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mother tried to pick it up with a vacuum cleaner. Later the family suffered tremors, flaking skin, and, in one person, hallucinations. Analysis of hair from the family members showed the following concentrations of mercury: father, 6.9 ppm; son, 17.5 ppm; mother, 141 ppm; and daughter, 8.3 ppm.

Conclude Spargo and Pounds: "The very high levels of mercury obtained in the hair of Newton and the correlation between them and his symptoms suggests that he may well have been suffering from mercury poisoning." Since the publication of their paper, the same journal has printed a rejoinder (*5*) that raises questions about possible weak links in the poisoning hypothesis, such as the difficulty in assuring the authenticity of the hair. As has always been the case with conjectures about the dark year, the debate will no doubt continue.

And if it was mercury poisoning? The effects are reversible, and after Newton in 1696 gave up his reclusive ways at Cambridge he went on to become Master of the Mint, President of the Royal Society, and a lion of London Society. It is clear, however, that his scientific displays were never again the equal of those in the early, pre-alchemical years when he discovered the calculus, the nature of white light, and the theory of gravitational attraction. Perhaps poisoning by mercury was not only the cause of Newton's brief lunacy, but was also the pivotal event that nudged the superstitious genius away from his researches in the lab to the seemingly less dangerous ways of the world.—WILLIAM J. BROAD

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Problems Continue at Three Mile Island

GAO says public will not benefit if utility is forced into bankruptcy

Time is running out for General Public Utilities (GPU), the holding company that owns the twin nuclear reactors at Three Mile Island. The General Accounting Office (GAO) examined the troubles facing the company as a result of the accident in March 1979 and, in a report* released on 26 August, concluded that an emergency aid package will be needed to save the company from bankruptcy.

The accident has already taken its toll. GPU stockholders have forfeited $150 million in lost income and customers throughout the GPU grid in Pennsylvania and New Jersey have been assessed slightly higher rates to pay for electricity bought from other companies. Corporate and customer costs will continue to rise, but the GAO claims that a rescue package could prevent them from climbing as high as they would if a bankruptcy occurs.

The GAO notes that no investor-owned utility has ever gone under before. GPU's demise would affect the entire industry. By one estimate, the accident has already added a risk premium of 0.75 percent to utility financial offerings, which is passed along to consumers in the form of rate increases of $170 million a year. If GPU were to go bankrupt, the study says, the risk premium would grow by an additional 1 percent, costing consumers $400 million more each year.

Although these financial penalties may not prove exactly correct, the GAO presents a strong case for believing that a bankruptcy proceeding would become bogged down in competing claims filed by investors, creditors, consumers, and regulators. Working out the etiquette of regulatory intervention would be a nightmare, for the federal government would join the fray in the guise of the Nuclear Regulatory Commission (NRC), the Federal Energy Regulatory Commission, and the Securities and Exchange Commission. Pennsylvania and New Jersey would jump in, with governors and legislatures offering solutions to the problem. And the state utility commissions would become preoccupied with the details of running a handful of orphaned electric plants.

Many people have a desire to make GPU pay for its mistakes at Three Mile Island. But in this report GAO raises an important question: would the public benefit by forcing GPU into bankruptcy? The GAO suggests it would not. One thing is clear: the less money GPU takes in, the less it will spend on cleaning up Three Mile Island. No one else has offered to finance the job, and GPU is running out of funds. The longer this chore is put off, the more it will cost.

The GAO report indicates that GPU has spent so much in dealing with the immediate problems raised by the accident that it cannot get out of its financial hole without help. The two decisions that hurt GPU the most were (i) the NRC's decision not to allow the company to turn on the power at the undamaged twin reactor at Three Mile Island (known as TMI-2) and (ii) the decision of the local rate-setting commission not to allow the company to charge for maintenance until the reactors are back in operation. If TMI-1 were restarted, the company would benefit in two ways: by reducing the amount of power it must purchase at a premium from outside and by making profits on the sale of electricity from TMI-1.

John Fidler, a spokesman for GPU, says the company hopes to receive approval to restart the reactor in November. After 9 months of hearings, the regulatory commission decided in late August that the company had reorganized its management sufficiently to merit public trust once again. A second decision on the adequacy of safety equipment is expected in late September. If this review is favorable and if the NRC goes along, the plant could be generating power by the end of the year. Fidler says this would bring in about $130 million annually.

The GAO report says that a favorable decision on TMI-1 will help stem GPU's losses, but will not pay for the cleanup of

*"Greater Commitment Needed to Solve Continuing Problem at Three Mile Island" (GAO, Washington, D.C., 26 August 1981).

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TMI-2, which the GAO estimates will cost $600 million in unsecured revenues. Nor is it clear how the company will finance the $400 million in long-term debt obligations or the $2.3 billion in construction programs that come due between this year and 1985. The financial pinch will tighten this fall, for the 45 banks that cooperated in extending GPU an emergency line of credit have lowered the borrowing limit from $412 million to $200 million, effective 1 October.

The greatest unknowns are the cost and the amount of time needed to clean up the damaged reactor. The company's own cost estimate is around $1 billion, of which about $200 million has already been spent. It is quite possible that with regulatory delays, financing troubles, and unexpected technical problems, the cost will rise. The company has had a couple of recent disappointments, typical of the kind of setbacks that drive expenses up. The director of the cleanup program, expressing "dismay" that funds were so tight, resigned in July after a year and a half on the job. Then in September the system intended to decontaminate the water in the containment building developed serious problems. Meanwhile, the Bechtel Corporation, the contractor in charge of the operation, continues to raise cost estimates. In explaining the changes, a Bechtel spokesman said last week, "Estimating what it would cost at first was like asking in 1958 how much it would cost to send a man to the moon: it had never been done before." As the engineers began looking inside the containment building this summer, they began to draw up more detailed projections of the work to be done.

Richard Thornburgh, the governor of Pennsylvania, made a strong plea for federal help in July. His proposal, probably the best publicized of several, asks that the cost of cleaning TMI-2 be shared by the federal government (25 percent), the nuclear and electric utility industries (25 percent), Pennsylvania and New Jersey (6 percent), GPU (32 percent), and the insurance fund (12 percent). The key to success in this case is to get Washington to make its pledge first. But according to a White House energy policymaker, neither the Administration nor Congress is enthusiastic about making such a large commitment. The official said the Administration agrees in principle that it should help out, so that the nuclear industry can get back on its feet. But he said the help would probably be limited to handling TMI-2 waste and definitely would not amount to a 25 percent contribution to the general cleanup effort. The 1982 budget allocates $37 million to the Department of Energy (DOE) for research and development on cleanup technologies for TMI-2—which is just "peanuts," as one DOE official said.

The Edison Electric Institute, the national organization of investor-owned utilities, also likes Thornburgh's idea "in principle." And, like the White House, it does not want to pledge such a large commitment. The Institute's board of directors and a special task force on TMI-2 will both be in Kansas City on 10 September for meetings. GPU hopes that they will produce a tangible offer of help, for lacking this, the future looks dark.

—ELIOT MARSHALL

Tight Screening Plan for EPA Data

EPA scientists are upset by a new proposal for peer review of oral statements and research results

The new Reagan Administration overseers of scientific research at the Environmental Protection Agency (EPA) have developed an aggressive plan to prevent researchers from making discomfiting public statements about environmental problems. The plan would require every oral presentation by an EPA scientist, scientific consultant, or research contractor to be reviewed at four levels of the EPA bureaucracy for what the agency terms "inappropriate policy statements or conclusions."

The plan, which has been circulated by EPA's new research director, Andrew Jovanovich, would also establish an unusually rigorous system of peer review, in which everything from slide presentations to computer software would have to be approved by at least seven officials before it could be displayed or released. Scientific manuals and reports would have to follow a circuitous path through the agency involving as many as 30 steps before their conclusions become known to the general public.

The effort is designed to ensure that research results "are of high quality and based on creditable scientific and technical knowledge," according to the most recent EPA draft. But it has been widely and strenuously criticized within the agency's scientific division. One person there calls it unworkable, while another terms it a disaster. "It could bring things to a screeching halt with its myriad clearance and feedback loops," says a third, who like the others requested complete anonymity because they feared reprisal.

Most of the individuals who spoke with *Science* said that the proposal was well intentioned even if seriously flawed. They say that EPA administrator Anne Gorsuch and deputy administrator John Hernandez, like previous political appointees, have expressed a serious commitment to improving the quality of the agency's work. But the Administration's open distaste for new regulatory initiatives has given rise to suspicions that the program is deliberately intended to enchain a major source of environmental information. As one EPA employee put it, "No published data—no new or revised pollution risk assessments—no standards which can, therefore, be defended—viola, you have instant regulatory reform."

The suspicions are apparently heightened by the agency's plan to trim the research budget by $60 million next year, or about 33 percent when the effects of inflation are taken into account. EPA is, for example, ending its support for research on the health effects of diesel exhaust fumes, utility ashes, indoor air pollution, mining wastes, and offshore oil drilling. It is curtailing research into the environmental effects of pesticides and toxic pollutants. Water quality research is being drastically cut, and the agency is reducing its support for long-term epidemiological studies of the effects of air pollutants. Some critics feel

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