G/712-11-12

PENNSYLVANIA ELECTRIC COMPANY

INTER-OFFICE MEMORANDUM

DATE April 5, 1979
OFFICE Johnstown

SUBJECT TMI-2

TO OFFICERS, DIVISION MANAGERS, DISTRICT MANAGERS, STATION SUPERINTENDENTS, SYSTEM DEPARTMENT HEADS, DIVISION CONSUMER SERVICES MANAGERS, DIVISION BUSINESS OFFICE SUPERVISORS, DIVISION COORDINATORS OF CONSUMER AFFAIRS

It will be some time before the TMI-2 incident is reported in full detail. Attached for your information is a plant status report, a copy of President Carter's statement to the press during his TMI visit, an explanation of nuclear radiation, and a fact sheet on the TMI plant.

On the matter of radiation releases resulting from the TMI-2 incident, the NRC reported the general public has received a total of less than 100 millirem of radiation. The radiation backgrounder explains nuclear radiation and lists typical radiation exposure and the doses which are generally termed high level. Also attached is a list of nuclear terms.

It is recommended this information be shared with other employees.

P. A. Pollino

P. A. POLLINO, Manager
Communications Services

PAP:dlr

1904 084

7908310569

April 5, 1979

TMI STATUS

The status of TMI Unit 2 remains stable with the temperature being controlled at about 280° F and pressure controlled at about 1,000 psi.

The present cooling mode continues. A review and evaluation of procedures to bring the plant to "cold-shutdown" is in process.

The NRC is conducting daily press conferences, usually around 2:30 p.m., to keep the press advised of the current situation. As Met-Ed President Walter Crietz said, "We work together and keep the NRC advised. It is in the mutual best interest that public comments on the TMI-2 situation be made by one source, the regulatory body, the NRC."

PRESIDENT CARTER'S NEWS BRIEFING
April 1, 1979

I would like to express my thanks and admiration for the civilian and government personnel that have continued to devote themselves without reservation to solving the problems at the reactor site. The working relation among State, local, Federal and private personnel has been excellent, and has also been productive. The primary and overriding concern for all of us is the health, and the safety of the people of this entire area. As I've said before, if we make an error all of us want to err on the side of extra precautions and extra safety. I've learned that the radiation levels are being very carefully monitored throughout the area and any trend toward higher levels would immediately be reported to me and to Governor Thornburgh and others and every effort will be made to keep those radiation levels down to the present state which is quite safe for all concerned. The challenge in the future will be to cool down the reactor core itself to a safe level and at the present time all those who are involved here who are highly qualified, tell me that the reactor core is indeed stable. However, within the next few days important decisions will be made on how to bring the reactor down to a cold and stable state. As always, in that transition period careful preparations are being made, every eventuality is being assessed and above all the health and safety of people involved will be paramount. I would like to say to the people who live around the TMI plant that if it does become necessary, your governor, Governor Thornburgh, will ask you and others in this area to take appropriate action to insure your safety. If he does, I want to urge that these instructions be carried out calmly and exactly as they have been in the past few days. This will not indicate the danger is high. It will indicate that a change is being made in the operation of the cooling water system to permanently correct the present state of the reactor and is strictly a precautionary measure. It's too early yet to make judgment about the lessons to be learned from this nuclear incident. Once the job of satisfactorily dealing with the present circumstances is completed, then there will be a thorough inquiry into the original causes and obviously into the events that have occurred since the incident, and additional safety precautions will undoubtedly be evolved. Perhaps some design changes will be implemented to make sure that there is no re-occurence of this incident or one similar to it. We will also do everything possible. I will be personally responsible for thoroughly informing the American people about this particular incident and the status of nuclear safety in the future. I intend to make sure that the investigation is conducted thoroughly and the results are made public. And now I would like to have the honor of introducing a man who has done a superlative job in co-ordinating this entire effort. Because of his response, the American people, and particularly those who live in this region, potential panic and disturbance has been minimized. I again would congratulate you Governor Thornburgh and thank you on behalf of our country for doing such a superb job. Thank you very much.

PRESIDENT CARTER'S NEWS BRIEFING CONT'D
GOVERNOR THORNBURGH

Thank you Mr. President. Your expression of concern and courage in coming to central Pennsylvania today is an inspiration to the good people of this region. That kind of courage has been exhibited for the past five days by technicians at the facility, by those individuals who undertook to relocate themselves voluntarily at our suggestion within the near end region and by countless thousands of other Pennsylvanians who have shown qualities of patience and forbearance during a very difficult period. We thank you from the bottom of our hearts for your expression, and that of Mrs. Carter, in being here today. We promise you, and assure you, that Pennsylvanians are tough people, that we're made of stern stuff, and that we will weather and endure this kind of difficulty to the credit of this great Commonwealth; and we thank you for your presence.

What is nuclear radiation? *

Man has an excellent scientific understanding of radiation. He should. He's been exposed to radiation from the beginning of time.

Radiation is in the air we breathe, the food we eat, the water we drink, the homes we live in and the earth we walk on. Even our bodies are mildly radioactive, and they always have been.

The radiation from the operation of a nuclear plant is physically no different than our natural "background" radiation. It consists of a stream of particles or rays which come from unstable atoms.

There are three types of radiation -- alpha and beta particles and gamma rays. Alpha particles travel about an inch in air and can be stopped by sheets of paper. Beta particles travel a few feet in the air and can be stopped by an inch of wood. Gamma rays travel a greater distance and can be stopped by dense material such as lead or concrete shielding.

Radiation occurs in a nuclear reactor when the uranium atom is split in the fission process. The resulting fission fragments, or lightweight atoms, are generally unstable.

Unstable atoms cannot exist in nature forever. They become stable by emitting energy (radiation) over a period of time which can vary from fractions of a second to thousands of years, depending upon the specific type of atom involved.

*Portions taken from EEI publication, Nuclear Power - Answers to your Questions.

How much radioactivity is there from a nuclear power plant?

The Federal Environmental Protection Agency (EPA), in a booklet entitled Questions and Answers About Nuclear Power Plants, has answered the question as follows:

"The concentration of radioactive materials released to the environment is very low -- often so low that it is difficult to detect. Most radiation we encounter in our daily lives comes from natural sources -- in our foods, in rocks, in the earth, in the air and in the water -- and is approximately an average per person of 130 to 200 millirems a year. (A millirem is a unit of radiation.) Little can be done to remove this radiation; it has been around since the world began. Other radiation is manmade; the greatest amount comes from X-rays used in medical and dental diagnosis and therapy. (An X-ray exposure study conducted by the Bureau of Radiologic Health of the Federal Food and Drug Administration indicated that in 1970 the genetically significant dose was approximately 20 millirems per person.) Another source of radiation exposure is fallout from former atmospheric weapons testing, which accounts for about 5 millirems per person per year. Radiation from jet flights, radioactive luminous watch dials and color television add about 2 millirems per year. By contrast, emissions from nuclear power plants and other atomic facilities average an annual exposure of only a fraction of a millirem per person. The average annual exposure of people living within a 50-mile radius of nuclear stations is much less than a millirem."

In the year 2000, assuming nuclear energy becomes a dominant source of electricity, the average citizen will still receive an

estimated yearly dose of less than 1 millirem from nuclear energy. Those living near nuclear power plants will receive less than 5 millirems per year.

Who decides on radiation protection standards?

The U.S. Environmental Protection Agency (EPA) sets radiation standards to protect the environment and the general public. The U.S. Nuclear Regulatory Commission (NRC) is responsible for the implementation and enforcement of the standards.

Present radiation standards have evolved from years of study and recommendations by radiation protection organizations.

In 1928, the International Society of Radiology sponsored the formation of the International Commission on Radiation Protection. One year after this international group was formed, the National Council on Radiation Protection and Measurements was organized. Both bodies have continually made recommendations on radiation protection over the years.

Further independent reviews of radiation guidelines are conducted periodically by the National Academy of Sciences -- National Research Council. And an international audit is provided by the United Nations Scientific Committee on the Effects of Atomic Radiation.

The NRC also gets data from the Advisory Committee of State Officials, established in 1955 for state participation in regulating nuclear power activities. Among these state, national and international groups are hundreds of the world's leading authorities on radiation, its effects and control.

With standards for controlling radiation from such medical sources as X-rays and radium established as far back as 1900, radiation control, then, has been studied continuously for over seven decades and represents the collective experience and judgment of the world's experts -- a consensus unequalled in any other field of environmental protection.

Why is any release of radioactivity permitted?

It is as impossible to have zero releases from nuclear plants as it is to have zero releases of pollutants from any industrial process. What can be done is to assure that any releases are well below the levels of significant environmental or human health effects. This practice has been observed in the nuclear power industry from its inception. In contrast, most other technologies were fully developed and used before pollution control was required or achieved.

If small amounts of long-lived radioactive materials are released to the environment, is there a buildup to dangerous levels over a long period of time?

The current levels of releases from nuclear plants are calculated to shorten the human life by 24 seconds. You can place this in perspective by realizing that being 25 percent overweight decreases the lifespan by 3.6 years, smoking a pack of cigarettes a day can

decrease life by 7 years, and living in the city rather than rural area can decrease it by 5 years.

Do radiation protection standards take into account the cumulative effect of several reactors on one site and of multiple plant sites in one region?

The U.S. Nuclear Regulatory Commission has always considered multiple sources of radiation as far as protection of the public is concerned. A plant's design criteria must take into account the release of radioactive effluents on a cumulative basis.

Radioactive releases during the operation of each nuclear reactor at the same site must be kept as low as reasonably achievable, as defined by the NRC.

Similar attention is given to the cumulative effect of nuclear power facilities at other sites throughout a given geographical area. NRC regulations provide that the average radiation exposure of the public due to the operation of all nuclear plants -- even projected up to the year 2000 -- will be less than one percent of the average natural background radiation.

Has any person in the United States ever been exposed to an overdose of radiation from commercial nuclear power plants?

The public has never been exposed to radiation levels above the annual dose limits set by the government. Rare cases of researchers and workers being overexposed have occurred, mostly in early days of nuclear science. Workers in commercial nuclear power production are, in fact, protected with extensive precautions to prevent overexposure.

TYPICAL RADIATION EXPOSURE LEVELS

From Natural Background Radiation (millirems/year)

Cosmic rays -- 35 to 70
Air -- 5
Building Materials -- 35 to 70
  Wood - 35
  Concrete - 50
  Brick - 75
  Stone - 70
Ground -- 11 to 15

From Manmade Sources Radiation (millirems/year)

Coast-to-coast jet flight -- 5
Color Television -- 1 to 10
X-ray Diagnosis and Treatment (millirems/exposure)
  Limb x-ray - 420
  Chest x-ray - 20 to 50
  Stomach x-ray - 350
  Colon x-ray - 450
  Head x-ray - 50
  Spinal x-ray - 250
  Gastrointestinal tract x-ray - 2000
  Dental x-ray - 20 to 1000

Effects of High Level Doses of Radiation

Dose	Effect
10,000,000 mrem	Death within hours due to damage to central nervous system.
1,200,000 mrem	Death within several days due to damage to gastrointestinal system.
600,000 mrem	Death within several weeks due to damage to blood-forming organs.
450,000 mrem	50-50 chance of death within 30 days.
100,000 mrem	Possible temporary impairment, but probable recovery.

NUCLEAR TERMS

Background Radiation	The radiation in man's natural environment, including cosmic rays and radiation from the naturally radioactive elements, both outside, and inside the bodies of humans and animals. It is also called natural radiation. The term may also mean radiation that is unrelated to a specific experiment.
Chain Reaction	A reaction that stimulates its own repetition. In a fission chain reaction, a fissionable nucleus absorbs a neutron and fissions, releasing additional neutrons. These in turn can be absorbed by other fissionable nuclei, releasing still more neutrons. A fission chain reaction is self-sustaining when the number of neutrons released in a given time equals or exceeds the number of neutrons lost by absorption in non-fissioning material or by escape from the system.
Cladding	The outer jacket of nuclear fuel elements. It prevents corrosion of the fuel by the coolant and the release of fission products into the coolant. Aluminum or its alloys, stainless steel and zirconium alloys are common cladding materials.
Containment Vessel	A gas-tight shell or other enclosure around a reactor.
Control Rod	A rod, plate or tube containing a material such as hafnium, boron, etc. used to control the power of a nuclear reactor. By absorbing neutrons, a control rod prevents the neutrons from causing further fission.
Coolant	A substance circulated through a nuclear reactor to remove or transfer heat. Common coolants are water, heavy water, air, carbon dioxide, liquid sodium and sodium-potassium alloy.
Core	The central portion of a nuclear reactor containing the fuel elements and usually the moderator, but not the reflector.
Fuel Element	A rod, tube, plate or other mechanical shape or form into which nuclear fuel is fabricated for use in a reactor.
Melt-down	The overheating of a plant's nuclear fuel to such a degree that it melts the protective shell around the nuclear reactor core, resulting in widespread release of radioactive contamination.
Millirem	The term used to measure absorption of radiation by humans. The average American is exposed to 100 to 200 millirem of radiation a year, including radiation from X-rays to cosmic rays. A normal chest X-ray exposes a perso

Nuclear Reactor	A device in which a fission chain reaction can be initiated, maintained and controlled. Its essential component is a core with fissionable fuel. It usually has a moderator, a reflector, shielding, coolant and control mechanisms. Sometimes called an atomic furnace, it is the basic machine of nuclear energy.
Nuclear Regulatory Commission (NRC)	The independent civilian agency of the federal government with statutory responsibility for atomic energy matters.
Radiation	The emission and propagation of energy through matter or space by means of electromagnetic disturbances which display both wave-like and particle-like behavior; in this context the particles are known as photons. Nuclear radiation is that emitted from atomic nuclei in various nuclear reactions, including alpha, beta and gamma radiation and neutrons.

PENNSYLVANIA ELECTRIC COMPANY

INTER-OFFICE MEMORANDUM

DATE April 6, 1979
OFFICE Johnstown

SUBJECT TMI-2 UPDATE

TO OFFICERS, DIVISION MANAGERS, DISTRICT MANAGERS, STATION SUPERINTENDENTS, SYSTEM DEPARTMENT HEADS, DIVISION CONSUMER SERVICES MANAGERS, DIVISION BUSINESS OFFICE SUPERVISORS, DIVISION COORDINATORS OF CONSUMER AFFAIRS

Please share this information with all employees.

James A. Johnson
JAMES A. JOHNSON

JAJ:dlr

1904 096

TMI-2 UPDATE

NEWS FROM OTHER SOURCES

MIDDLETOWN, PA. - April 3, 1979 -- NRC spokesperson Harold Denton said he expects extreme damage to most fuel rods in the upper part of the core. It appears that some 2% to 15% of the fuel elements have been damaged. Asked how long it would take before someone could re-enter the containment, Denton said that first the Xenon would be allowed to decay. An estimate of 20 to 45 days from now, he said, would probably be optimistic. "We are talking about a considerable period of time before it could be operated again," he said, indicating that he believes it possible that the plant could go back into service. (AIF Info Wire, 4/3/79)

# # #

MIDDLETOWN, PA. - April 3, 1979 -- Harold R. Denton, Operations Chief of the Nuclear Regulatory Commission, says "we're talking about a considerable period of time before resumption of operation" of the reactor. Robert Benero, Assistant Director of the NRC's Office of Materials Safety Standards, estimated that perhaps as long as four years might be required for the crippled power plant to be decontaminated, overhauled and placed back on-line. "It certainly will be at least one or two years before the facility is decontaminated," he said.

There was increasing speculation in Washington, however, notably from Senator Gary Hart of Colorado, that the damaged reactor unit will never open again because of the extensive damage and the cost of repair. Senator Hart, Chairman of the Sub Committee on Nuclear Regulation, said it might cost more to clean up the plant than it did to build it, adding that it might become "a $1 billion mausoleum." (New York Times, 4/4/79)

# # #

HARRISBURG, PA. - April 3, 1979 -- Met-Ed employee Edward Hauser, chemistry foreman at Three Mile Island, was extensively featured in a human interest story in the April 4th issue of the New York Times. The article reports that Hauser was one of four employees who received overdoses of gamma radiation last Wednesday, March 28th at the TMI site, receiving approximately 4 rems, exceeding the quarterly limit of 3 rems. Hauser, who was involved in collection of water samples from a sampling room in the auxiliary building adjoining the reactor, has been cleared to return to work and is back on the job at Three Mile Island, although he is not working in the vicinity of high radiation. The article concluded: Since the accident, he (Hauser) has given a lot of thought to the nuclear power program and has lost no faith. "I believe in nuclear power 100%," he said. The article also explained that Hauser has faith in Metropolitan Edison Company, and the Nuclear Regulatory Commission, and the people who work with him, and in the regulations.

# # #

PENNSYLVANIA ELECTRIC COMPANY

INTER-OFFICE MEMORANDUM

DATE April 6, 1979
OFFICE Johnstown

SUBJECT TMI Recovery Organization

TO OFFICERS AND DIVISION MANAGERS

Attached is a copy of a letter which was released to employees yesterday at Parsippany.

P. A. Pollino

P. A. POLLINO

PAP:dlr

1904 098

April 5, 1979

TMI RECOVERY ORGANIZATION

ALL EMPLOYEES

Parsippany

The organization for the recovery operation at TMI is now in place. M. W. Lee, President of Duke Power, will be working with me as my Deputy in this activity. In addition, several senior, experienced people from other utilities and nuclear industry organizations across the country are being integrated with our own people into the recovery operation.

Walter Creitz, President of Met-Ed, in addition to his regular duties, will be overseeing the support functions of Met-Ed so important to the success of the recovery work at TMI.

The recovery organization is focusing priorities on:

a) Maintaining the current plant operations in the safest condition.

b) Containing the release of radioactivity from the auxiliary building.

c) Making a reliable safe transition to a benign and reliable long-term cooling mode for the plant and,

d) Reinforcing the capability of this plant to assure long-term cooling.

I want to express my heartfelt thanks to each and every employee working on this task, many of whom have been working night and day since the accident occurred.

Your continuing support will insure the success of our efforts.

1904 099

H. M. DIECKAMP

cq

cc: TMI Recovery Organization

PENNSYLVANIA ELECTRIC COMPANY

INTER-OFFICE MEMORANDUM

DATE April 6, 1979
OFFICE Johnstown

SUBJECT TMI-2 COMMENTARY

TO OFFICERS, DIVISION MANAGERS, DISTRICT MANAGERS, STATION SUPERINTENDENTS, SYSTEM DEPARTMENT HEADS, DIVISION CONSUMER SERVICES MANAGERS, DIVISION BUSINESS OFFICE SUPERVISORS, DIVISION COORDINATORS OF CONSUMER AFFAIRS

Attached, for your information, is a positive commentary which appeared in the April 5 issue of the Wall Street Journal. It urges that rational thinking prevail in making any judgments on the nuclear question based on what happened at TMI.

P. A. Pollino

P. A. POLLINO, Manager
Communications Services

PAP/sms

1904 100

WALL STREET JOURNAL
Apr'l 5, 1979

REVIEW & OUTLOOK

Cooling Down

With the Three Mile Island power station now safely cooling down, the salient fact is that despite the high drama no one was hurt. It remains true that in 25 years of experience with nuclear power, no member of the general public—and very few utility workers — has suffered any injury from it.

The nation's attention was focused on Middletown, but meanwhile a tornado leveled half the town of Braddyville, Iowa, sending four people to the hospital. Boarding house fires killed 25 people in Farmington, Mo. and nine in Connellsville, Pa. Some 2,000 remained homeless due to floods around Chillicothe, Ill. Hospitals near the Homestead Air Force Base in Florida admitted 89 children and two adults when a YMCA bus ran into a ditch, and 20 people were injured when a semitrailer rammed a school bus in Greentown, Ind.

This is not to trivialize the problems at Three Mile Island, which were undeniably serious. But it is a useful note to strike in the wake of the near-hysteria we have been inundated with for the past week. No sooner had he heard about the incident than nuclear critic George Wald got on a plane for Pennsylvania, getting as close as possible to the accident so he could tell us how dangerous it was. The television networks descended on the scene in their clumsy way, employing marvelous technology to get canned answers to canned questions. The usual politicians, predictably led by California Governor Jerry Brown, emitted the usual demagogy. Jane Fonda and Tom Hayden held a press conference to plug their latest cause and her latest film.

The truth is that we are not yet able to measure the dimensions of the Three Mile Island accident. It clearly does show that even the best engineers do not think of everything; apparently no one imagined a hydrogen bubble blocking the emergency cooling. It clearly shows that nuclear power has its problems and can be oversold. As the accident happened, the General Public Utilities 1978 annual report was in the mail, with a splendid color photo captioned, "75 Years of Power: York Haven to Three Mile Island." The ugly brick building in the foreground before the cooling towers is a 75-year-old hydroelectric station. The explanation reads, "Still in reliable operation, York Haven has a capacity of 19 megawatts."

We do not know, however, what caused the accident and how likely it is to be repeated in other plants, even of similar design. We do not really know how close we came to a large emission of radiation. We do not know the financial exposure, which surely will have an impact on the future of nuclear power. Our best advice is that the $1 billion reactor probably can be put back in service, but that might take five years—two years for the cleanup and three years for the hearings process.

As we learn more about what actually happened at Three Mile Island, we will be in a better position to assess the future of nuclear power. It is of course an intrinsically dangerous technology, perhaps statistically safe in comparison with alternate sources of power, but opening the possibility of large individual catastrophes.

Yet it is far from clear that such technologies are intolerable. No one suggests abandoning air travel, though accidents do happen in which hundreds of people are killed at one blow. Very few people are willing to give up their automobiles, despite the statistical risk. For that matter, much of the public continues voluntarily to expose itself to cigarets. If these risks are acceptable, it is hard to believe that a democratic society would choose to give up 14% of its electricity to avoid future incidents like the one at Three Mile Island.

Somehow atomic power is commonly held to a higher standard. Or at least, it has become a particular bete noir to that part of the population that likes to protest. We have never been able to understand the reasons for this, and can only guess that they are deeply buried in the psyche. But the regulation of atomic power is a question that ought to be decided by rational calculations of trade-offs and relative risks. We hope and trust that as the Three Mile Island reactor cools down, the public mood does as well.

PENNSYLVANIA ELECTRIC COMPANY

INTER-OFFICE MEMORANDUM

DATE April 6, 1979
OFFICE Johnstown
SUBJECT

TO OFFICERS, DIVISION MANAGERS, DISTRICT MANAGERS, STATION SUPERINTENDENTS, SYSTEM DEPARTMENT HEADS, DIVISION CONSUMER SERVICES MANAGERS, DIVISION BUSINESS OFFICE SUPERVISORS, DIVISION COORDINATORS OF CONSUMER AFFAIRS

A number of legislators and others are beginning to get headlines and some public attention by calling for the GPU investors to shoulder the costs of the TMI-2 incident.

The following statement is for use in response - on inquiry - to the media, consumer groups, and customers.

> Our immediate concern is the protection and health of the public, and bringing the reactor at TMI-2 to "cold shutdown." Only after this is assured and there is absolutely no potential problem insofar as the public is concerned, can we begin to look at the detailed costs involved and who should pay what.
>
> It is premature to speculate on this until the actual costs involved are determined, a complete investigation of the incident is completed and all of the facts have been reviewed and evaluated.

James A. Johnson
JAMES A. JOHNSON

JAJ:dlr

1904 102

PENNSYLVANIA ELECTRIC COMPANY

INTER-OFFICE MEMORANDUM

DATE April 11, 1979
OFFICE Johnstown

SUBJECT Penelec's Planned Cutbacks

TO OFFICERS, DIVISION MANAGERS, DISTRICT MANAGERS, STATION SUPERINTENDENTS SYSTEM DEPARTMENT HEADS, DIVISION CONSUMER SERVICES MANAGERS, DIVISION BUSINESS OFFICE SUPERVISORS, DIVISION COORDINATORS OF CONSUMER AFFAIRS

Attached is an information copy of an employee bulletin outlining Penelec's planned cutbacks resulting from the economic impact of TMI on our operations. Please share this information with all employees.

JAMES A. JOHNSON, Director
Public Information

JAJ/sms

1904 103

April 11, 1979

EMPLOYEE BULLETIN

Penelec and other GPU companies are faced with a serious cash bind as a result of the Three Mile Island situation, according to Company President William A. Verrochi, and steps are being taken to improve the Company's cash flow largely through reducing all but the most essential construction and operations and maintenance (O & M) expenditures.

Verrochi indicated that the 1979 Penelec construction budget of approximately $90 million will be shaved to about $60 million and that another $13 million will be pared from the 1979 O & M budget of $133 million through various cost-cutting measures.

Cost cuts in construction will be realized mainly in three areas: new generating stations, existing generating stations, and transmission and distribution (T & D) facilities. Engineering has been temporarily suspended on the Seward 7 project - on which construction has not yet begun - except for modest expenditures necessary for ongoing licensing procedures. As for construction earmarked for existing stations, some lesser priority environmental and performance improvement projects have been deferred.

"These revisions to our environmental and performance improvement programs have been carefully scrutinized to insure fulfillment of our immediate environmental and production commitments," said Verrochi.

The T & D reductions will be reflected in deferring most of the projects involving additions and replacements of facilities such as transformers, substations and lines. Verrochi emphasized there are no budgeted reductions planned which would impair Penelec's ability to provide service for new customers.

On the O & M side of the picture, he explained a savings of some $3.4 million in outside contractor work and $.4 million in materials and supplies should be realized largely through deferment or reductions in scope of scheduled

outages at the Company's coal-fired generating stations. These steps will also increase the kilowatthours generated from the stations, which would in part offset the increased fuel costs associated with generation lost at TMI. Tree trimming activity for the balance of the year will be reduced by some $2.6 million to a level which will permit the Company to handle emergencies. O & M payroll will be reduced by some $2 million for the balance of the year, and the remaining cost reductions will be achieved through other miscellaneous O & M curtailments which would include such things as outside contractor work (in addition to that related to scheduled outages in Generation), research and development programs, preventative maintenance on equipment and facilities, employee travel, and advertising programs.

"We hope to achieve the necessary payroll cost reductions mainly through reduced overtime, a general freeze on hiring, and attrition," Verrochi explained.

He added that management is currently assessing other potential cutbacks and deferrals, including layoffs, but indicated that no decision had been reached as to what, if any, action might be taken along these lines.

"In short," he said, "we are cutting back costs and expenses wherever we can without jeopardizing our ability to serve our customers."

He added that the financial implications of TMI are compounded by the fact that "we simply do not yet know the future of the nuclear station. Among the uncertainties we're faced with are the extent of the damage to TMI-2, how much it will cost to clean it up and how long each unit at TMI will be out of service."

DISTRIBUTED BY COMMUNICATIONS SERVICES

PENNSYLVANIA ELECTRIC COMPANY

INTER-OFFICE MEMORANDUM

DATE April 11, 1979
OFFICE Johnstown

SUBJECT GPU STOCK

TO OFFICERS, DIVISION MANAGERS, DISTRICT MANAGERS, STATION SUPERINTENDENTS, SYSTEM DEPARTMENT HEADS, DIVISION CONSUMER SERVICES MANAGERS, DIVISION BUSINESS OFFICE SUPERVISORS, DIVISION COORDINATORS OF CONSUMER AFFAIRS

Attached is an information copy of the latest TMI-2 update distributed for bulletin board posting.

James A. Johnson

JAMES A. JOHNSON, Director
Public Information

JAJ/sms

1904 106

GPU STOCK

TMI-2 UPDATE April 11, 1979

PARSIPPANY, N.J. - April 10, 1979 -- As of 3:30 p.m. today GPU stock was 13-5/8, up 5/8 from its closing price of 13 for Monday, April 9, 1979. The high for the day was 13-3/4; the low was 13. Trading volume was 412,200.

EMPLOYEES URGED TO COOPERATE FULLY WITH TMI INVESTIGATIONS

In a special letter to all employees and others involved at TMI, GPU and Met-Ed policy relating to investigations of the TMI situation by the Nuclear Regulatory Commission or by any other Governmental organization was outlined. The letter, signed by Met-Ed President Walter M. Creitz, GPU President Herman Dieckamp and Met-Ed Vice President - Generation, John Herbein, stated (in part) as follows:

"Our policy is to cooperate fully in every way with the Governmental investigators. We wish to make available to such agencies, fully and frankly, all information at out disposal. We believe that the overall public interest will be best served by the fullest knowledge of what occurred.

"The Company and its employees, suppliers and contractors are fully covered by public liability insurance, and are indemnified, i.e., held harmless, under the Price-Anderson Act.

# # #

NRC OFFICIAL SAYS TMI CRISIS OVER

HARRISBURG, PA - April 10, 1979 -- Harold Denton, top NRC official at TMI, was quoted as saying "while there continues to be (several problems at the plant), when I look at the entire spectrum, I consider the crisis to be over... regarding the condition of the reactor core." He also indicated that the likelihood of another major release of radiation was "very remote." Based on that assessment, Pennsylvania Governor Richard Thornburgh has said that he now believes that pregnant women and pre-school children may safely return to their homes near the plant. Summarizing the health impact of the accident, Mr. Denton said the maximum possible dosage from the TMI accident for any person outside the plant is less than 100 millirems and that there is no evidence that anyone off the plant site actually did receive such high levels. Twelve plant workers received doses between 2 and 3 rems and another three received more than 3 rems. (Wall Street Journal, 4/10/79)

# # #

1904 107

INSURERS ESTIMATE TMI DAMAGE AT $140 MILLION

NEW YORK, April 9, 1979 -- Mr. Burt C. Proom, president of American Nuclear Insurers, a pool of about 130 publicly owned insurance companies who are participating in the insurance programs for TMI, released a preliminary estimate of $140 million for damage to the insured property at TMI-2. That is well below the $300 million property coverage supplied by the insurers.

# # #

MORE

American Nuclear Insurers also stated that they and another pool have paid out $650,000 for the plant's liability coverage, largely as emergency out-of-pocket funds for the evacuation. At this point, there are no reports that radiation ever reached a dangerous level in areas surrounding the plant, so insurers are hopeful liability payout will be limited to the cost of the evacuation and related expenses. (Wall Street Journal, 4/10/79)

NOTE: GPU continues to state that it does not know what the total cost of the property damage might be and cannot say whether or not the total cost might exceed the $300 million in property damage insurance available to it.

# # #

NEW YORK CITY, N.Y. - April 9, 1979 -- Energy Secretary James Schlesinger said on ABC's "Issues and Answers" program Sunday that the future of nuclear energy is "in trouble" after the accident at the Three Mile Island power plant in Pennsylvania. But it would be "unwise to write off nuclear power," he said. He also rejected the suggestion that a moratorium be called on new nuclear power plant construction until an investigation of the Three Mile Island accident is completed.

# # #

AUSTIN VOTERS SUPPORT LOCAL NUCLEAR PROJECT

In the first public election since the March 28th TMI accident, voters in Austin, Texas have approved their city's participation in the South Texas Nuclear Project. A 53.1% majority authorized the city council to sell $215 million in revenue bonds to finance the city's share of the project. A second proposal, which would have ordered the city council to sell Austin's share in the project, was also rejected by the voters. (AIF InfoWire, 4/9/79)

# # #

OYSTER CREEK STILL A WELCOME NEIGHBOR

LACEY TWP, N.J. - April 9, 1979 -- The Oyster Creek nuclear plant here continues to generate power and revenue for the community's 14,000 residents - with surprisingly little controversy in spite of the Harrisburg accident about 150 miles to the West. The plant is operated by Jersey Central Power & Light, a unit of General Public Utilities Corp., the same people who own Three Mile Island.

People here still like their 650,000 killowatt nuclear plant, much as they did in 1976 when a Wall Street Journal reporter visited the Barnegeat Bay community. A return visit last week to gauge the impact of the Three Mile Island crisis found the plant's considerable popularity as the township's biggest benefactor still holds sway. Lacey Township residents have been watching the Pennsylvania situation closely. Many are dismayed that in other parts of the country people have suddenly decided nuclear power plants aren't safe. (Wall Street Journal, 4/10/79)

# # #

PENNSYLVANIA ELECTRIC COMPANY

INTER-OFFICE MEMORANDUM

DATE April 10, 1979

OFFICE Johnstown

SUBJECT Three Mile Island

TO OFFICERS, DIVISION MANAGERS, DISTRICT MANAGERS, STATION SUPERINTENDENTS, SYSTEM DEPARTMENT HEADS, DIVISION CONSUMER SERVICES MANAGERS, DIVISION BUSINESS OFFICE SUPERVISORS, DIVISION COORDINATORS OF CONSUMER AFFAIRS

To help you handle questions about the Three Mile Island accident, enclosed is information provided by the Atomic Industrial Forum:

- Radiation Level at the Three Mile Island Nuclear Plant
- Experience in Nuclear Plant Accident Recovery
- Nuclear Insurance and Three Mile Island
- AIF President Carl Walske Statement
- Nuclear Reactor Information Bulletin

P. A. POLLINO, Manager
Communications Services

PAP:dlr

1904 109

April 5, 1979

RADIATION LEVELS AT THE THREE MILE ISLAND NUCLEAR PLANT

Radiation levels above normal background have been detected outside the Three Mile Island nuclear plant as a result of the incident that occurred there last week. Radiation measurements have been taken by the Nuclear Regulatory Commission and a number of other agencies. The NRC reports that the maximum potential cumulative dose which the most exposed individual might have received over the last five day period is 80 millirems (mrem) which is about the dose one would receive from two chest x-rays. (A millirem is one-thousandth of a rem which is a measure of biological response to a certain quantity of radiation.)

According to HEW Secretary Joseph Califano, the average cumulative dose to individuals within a 50-mile radius is slightly less than 1 mrem. Califano has stated that he would expect to find no additional cancers as a result of this low level.

The natural background radiation for the area around Middletown is estimated at about 100 mrem per year. Background radiation in the U.S. can be 165 millirem or more in higher elevations such as Denver.

The type of radiation which has been emitted during the Three Mile Island incident has been primarily from noble gases, largely xenon. Noble gases do not interact with the body chemically or biologically and cause exposure by direct radiation from a passing cloud of gas. After cloud passage, the radiation does not persist in the area and therefore does not continue to expose those in the vicinity. In addition, the radioactivity is reduced during its movement through the air because of dilution and by radioactive decay.

Following extensive samplings by the FDA and NRC, small traces of radioiodine have been detected in milk offsite. Samples showed concentration levels of about 10 to 20 picocuries per liter, with a reported peak of 31 picocuries. FDA "action levels" begin at 12,000 picocuries per liter. The FDA has stated that there has been no risk to the area's food or drinking water. Although iodine levels need to be monitored closely, the iodine half-life is only eight days and therefore should be declining due to radioactive decay.

Radiation in the Three Mile Island containment building shortly after the incident was detected as high as 30,000 rem per hour. Although these levels are quite high, they have had no effect on the general population since the radiation has been contained. Radiation readings just outside of the containment dome have only been 1 to 5 mrem per hour.

EXPERIENCE IN NUCLEAR ACCIDENT RECOVERY

Although the safety record of nuclear energy is without parallel in the development of industrial technology, several accidents have occurred resulting in significant radioactive contamination outside the primary reactor system due to failure or melting of fuel in the reactor core.

In no case did an injury or fatality result among the public.

Extensive investigation and recovery operations followed these incidents. As well as increasing the safety of subsequent generation reactors, this experience has provided the nuclear community with detailed data on decontamination and restoration of plant operations.

The accidents described below took place at prototype, test and demonstration facilities and at military production reactors in several countries. Accident sequences, accordingly, are not directly relevant to nuclear power plants of current design. However, fission products released from any source present similar problems in cleanup. This experience, therefore, does place in perspective the methods and times that most likely would be required for decontamination and recovery following accidents at present facilities.

--During an experiment on December 12, 1952, the 30 MWe research and test NRX reactor, light-water cooled and heavy-water moderated, at Chalk River, Canada, experienced a failure of mechanical safety devices. The nuclear excursion resulting melted part of the fuel in the core, burst some of the coolant tubes and severely damaged the reactor vessel.

Approximately one million gallons of water carrying some 10,000 curies of fission products flooded the basement of the reactor building. Some radioactive material was released to the environment. No exposure of the public to levels of radiation above protection standards occurred.

After initial salvage operations, the vessel and its remaining contents were packaged and carried away for burial. Auxiliary equipment was decontaminated.

Within 14 months, the reactor was returned to operation with a new fuel core and vessel installed.

--On October 7, 1957, at the Windscale air-cooled, graphite-moderated plutonium production reactor in England, temperature was permitted to rise too rapidly, resulting in the failure of some fuel cladding. The exposed metallic uranium fuel oxidized rapidly and caught fire, releasing large amounts of radioactive material.

Most solid fission products were captured by filters in the discharge stack, so that excessive radiation levels did not result from external exposure. However, approximately 20,000 curies of Iodine-131 were transported through the atmosphere directly to animal feed in sections of land downwind from the plant. Through selective uptake of radioiodine by dairy

cattle, milk subsequently was contaminated. Distribution of milk was suspended over a total area of 200 square miles. Within the restricted area, use of milk by the population was prohibited for 25 days; in the most contaminated areas, for 44 days.

Except for this confiscation, no other environmental action was required.

The U.K. Medical Research Council concluded that "it is in the highest degree unlikely that any harm has been done to the health of anybody, whether a worker in the Windscale plant or a member of the general public."

--Located at the National Reactor Testing Station in Idaho, SL-1 was a 200 KWe direct cycle boiling water prototype facility operated for the military. On January 3, 1961, while the reactor was shut down for maintenance and modification of the core, a nuclear excursion took place when the central control rod was suddenly and manually withdrawn. The resulting generation of heat melted part of the fuel in the core and produced a pressure surge which dislocated the reactor vessel.

Three technicians working on the reactor were killed by effects of the blast. Radiation levels in the reactor room read from 500 to 1,000 Roentgens per hour. Even though the shed housing the reactor was not designed for vapor containment, only small amounts of fission products escaped the building. At the boundary of the three-acre site, levels were within radiation protection standards.

On May 23, 1961, recovery operations, involving remote control and direct access, got under way to dismantle the reactor vessel and core and to remove large pieces of contaminated equipment and debris. Subsequently, the reactor building was razed, service buildings and work areas decontaminated. On June 22, 1962---18 months after the incident---the site was available for future utilization.

--Enrico Fermi 1 was a 61 MWe liquid metal fast breeder reactor located near Monroe, Michigan. On October 5, 1966, two fuel assemblies were partially melted as the result of coolant flow blockage.

Surveys indicated the highest radiation level was 9 millirems per hour at the outside surface of the reactor building. The incident caused no hazard to public health or safety.

In December 1966, recovery began with removal of all fuel assemblies, draining of coolant for inspection of the pressure vessel and repair or removal of damaged equipment. On July 18, 1970, the unit resumed operation with a new core.

Subsequently, owners of the facility decided, for economic reasons, not to embark on a further demonstration program. In December 1975, decommissioning of the plant was complete. Later, its turbine-generator, coupled to a fossil-fired boiler, was used for peaking power.

According to a preliminary assessment of the situation at Three Mile Island, unit number 2 could be decontaminated and returned to operation within one to two years.

Some current technologies and procedures which apply:

---Primary coolant system-ion exchangers coupled to the primary coolant system would demineralize the inventory of approximately 80,000 gallons. Capacity of this procedure is about 25 gallons per minute. As a further step, the water could be treated with polyurethane formaldehyde to recover and package it as a solid.

---Containment-spray systems would be activated to scrub off radioactive materials deposited on the liners. Sodium thiosulfate added to the spray would remove fission product iodine from the containment atmosphere. Krypton could be removed by cryogenic distillation for separation as a liquid or by fluorocarbon absorption. Xenon-133, the primary noble gas present, has a half-life of 5.29 days.

---Sump-some 200,000 gallons of contaminated water on the containment floor could be pumped to normal liquid radwaste systems in the auxiliary building. After deionization, it could be recycled back to the containment spray system.

Following these procedures and eventual entry to the containment, operations could begin to remove the reactor vessel head. With no indication of vessel distortion, this procedure is expected to be carried out with existing equipment. Vacuuming out of cladding and other debris is made easier by the relatively large and simple geometry of the primary coolant system. Special tooling, however, might be required to extract the damaged fuel assemblies.

NUCLEAR INSURANCE AND THREE MILE ISLAND

Just one day after the incident at Three Mile Island Unit #2, a team from American Nuclear Insurers established a claims office in the area to begin making disbursals. As of April 3rd. $200,000 had been paid out to defray costs associated with relocation of families having pregnant women and/or pre-school children. A total of $560 million in nuclear liability insurance is available for such claims.

The $560 million available is provided for through the Price-Anderson Act, first passed by the Congress in 1957. Price-Anderson requires that utilities operating large power reactors maintain financial protection equal to the maximum amount of liability insurance available from the private market. Today, that amount is $140 million.* This coverage is provided by American Nuclear Insurers, representing groups of private companies, pledging assets which exceed the available resources of a single member.

Should claims resulting from a nuclear accident exceed this primary capacity of $140 million, the insurance pools would assess each nuclear plant licensee a premium of up to $5 million per operating reactor. With the number of commercial nuclear generating units now licensed, an additional $335 million would be available through these retrospective premiums. The final $85 million would be available from government indemnification, as provided for in the Price-Anderson Act, until enough additional plants are licensed that licensees have total responsibility for the $560 million. Then, as additional plants are licensed to operate, the $560 million now available will increase in $5 million increments beyond the present limit.

Beyond this, Congress has indicated its intention to take whatever additional steps may be considered fair to compensate the public in the event a nuclear accident results in losses exceeding the funds available from both private insurance and federal indemnity.

If the Three Mile Island accident had been classified an "extraordinary nuclear occurrence," additional and extraordinary public protection features, such as waiver of defenses, would have facilitated payment of claims. The NRC did not find sufficient radiation release for making that designation.

Although damages to the Three Mile Island plant itself have yet to be computed, the facility is covered by $300 million in property damage insurance.

*Shortly to rise to $160 million

AIF PRESIDENT CARL WALSKE ISSUED THE FOLLOWING COMMENT ON THE THREE MILE ISLAND ACCIDENT:

The accident at Three Mile Island is the most serious in 25 years of commercial reactor operation. It has been traumatic for the public, the utility that owns the plant and for those of us in the nuclear industry. We deeply regret the anxiety and inconvenience that it has caused, but we are also thankful that no one was killed or injured.

Although we take no pride in this accident, we shall learn many valuable lessons from it. Nuclear power in the future will be made even safer. The first order of business will be to investigate thoroughly every aspect of the accident, and to sort out for the public not just what happened but also the many dire things that did *not* happen. New operating procedures and additional reactor safeguards may be needed, and if so, the necessary changes will be made. At the same time, we already know that, even in the face of this serious accident, the safety barriers designed and built into all nuclear plants did their job and restricted damage to the plant itself.

The public has been dramatically confronted with the risk of nuclear power, but for them it remains a *potential* risk. The Three Mile Island accident must now be assimilated with the many *real* risks all around us. The risks from nuclear power remain small relative to those from other available energy sources. Most importantly, the public must also appreciate the benefits of nuclear power. When both sides of the nuclear question are weighed, I am confident that the public will want to continue to use an energy source that already supplies 14 percent of our electricity nationwide, and as much as 60 percent in several industrial regions of the country. Reactors under construction will have twice again the capacity of those in operation.

In making their choice, the public should also know that, even after we conserve to the utmost, we have only three real options when it comes to future electric power supplies: coal, nuclear energy and shortages. Coal has its own problems, and will do well to carry the additional burden now projected for it. Nuclear energy--even with all its problems--is coming on fast, and in the next three years alone will expand our nuclear electric capacity by 60 percent. The third option--power shortages--will surely be upon us unless we continue to employ both coal and nuclear energy.

1904 115

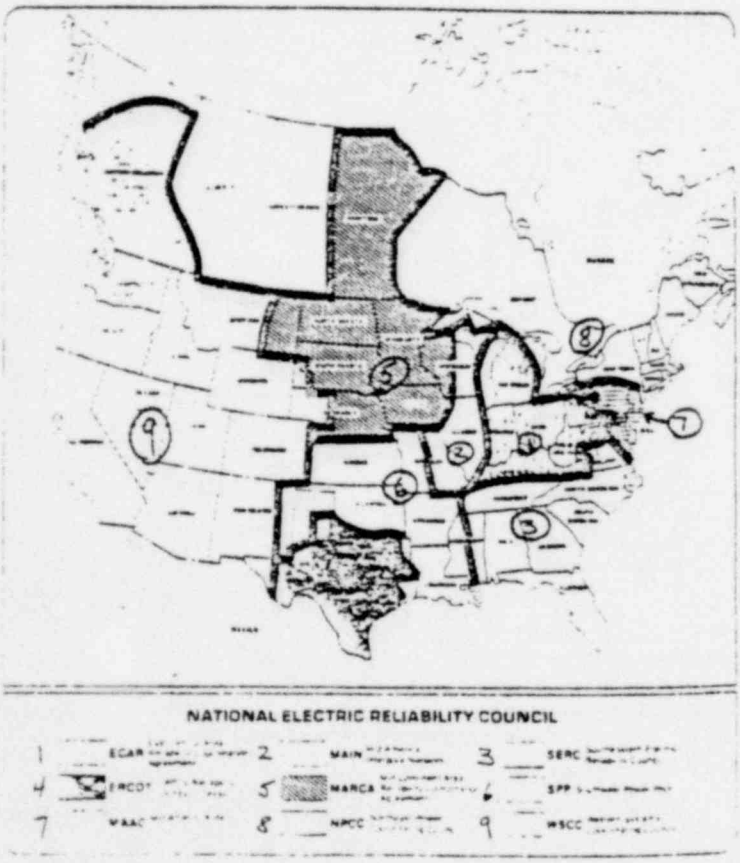
April 6, 1979

Atomic Industrial Forum, Inc.
7101 Wisconsin Avenue
Washington, D.C. 20014
Telephone (301) 654-9260
Cable Atomforum Washingtondc

NET ELECTRICAL ENERGY GENERATION
-- MILLION KWHR --

		1977 TOTAL	1977 NUCLEAR	PERCENTAGE OF NUCLEAR 1977*	PERCENTAGE OF NUCLEAR 1978**
(1)	ECAR	371,343	23,600	6%	6%
(4)	ERCOT	136,060	0	0%	0%
(7)	MAAC	158,423	32,064	20%	25%
(2)	MAIN	162,624	37,424	23%	22%
(5)	MARCA	90,594	25,741	28%	26%
(8)	NPCC	191,319	46,130	24%	24%
(3)	SERC	444,128	73,047	16%	18%
(6)	SPP	178,109	5,085	3%	5%
(9)	WSCC	380,771	19,116	5%	5%
	NERC	2,113,371	262,207	12%	13%

*Actual numbers. **Projected.



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SOURCE: National Electric Reliability Council

Atomic Industrial Forum, Inc.
7101 Wisconsin Avenue
Washington D C 20014
Telephone (301) 654 9260
Cable Atomforum Washingtondc

NUCLEAR REACTOR INFORMATION REPORT: CURRENT TO MARCH 14, 1979*

72 WITH OPERATING LICENSES

92 WITH CONSTRUCTION PERMITS

4 WITH LIMITED WORK AUTHORIZATIONS

30 ON ORDER

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198 TOTAL

* As of December 31, 1978, U.S. commercial nuclear reactors accumulated 463 years of operating experience.

** As of December 31, 1978, accounted for 9.7% of the total U.S. electric generating capacity. In actual generation, nuclear power produced nearly 12.6% of the total U.S. electric output in 1978.

10 YEAR PROFILE OF NUCLEAR POWER IN THE UNITED STATES

	ADDITIONS[1]		CUMULATIVE[1]			
YEAR	# OF NUCLEAR PLANTS	MWe	# OF NUCLEAR PLANTS	MWe	TOTAL U.S. ELECTRIC CAPACITY (MWe)[2]	NUCLEAR AS % OF TOTAL CAPACITY
1978	3	2,613	72	52,396	537,487	9.7%
1979	7	7,610	79	60,006	562,378	10.7%
1980	10	10,237	89	70,243	589,164	11.9%
1981	12	13,486	101	83,729	617,298	13.6%
1982	11	12,025	112	95,754	647,256	14.8%
1983	11	12,229	123	107,983	680,608	15.9%
1984	18	19,633	141	127,616	708,373	18.0%
1985	10	11,791	151	139,407	743,373	18.8%
1986	12	12,823	163	152,230	773,946	19.7%
1987	9	10,099	172	162,329	803,482	20.2%
1988	10	11,417	182	173,746	851,344	20.4%

1. Source: Atomic Industrial Forum - based on current commitments as shown in the 1978 year-end report.

2. Source: National Electric Reliability Council.

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- A 1,000,000-kilowatt power plant needs about 30 tons of uranium fuel per year. A similar fossil plant burns 2.6 million tons of coal or 9.6 million barrels of oil.

- Nuclear generation of electricity in 1977 offset the need for 440 million barrels of oil which would have cost $6 billion to import.

- If the nuclear kilowatt-hours generated in 1978 had been produced instead by oil, we would have had to double the oil normally imported per year from Iran before the turmoil there cut off supplies.