a construction permit, the reactor sits idle.

The accident at Three Mile Island (TMI) began at 3:54 AM on March 28. A combination of design problems and operator error almost led to a meltdown and a major release of radioactivity to the environment. Luck played a part in averting a more serious accident.

For the first three hours of the accident see the box.

After this early morning three-hour sequence of design defects and operator errors, Three Mile Island and the nuclear industry will never be the same again.

Wednesday continues

Radiation levels outside the plant are beginning to increase. The steam which spurted out of the stuck valve on the pressurizer becomes water several feet deep within the containment building. A sump pump transfers this water to a supposedly sealed container within a second building. However--third design defect-- the container leaks the radioactive water into the second building, where the ventilation system vents the radioactive air to the environment. At 8:45 AM, the NRC dispatches a dozen inspectors and technicians to the site and notifies the White House of the crisis. Radiation levels of 20 mrem/hr are being recorded on the TMI site.

Temperatures at the top and center of the core are above boiling. The Waste Paper believes that these parts of the core were not covered with water, and were cooled only by steam. This section of the core continues to heat up. At 1:50 PM, about 10 hours after the initiation of the accident, a small explosion takes place. The Waste Paper believes that the explosion was caused by an interaction between the cladding and the steam which leads to destruction of fuel cladding at the top of the core, and the release of hydrogen and fission products. The radiation levels in the coolant increase from 600 mr/hr to 1,000 rems/hr. A large hydrogen bubble forms at the top of the reactor vessel. According to the NRC, "there is evidence of severe damage to the nuclear fuel." Samples of primary coolant containing

high levels of radioiodine and instruments in the core indicate high fuel temperatures in some of the fuel bundles.

As of 3:30 PM, the plant is being cooled down at 3°F/hr, with pressure at 450 psi. It was thought that it would take 15 to 18 hours to reach 350°F and 350 psi pressure. However, the purification filters, which remove radioactive particle contamination, are somewhat plugged, causing resistance to the flow. There is concern that the large bubble in the reactor vessel may grow if the pressure is dropped.

Thursday, March 29

At 5 P.M. two Met Ed employees take a 100 ml sample of the primary coolant system. The workers receive a 3 rem dose in 11 seconds. In 1/6th of a minute, the workers have received their maximum quarterly dose! From the temperature assessment of the core, the NRC estimates that core damage has occurred in 1/4 of the 177 fuel assemblies and generally in the center of the core. The core continues to cool throughout the day. A case of extraordin-

Wednesday, March 28

3:54 A.M. Pump in secondary cooling loop fails → Stand-by pump does not kick on → **1st Operator Error**
The pump does not kick on because a valve is closed. This is an operator error. The valve had been closed two weeks earlier during an inspection.

Without the pump, there is no water in the secondary loop. Without water there is no steam. The electric generating turbine turns off. The control rods fall into place shutting off the nuclear reaction.

The nuclear fuel is still searing hot and will self-melt without steam or water cooling.

With secondary cooling loop not functioning, the water in reactor heats up. Pressure builds up. Water in reactor is boiling.

Pressurizer valve opens and allows steam to escape, but → **1st Design Defect**
Valve on pressurizer stays open. Plant operators do not know that valve is stuck open for 2 1/2 hours.

Water in reactor continues to boil. ECCS kicks on automatically, replacing water that is boiling off.

Water, condensed from the escaping steam, begins to collect on floor of containment vessel. Operator, aware of excess water, shuts off the ECCS. → **2nd Design Defect** → **2nd Operator Error**
The B&W reactors have no reliable instruments which determine actual water level in the reactor core. Reactor operator bypasses the automatic system and shuts off the ECCS. As a result, not enough water is delivered to the hot reactor core.

3:59 A.M. With ECCS off and pressurizer valve open, water level in reactor drops. Fuel is exposed to air. Temperature in fuel assemblies rise. Cladding around fuel pellets starts to deteriorate. This is the beginning of a meltdown. → **Design defect and operator error repeated**
Operator starts up ECCS again, then shuts it down because of improper instrument reading. Operators still do not know water level in the core.

6:10 A.M. Finally, the stuck pressurizer valve is discovered and forced shut.

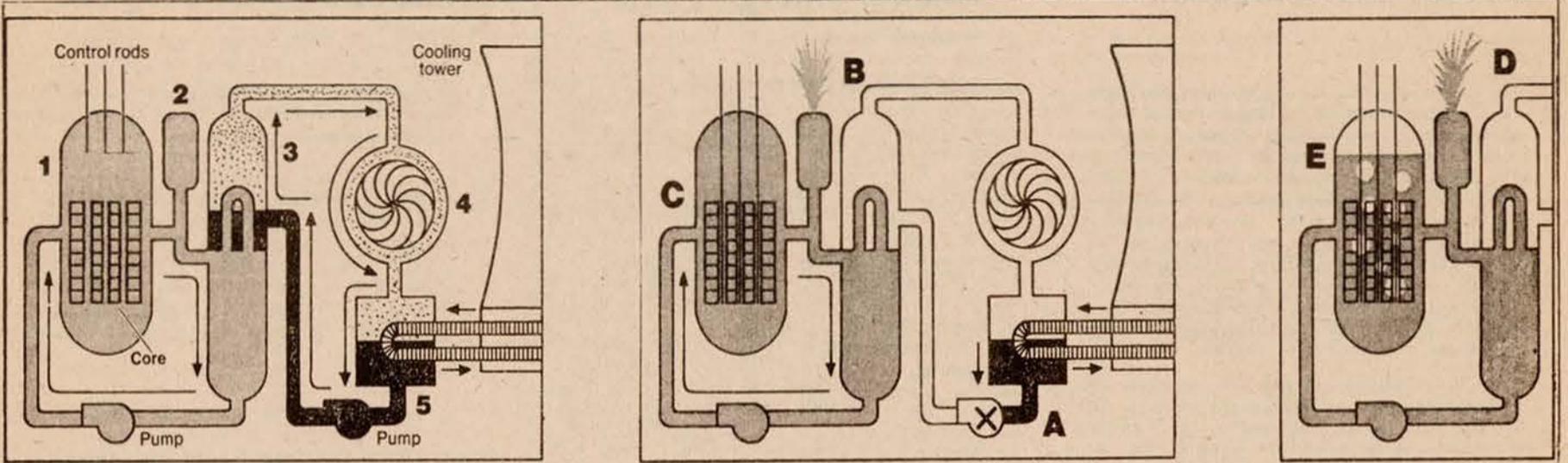
The Waste Paper believes that at least one quarter of the core was uncovered from 4:00 A.M. to 1:50 P.M. At 7:00 A.M., high radioactivity levels were noted in the reactor coolant--readings of about 600 mr/hr. These levels indicate that fuel cladding damage was occurring. As radiation began to leave the TMI site, a site emergency was declared and at 7:45 A.M., three hours after the initiation of the accident, the NRC is notified.

ary luck. The reactor has only operated for a few weeks, and limited radioactivity has built up in the fuel. With each day's operation of a nuclear reactor, the levels of Sr-90 and Cs-137 and other radionuclides build up. The presence of these hot elements would have made the cool-down extremely difficult. Had the accident happened two and a half years later, a major meltdown, with catastrophic releases probably would have occurred. Pennsylvania residents are lucky. New Jerseyites and New Yorkers are lucky. Met Ed officials remain blandly reassuring. "There is presently no danger to the public health or safety. We didn't injure anybody. We didn't overexpose anybody. And we certainly didn't kill anybody. The radiation off-site was absolutely miniscule." Nevertheless, inexplicably Met Ed pulls all its radiation monitors (thermoluminescent dosimeters) from 17 fixed positions located within a 15 mile radius of the site. The highest readings were 4 times above the background dose for the quarterly period. Met Ed released 50,000 gallons of "slightly contaminated" industrial wastes into the Susquehanna River. Apparently the reactor is not cooling down as rapidly as previously thought.

Met Ed tells the NRC at 11:00 PM it will require another 24 hours to cool down the reactor.

Friday, March 30

The reassurances by Met Ed officials are premature. There are intermittent "uncontrolled" releases of radioactivity into the atmosphere from the primary coolant system. The levels are as high as 20 to 25 mrem/hr near the site. This is 1/5th of natural background radiation for a year in one hour. At 11:15 AM, President Carter calls the Governor. According to the New York Times, the President is deeply concerned about all the confusion. An NRC official, Harold Denton, is dispatched to the scene, and special phones are installed by the Army. The release of information about



Credit: The New York Times

What Went Wrong

NORMALLY water in the reactor is heated (1) by the radioactive core (2) and pressurized to prevent boiling. (3) Its heat - but not its radioactivity - is transferred through coils in the steam generator and the hot water recirculates. (4) Steam turns the turbine blades, (5) is cooled and condensed back into water, and recirculated.

IN THE ACCIDENT, the condensate pump failed (A), depriving the steam generator of its ability to draw heat out of the reactor's water system. As the water from the core overheated, pressure was relieved (B) by venting the pressurizer and rods were dropped into the core (C) to control the chain reaction.

THE SITUATION WORSENEd because the vent (D) did not close, and in the absence of pressure, water in the core boiled. As it did, (E) steam bubbles in the core deprived the fuel assembly of necessary coolant and damaged it.

the reactor is now being controlled. At 11:30 AM another radiation burst occurs. Apparently the reactor is not being cooled down as easily or as rapidly as originally had been hoped.

Hendrie, the Chairman of the Nuclear Regulatory Commission, complains that the Pennsylvania governor and he are operating "almost totally in the blind." "It's like a couple of blind men staggering around making decisions."

The NRC team is increased to 83. The NRC officials understand the seriousness of the problem. A badly damaged core, a hydrogen bubble at the top of the reactor. The bubble may explode, ripping open the reactor, or it may expand, further exposing the fuel elements. At 2:50 PM another gaseous release occurs. Since Met Ed has removed the radiation monitors, only helicopter flights record the drift of radioactive gasses...

The NRC determines that the pressure must remain high while the reactor cools in order to restrict the size of the hydrogen bubble at the top of the reactor.

Saturday, March 31

There are no surprises that we know of on Saturday. The fuel, apparently now covered with water, continues to cool.

Sunday, April 1

The President and Rosalynn arrive at 12:45 PM and stay in the control room long enough for a picture to be taken. Jimmy's purpose is to reassure the American public and

to protect the nuclear industry. A cold shutdown of the reactor is reached on April 27, 1 day short of a full month after the initiation of the accident.

Harrisburg Syndrome

Meanwhile, the message has gotten through to the public. Nuclear reactors are not so safe as the industry has led us to believe. The famous Rasmussen report which calculates the probability of an accident occurring has been shown to be nothing more than nuclear industry public relations. The probability of this type of accident occurring is 1 in 17,000 reactor years. It is highly unlikely for such an accident to occur once in 500 reactor yrs. The "Harrisburg Syndrome" has set in: a melt down of confidence in public officials and the nuclear industry.

The Nuclear Regulatory Commission is in a quandary. Should the remaining B&W reactors be shut down for safety improvements? The Duke Power Company threatens the Nuclear Regulatory Commission with the thought of a 23% rate increase and rotational blackouts throughout the summer. The NRC comes to a compromise agreement on April 26. Duke Power can be allowed to operate two of their Oconee reactors providing a reactor technician is stationed at all times near the auxiliary pumps to make sure that the valves are opened when the pumps kick on. Will there be a string around the technician's toe? Another senior operator, capable of dealing with Pennsylvania-type accidents, will be located in the control room at all times.

The safety devices to be installed include improved reliability and speed of auxiliary pumps. Another system would shut down the reactor immediately if there is a water supply problem in the secondary loop. This would shut down the reactor before it overheated and over-pressurized. It is our understanding that this will cause increased down time of the B&W reactor. If any utility is still buying a B&W reactor.

The TMI reactor is in a shutdown mode. It may stay this way for a year, as the radioactivity and temperature cool down. Eventually, it will be opened. The Waste Paper conjectures that considerable fuel cladding damage has occurred, primarily at the top, and in

the center of the reactor core. The fuel cladding will be broken and brittle. Under ordinary circumstances, the fuel would be lifted with a crane by a grapple at the top of each fuel assembly. It is not clear what will be done to remove the fuel elements in this case. Perhaps entirely new equipment will have to be designed to extract the fuel assemblies. The radioactive water will have to be disposed of somewhere. It is highly likely that the reactor metal structure that holds the fuel assemblies is itself damaged. The costs to clean up and repair the reactor may equal the original price of the reactor due to inflation and increased safety equipment. It seems unlikely that the TMI reactor will ever operate again.

No decommissioning fund has been established. Who will pay the costs of the management decision to build a B&W nuclear reactor? Who will pay the costs to clean up the reactor? Met Ed, the utility, says that the ratepayers will have to pay or the company will go bankrupt. The public, the taxpayers, will have to pay for the private decision of the company to go nuclear. If the company goes bankrupt, the large bondholders, the banks, will pay for the management decision to go nuclear.

Bailout

With bankruptcy a possibility, with increasing pressure to close down the nuclear industry, it is no wonder the *New York Times* is urging calm: "It may turn out that the facts of the accident, once understood, will impel a temperate response from the public - maintaining the nuclear option though with more stringent safety protections." The American public will be asked to pay more for the "clean, safe energy of the atom", but will the real promoters of nuclear power and their supporters in the news media be forced to pay their share? It seems, on the contrary, the more the public understands TMI, the less temperate the response. At a packed April 19 rate hearing in Harrisburg, the possibility that Met Ed might go bankrupt was welcomed with shouts of "Good." It looked like utility rate payers might not tolerate more bailouts of the peaceful atom.

A Fresh Cup of Coffee

As a result of the Harrisburg accident, a considerable amount of tinkering, glueing, valve-checking, re-writing of safety regulations is planned. These activities doubtless will consume vast amounts of money, generate mounds of reports, and, perhaps, re-assure some nuclear enthusiasts. We feel, however, that no amount of tinkering can resolve the fundamental safety problems of the industry. What is needed is a totally fresh approach to the energy problems of the country. We like the approach of the Philadelphia lady who recommends a fresh cup of coffee:

"As Mrs. Peterkin raised the cup of coffee to her lips, she suddenly realized that she had put salt in it, not sugar. She summoned a chemist; he recommended adding a pinch of potassium chlorate. But the coffee tasted no better.

He tried tartaric acid and hypersulfate of lime; these did not help.

In turn he introduced some ammonia, some oxalic, cyanic, acetic, phosphoric, chloric, hyperchloric, sulfuric, boracic, silicic, nitric, formic, nitrous, and carbolic acid. Mrs. Peterkin test each new mixture and shook her head. It still wasn't coffee.

After another round of unsuccessful experiments with various herbs, Mrs. Peterkin's daughter took the problem to a lady in Philadelphia, who asked: 'Why doesn't your mother make a fresh cup of coffee?' "

Lucretia P. Hale: The Peterkin Papers (1880)



Literature Available

All of the literature listed below is available for 50¢ per item - unless otherwise specified. Please send self-addressed envelope.

Summary Critique. This 4-page critique of the U.S. Department of Energy's Western New York Nuclear Service Center (DOE's euphemism for West Valley) Study summarizes inaccuracies, omissions and distortions of the DOE study on options for West Valley.

Sierra Club White Paper #1 Did the DOE Study Do What It Was Supposed to Do? An 18-page review of the \$1 million DOE study on West Valley. The paper details the failure of DOE to address Congressional concerns about the site. Send envelope with 28-cent stamp.

Salt Will Not Work. The first of several factsheets providing a brief review of why an increasing number of scientists and informed citizens are concerned about the current DOE promotion of salt as the favored geologic medium for a permanent federal repository. Includes data from the latest unpublished National Academy of Sciences report.

Guidelines for Working with the Religious Community. Discusses the approach used by the Sierra Club campaign to mobilize the religious community on the issue of radioactive waste. Lists recommended steps for groups planning to work with the church community.

Sierra Club White Paper #2. Is Radioactive Waste Clean-Up Technology Available? A detailed analysis of the status of technology for cleaning up the West Valley radioactive waste dump. Many of the findings are applicable to radioactive waste problems in other states.

Sierra Club White Paper #3 Hazards of the West Valley Radioactive Waste Dump. A discussion of how many cancers could be generated by the waste on site. Plus basic information on health effects of low level radiation.

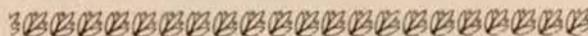
Sierra Club White Paper #4. What is the Next Step? What should Congress do about cleaning up West Valley? Should DOE be involved? Should a new commission be formed?

Master Energy Plan

continued from page 1

business in the state" that wishes to be a recognized party to the proceeding must notify the State Energy Commission no later than three weeks after August 1. It is heartily recommended, however, that municipalities, citizens, or organizations notify the Commission prior to May 15 since this is the cut-off date for those who wish to ask "discovery" questions of the utilities regarding their energy forecast. These "discovery" questions will allow citizens access to data, records and documents used by the utilities in developing their figures.

To become a party to the Master Energy Plan proceeding, write James Larocca, State Energy Office, Agency Building 12, Empire State Plaza, Albany, New York 12223. Remember all citizens can participate in the May hearings regardless of whether you are "parties" or not. For further information about the plan and hearings, call Tom Lehman in the Energy Office at 474-8183.



WIPP

On December 15, 1978, Gulf Oil Exploration and Production Company wrote the Bureau of Land Management opposing the U.S. Department of Energy plans to withdraw about 17,200 acres from "development activity" so as to provide for the Waste Isolation Pilot Project (WIPP) in New Mexico. The WIPP facility would be an underground salt mine used to dispose of defense wastes and 1,000 commercial spent fuel elements.

The oil company is distressed at the prospect of losing the right to develop four oil and gas leases covering about 2,280 acres of land. In its letter, the company stated that the "prospects for drilling successful gas wells on the lands are very good. The sediments beneath these lands appear to contain substantial reserves of natural gas."

It has been one of the chief arguments of critics of the Department of Energy's radioactive waste proposals that the radioactive materials must not be buried in formations adjacent to resources of commercial value or perceived commercial value since 1) at a future date society might need to develop those resources and 2) a future society might unwittingly search for and/or develop potash mines, oil or gas wells, unaware that they were contaminated by radioactive materials.

The Gulf Oil letter underscores the validity of these concerns of radioactive waste critics. In its concluding paragraph of the December letter, Gulf states, "Gulf recognized the dilemma imposed on the Bureau in attempting to locate a suitable waste disposal site. But surely a balancing of all the equities in this case militate against the proposed location. The simple truth of the matter is that this area probably contains valuable reserves of oil and gas in substantial quantities. These resources should be produced and made available for the public's use...Gulf would hope that an alternate location will be chosen for the waste disposal site where valuable oil and gas production will not be lost."

The question is, where in the country can a radioactive waste repository be located that does not compete with present and future oil and gas production or potash production or salt production...and how can it be assured that 100 or 1000 years from now the potential for such production will not be perceived and exploratory drilling not commence, right down into thousands of tons of radioactive waste?

The answer to this question cannot be found in the recently released draft environmental impact statement for the WIPP facility. If you don't believe us, take a look for yourself. Copies of the EIS may be obtained from Eugene Beckett, WIPP Program Office, Mail Stop B-107, Washington, D.C. 20545. Tell him you saw it in The Waste Paper.

Answers to WV Quiz

continued from page 3

- 1) c) There are 561,000 gallons of neutralized waste at West Valley. The waste was neutralized to reduce its acidity.
- 2) b) c) or d) The number of regular employees at NFS fluctuated from year to year. The lowest number, in 1977, was 50 employees, the highest, in 1968, was 264.
- 3) b) 991 The figure 696 appears in the DOE Western New York Nuclear Service Center report, which incorrectly cites this figure.
- 4) d) 1883 Kg.
- 5) c) 3-4 feet
- 6) a) 27 years, if the original 40-year life span projected in the AEC preliminary safety analyses of the carbon steel waste tanks is used as a reference, 37 years if a new 1979 DOE estimate of a 50-year life span is used, and less if a leak is sprung.
- 7) b) A "routine check" of the waste tank in December, 1978 revealed a hole in the saucer in which the high level waste tank sets. It is not known whether the hole can be repaired. The vault is cracked, too.
- 8) c) 42. The ruptured fuel elements are high-level waste that were dumped in a trench and then encased in concrete.
- 9) c) 6

Influx

Coincident with the announcement of James Larocca's "agreement in principle," with the U.S. Department of Energy for the trade-off of the West Valley Nuclear Dump Clean-up for an Away-From Reactor storage site there, the telephones of the Coalition on West Valley Nuclear Wastes began ringing. People wanted to know what they could do to stop the Deal.

Within two weeks five new groups had formed and hundreds of new people expressed interest in joining the Coalition. New groups have been organized in West Valley, Jamestown, Alfred, East Aurora and the Gowanda-East Otto area.

To help handle the influx of new people the Coalition has formed a study group on the technical and political issues surrounding West Valley. While the study group was formed primarily for the benefit of the organizers of the new groups, it is open to anyone who is interested in the West Valley issues.

Anyone who is interested in any of the new groups or the Coalition's study group can get more information by contacting Janne Pyles, Coalition on West Valley Nuclear Wastes Co-ordinator, at 716/537-9718.

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Radioactive Waste Campaign.

Business Offices: 3164 Main Street
Buffalo, New York 14214
(716) 832-9100

Staff: Mina Hamilton (organizer)
Dave Pyles (media/organizer)
Marvin Resnikoff (staff scientist)

New York City Office: 800 Second Avenue
New York, New York 10017
(212) 687-5559

Staff: Warren Liebold (organizer)

Advisory Board: Beatrice Anderson,
Ruth Caplan, Steve Galac, Kelly Davis, Judith
Kessler, Richard Lippes, John Rolfe, Sam Sage,
Ray Stiefel, Yve Zinaman Dorothy Cairns,

West Valley AFR?

Given the push to re-open West Valley as an AFR for spent fuel rods, we thought Waste Paper readers would want to know exactly how soon New York State reactors will need an off-site storage facility. According to NUREG 0020, The Nuclear Regulatory Commission's (NRC) March 1979 Units Status Report, only one NY reactor, Fitzpatrick, faces a storage crunch in the next two years. But since Fitzpatrick was closed down by the NRC in March because of seismic hazards, the storage pool capacity date may well be pushed to a later date. The four other operating reactors will not run out of space for five to twelve years.

However, it would take at least five years to build a new spent fuel pool. Once a new fuel pool was in place it would be a virtual certainty that reactors from all over the northeast would want to send their spent fuel rods to the new facility.

Citizens are urged to check NUREG 0020 (which document is available for inspection at designated federal depositories in most major cities) for status on spent fuel at your local reactors. In Buffalo, NUREG 0020 and other NRC documents are available to the Erie County Public Library on Main Street. Take the escalator to the second floor, area seven and the librarian will assist you.

For more information on spent fuel pools, Jerry Carter of the NRC is very helpful. His number is 301/492-7330.

STATUS OF SPENT FUEL STORAGE CAPABILITY							
DATA AS OF 2-28-79							
Facility	Core size (# of assemblies)	Present authorized storage pool capacity (# of assemblies)	# of assemblies stored	Remaining capacity (# of assemblies)	Remaining capacity if pending request approved	Scheduled Date for next refueling	Will fill present authorized capacity
Pressurized Water Reactors							
Gina	121	595	156	439	-	2/79	1987
Indian Point I	0	288	160	128	-	N/S	-
II	193	482	132	350	-	6/79	1984
III	193	837	64	773	-	N/S	1989
Boiling Water Reactors							
Nine Mile Point I	532	1984	660	1324	2349	3/79	1990
Pitzpatrick	560	760	268	493	1752	3/80	1981

SOURCE: Nuclear Regulatory Commission: Operating Units Status Report, NUREG 0020, Vol.3 #3, March 1979.

Glossary

AFR

Away-from-reactor centralized storage pool for spent fuel assemblies. Each fuel assembly holds from 50 to 300 rods containing the uranium fuel in the form of ceramic pellets. Currently, the rods are being stored in pools at each reactor. Originally, the pools were conceived as temporary 6-month cooling down basins for spent fuel before the fuel was sent to a reprocessing plant. Since commercial reprocessing has been shut down, the fuel has been piling up at reactors. To cope with this constipation problem, utilities have been requesting (and obtaining) permission from the NRC to compact spent fuel rods at the individual reactor pools.

The utilities do not want the expense, added safety problems and increased criticality hazard of on-site compacted pools. The government has responded with a push for centralized-tax-payer subsidized AFR's. As yet it has not been demonstrated whether a centralized facility reduces or increases the possibility of an accident that would threaten the health and safety of the public.

Spent Fuel

After 3-4 years, uranium inside a reactor has fissioned so extensively that a large number of dangerous, radioactive by-products have been built up. These by-products slow down the fissioning process of the U-235. The nuclear industry considers spent fuel a valuable resource that can be reprocessed to produce plutonium and uranium. Nuclear critics consider spent fuel as an extremely hot form of radioactive waste that must be cooled indefinitely - pending the development of adequate solidification and isolation technologies.



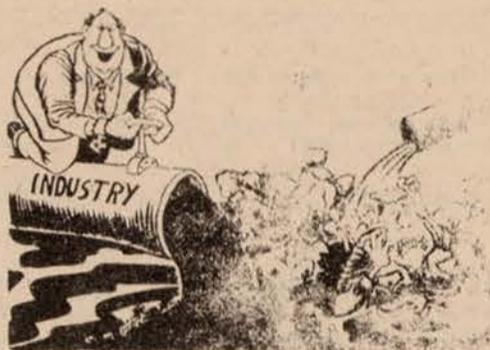
Downstate Report

Activity around nuclear power issues has been growing steadily over the last few years in southern New York. Now the concern about the threats of nuclear plants, waste and higher utility bills which accompany them promise to be campaign issues in the future as well as the focus of an increasing amount of grass-roots citizen organizing.

The New York Metropolitan area and the Hudson Valley are already troubled with substantial nuclear development. New York State's first nuclear plant was Con Edison's 265 megawatt nuclear-oil hybrid Indian Point #1 which began operation in 1962 and was shut in 1974 when the utility decided not to bother installing the required emergency core cooling system. In 1973 a second reactor of 873 megawatts was started by Con Ed and in 1976 the third plant at the Buchanan, New York site became operational. The Number 3 plant was originally owned by Con Ed, but the Power Authority of the State of New York (PASNY) bought the 965 megawatt nuke from Con Ed as part of a bail-out scheme for the perpetually troubled supplier of power to the Big Apple.

Long Island Lighting's (LILCO) 820 megawatt reactor at Shoreham is now about 80% complete, but LILCO is still having problems with the project as popular opposition mounts and the Public Service Commission increases its concern over cost overruns on the \$1.2 billion project. Even greater problems face the utility as it plans two more plants at a site in Jamesport near some of the best agricultural land in the State. LILCO says the Shoreham and Jamesport sites could eventually hold a total of nine power-plants.

continued to page 3



"Cut pollution? Why that would cost these people their jobs."



Downstate continued from page 7

The Hudson River village of Cementon now looks like a nuclear-free zone. PAsNY has announced that it will not be building a 1300 megawatt nuke at the site as a result of constantly escalating costs. We think constantly escalating opposition from citizen groups is more like it. The designers for the proposed plant would have been Babcock & Wilcox, the firm responsible for the design defects at the Three Mile Island plant.

TRIGA

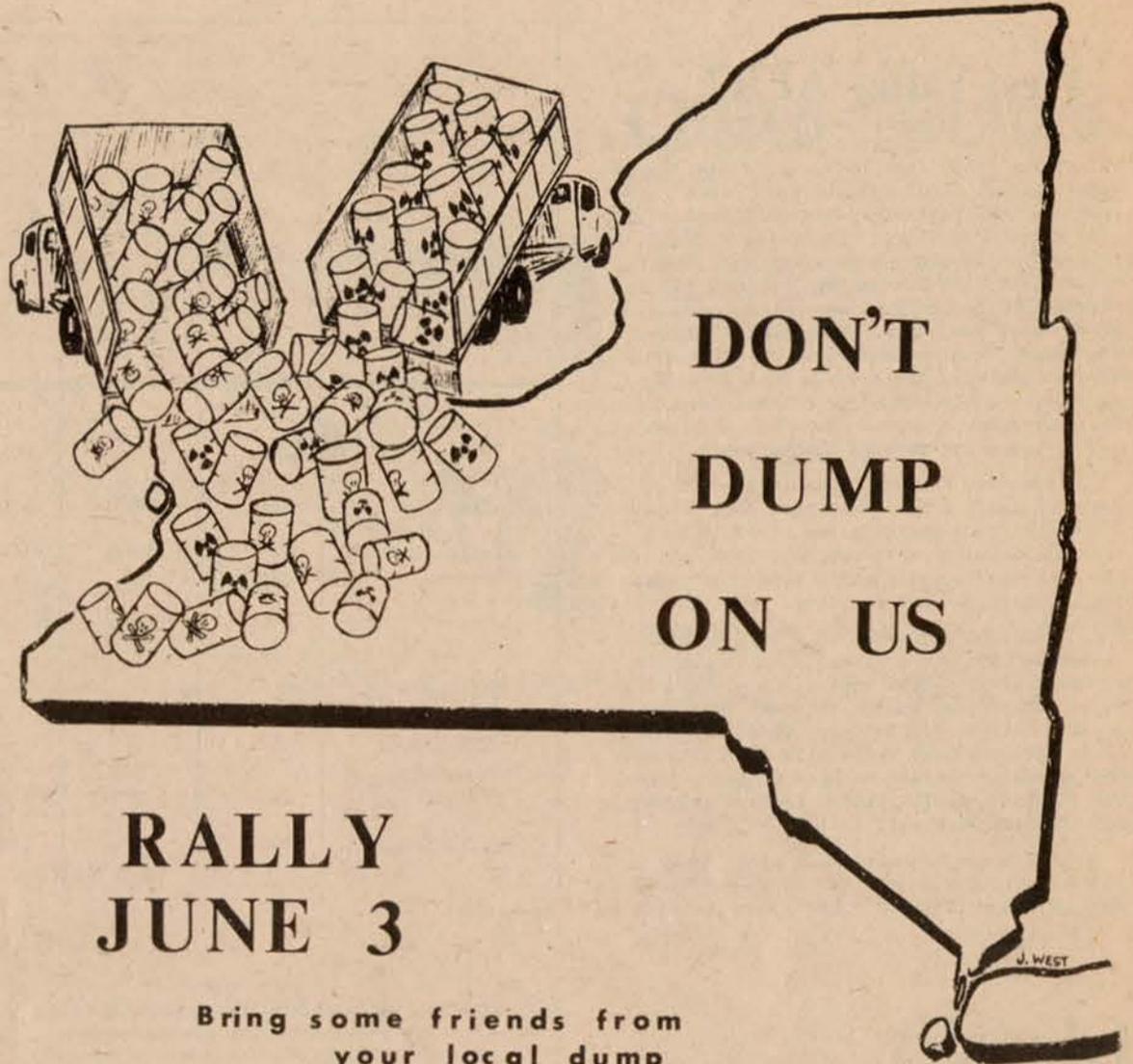
A direct result of the Three Mile Island (TMI) accident was the great boost given to opponents of Columbia University's TRIGA reactor in New York City. The research reactor has been a source of controversy since 1960, but it seemed that the only things standing between Columbia's nuclear priesthood and plans to fuel the reactor in the near future were a court suit brought by the City and a community of determined people, determined to stop the University from operating a reactor in one of the most densely populated spots in the U.S.

Since the events in Middletown, Pennsylvania began to unfold, Columbia's President William McGill has repeatedly stated that the TRIGA reactor will not operate as long as he is the University's President. The institution's Board of Trustees has gone along and the Engineering Faculty has also assented to McGill's policy, albeit with visible reluctance. The fight, however, is far from over as the University has not announced plans to dismantle the reactor. This raises suspicions that the University is merely waiting for the storm to blow over. The people who live near Columbia have had differences with the institution over the years which are much more wide-ranging than whether the Engineering Faculty has the "academic freedom" to endanger Manhattan Island. They probably won't be letting down their guard too easily.

The TRIGA issue is important to more than just Columbia and the residents of Morningside Heights. If the research reactor is allowed to operate, it will be an exception to New York City's ban on the transport of radioactive waste which was enacted in 1976 and whose survival of administrative and court tests paved the way for other communities to regulate or stop the flow of nuclear materials within their borders. Brookhaven National Labs (BNL), site of another research reactor and home for much of the nuclear establishment, has been shipping its waste through New York before the ban. The Lab has been trying to get the law overturned ever since then and operation of the TRIGA would be a radioactive foot (should we call it hot foot?) in the door.

Transport Bans

New York City and the Hudson Valley will be a major waste transport corridor should the Department of Energy try to establish an Away From Reactor (AFR) facility at West Valley or anywhere else in the Northeast. With the New York City ban in effect, Brookhaven, LILCO and the utilities in New England will either have to ship their radwaste across the Hudson River north of the City or entirely by barge. Some of the major bridges still available for transport across the river may be cut off as more towns pass transport bans. Some of the bridges are so high that the waste shipping casks are not designed to survive a fall from them! Judy Kessler of Rockland County is coordinating a new Transportation Committee.



**RALLY
JUNE 3**

**Bring some friends from
your local dump**

On June 3, thousands of people from the New York area will converge on LILCO's Shoreham construction site for the largest demonstration ever held on Long Island. Speakers will include Nobel laureate George Wald, cancer researcher Rosalie Bertell, author-activists Grace Paley and Dave Dellinger and long-time anti-nuclear person Connie Hogarth. Pete Seeger, Charlie King and John Hammond will highlight a number of entertainers. The event is being sponsored by the SHAD Alliance. Information about the demonstration can be had by calling the SHAD offices in Smithtown (516) 360-0045, New York City (212) 533-0796 and Westchester (914) 682-0488.

would like to join a coalition with other unions, talk it up with your members, and ask David for literature or other assistance

Activities are also taking place on the legislative front. The Radioactive Waste Campaign is beginning to establish a network of people to organize letter-writing campaigns to Congress and the State Legislature on nuclear waste matters. For those who would like to write letters, or field a team of letter-writers, contact Warren Liebold (212) 687-5559. We particularly need persons to write their State Senators in support of the Hoyt/Barclay bill, S-3868, which would ban a radioactive waste dump in New York State. Flyers explaining this bill may also be obtained from Warren, and are at the Sierra Club office in New York City.

Committees

Finally, for this issue, Warren is forming study groups on the subject of energy: nuclear power, nuclear waste, and alternate energy. Call the Sierra Club NYC office for details.

On the labor front, a new Labor Outreach Committee has been formed downstate, headed up by David Tykulshar (516) 248-1834. The most recent union to cast a more critical eye on nuclear power is the New York State Machinists & Aerospace Workers. At their recent convention April 26-28th, a resolution was passed calling for the retraining of nuclear workers in solar and alternative energy, the end of all government subsidies of nuclear power, and a moratorium on the additional construction of nuclear power plants. Further information can be obtained from David. If you



Sierra Club Radioactive Waste Campaign
Box 64, Station G
Buffalo, New York 14213
(716) 832-9100

Name _____
Address _____
City _____ State _____ Zip _____
Phone: Work() _____ Home _____

Please make checks payable to Atlantic Chapter Radioactive Waste Campaign

Yes I would like to volunteer some time for the Radioactive Waste Campaign. I will help with research, clerical, organizing, public speaking (Please circle your interest).

Yes, please put me on your mailing list.

Yes, please send me more information

Yes, I would like to stop radioactive waste in New York State. Here is my contribution of \$ _____

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