BY THE COMPTROLLER GENERAL

Report To The Congress

OF THE UNITED STATES

Greater Commitment Needed To Solve Continuing Problems At Three Mile Island

The Nation's first major accident at a commercial nuclear-powered electricity generating station occurred at Three Mile Island over 2 years ago, yet the resolution of the resultant problems is still subject to regulatory and financial uncertainty. Consequently, little progress has been made to clean up the damaged facility or alleviate the extreme financial stress placed upon its owners.

The remedies required to resolve the continuing problems at Three Mile Island will require unprecedented coordination and commitment by Federal and State regulatory bodies, the electric utility industry, the financial community, and the owners of the damaged facility.

To safeguard against similar problems in the future, the Nuclear Regulatory Commission should develop accident recovery guidelines and ensure that increased property insurance coverage is available for nuclear facilities.

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COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON D.C. 20548

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To the President of the Senate and the
Speaker of the House of Representatives

This report examines several key issues involving the financial status of the General Public Utilities Corporation, the need for and source of funding to clean up the damaged nuclear reactor at Three Mile Island, and the prospects for continued reliable electric service to Pennsylvania and New Jersey consumers. It also examines bankruptcy as a solution to the utilities' financial problems, and the need for (1) increased property damage insurance coverage on nuclear reactors and (2) an improved regulatory environment for nuclear accident recovery efforts. We believe there is a role for the Federal Government in the accident recovery effort and have recommended Congressional support for a Federal research and development program. We have also recommended that the Nuclear Regulatory Commission follow the expansion of property insurance coverage for nuclear units by the private sector and develop guidelines to expedite any future accident recovery efforts.

We undertook the review at the request of Representatives Allen Ertel, James J. Howard, and Morris K. Udall, and Senators Bill Bradley, Gary Hart, John Heinz, Jennings Randolph, and Alan K. Simpson. Several other Members have also expressed interest in this effort. Because of this, the requesting Members agreed that the report should be addressed to the Congress as a whole.

Copies of this report are also being sent to the Director, Office of Management and Budget; the Secretary of Energy; and the Chairman, Nuclear Regulatory Commission.

Milton J. Socolar

Acting Comptroller General
of the United States

COMPTROLLER GENERAL'S
REPORT TO THE CONGRESS

GREATER COMMITMENT NEEDED TO SOLVE CONTINUING PROBLEMS AT THREE MILE ISLAND

D I G E S T

The nuclear accident at Three Mile Island (TMI) on March 28, 1979, placed a major electric utility system--the General Public Utilities Corporation (GPU)--on the brink of insolvency while faced with a multi-year, $600-million unfunded cleanup operation that must be completed under uncertain regulatory constraints. More than 2 years after the accident, a number of important questions remain unanswered:

--Can the utility companies comprising the GPU System continue to provide reliable power to their 1.5 million customers?

--Can the utilities remain financially viable?

--What are the prospects for cleaning up the radioactive TMI-2 reactor building, and how much will it cost?

--Where will the cleanup money come from?

--What can be done to protect the financial and operational integrity of other utility companies that might suffer similar major accidents?

At the request of eight Members of Congress, the General Accounting Office (GAO) reviewed the current and prospective status of GPU and concluded that:

--Replacement power for the TMI units is available, but future System reliability is questionable unless funds are made available to increase construction and maintenance above present restricted levels.

--The financial condition of GPU continues to deteriorate, and unless sufficient rate relief is granted to restore its financial credibility, its future as a provider of electric power is in doubt.

--Cleanup of TMI-2 is technologically feasible but the uncertainties surrounding the source of the estimated $600 million needed for the task and the regulatory environment in which it must be done have yet to be resolved.

--The expeditious cleanup of TMI-2 and the benefits that can be derived are significant enough to warrant the financial participation of several parties rather than putting the entire burden on any one entity.

--State officials in Pennsylvania and New Jersey should take the leadership role in assembling the financial assistance needed for the cleanup.

--On-site property insurance coverage needs to be increased to levels that the Nuclear Regulatory Commission (NRC) determines to be adequate if other utilities are to avoid the financial and operational stress suffered by GPU in the event of another major accident.

--Better defined regulatory guidelines for nuclear accident recovery efforts are needed to minimize the delays and added costs that have occurred at TMI-2.

THE ACCIDENT HAS AFFECTED POWER SUPPLIES AND ALTERED SYSTEM PLANNING

The TMI-2 accident and the unavailability of the undamaged TMI-1 generating unit necessitated an unusually heavy reliance on purchased power to economically meet the GPU System's energy requirements. These purchases amounted to over 12 billion kilowatt hours in 1980, nearly three times the amount purchased in 1978. The current excess generating capacity in neighboring utility systems has enabled GPU to meet its energy requirements to date but these short-term purchases do not enhance the System's longer-term reliability. (See p. 8.)

The accident, and its affect on the System's financial capabilities, has adversely affected GPU's plans for providing power over the next two decades. Pre-accident plans called for the addition of a number of new generating units

beginning in 1983 and continuing until 1992. The loss of earnings and restricted access to capital markets resulting from the accident, coupled with a reduction in consumer demand, resulted in GPU deferring new project completion dates or cancelling the projects entirely. Unless the rate of growth in consumer demand is less than expected, GPU will have to continue its reliance on outside power purchases to meet future energy demands longer than expected with a potential decrease in reliability of service. (See p. 7.)

A detailed analysis of GPU's future reliability and cost of energy was performed by the Department of Energy (DOE) staff as part of this study. Using a base case scenario that projected GPU's current generating capacity additions and load growth forecasts through 1994, the analysis estimated the relative magnitude of changes in incremental revenue requirements and total power purchases under varying operating conditions. The analysis showed that the average annual revenue requirement attributable to not restarting the undamaged TMI-1 unit was nearly $421 million. If both TMI units are not returned to service and a large firm-purchase is not completed, the average annual cost to the GPU System could increase by $1.1 billion per year. If this occurs, GPU's dependence on neighboring utilities for power supplies would increase to the point where reliable service could not be assured. If GPU were able to clean up and restart the damaged TMI-2 unit in 1986--two years earlier than currently planned--the System's annual average revenue requirements would be reduced by about $30 million. (See pp. 9 to 11.)

One of the most influential factors affecting future power needs is the rate of change in the consumer demand for power. If the rate of load growth were reduced from the 2.6 percent forecast used in the base case scenario to 1.6 percent, the annual average revenue requirement could be reduced by nearly $470 million. (See p. 11.)

GPU'S FINANCIAL CONDITION CONTINUES TO DETERIORATE

GPU's financial recovery continues to be adversely affected by the limited rate relief

allowed by State regulators and the millions of dollars in unrecovered costs which are being expended for non-cleanup activities on the TMI units. The long-term operation of the System could be adversely affected if GPU is unable to regain its access to capital market funding for refinancing its debt and making capital improvements. While GPU is able to obtain some short-term loans, this arrangement can only help the company to a limited extent. The present loan agreement is due to expire on October 1, 1981. (See pp. 21, 22, 33 thru 35.)

The GPU companies are being allowed by their regulatory commissions to recover from customers about $605 million for purchased power costs. This includes current costs through June 1981 as well as some costs that were previously deferred. These measures do little to alleviate GPU's financial problems, however, because the commissions have offset the increased energy costs by reducing the companies' revenues from base rates by a total of $326 million during the same period. In addition, uninsured costs incurred for accident recovery efforts have been borne by GPU stockholders because GPU has not been allowed to pass them on to the ratepayers. This has placed an additional constraint on the companies' already limited cash resources. (See pp. 25 thru 28.)

GPU expected to obtain some financial assistance from the capital market by 1982, but this is now considered to be highly unlikely. As a consequence, the companies will have to continue their dependence on internally-generated funds and short-term borrowings for capital financing requirements. If the total capital financing needs of the companies of more than $2.7 billion over the next 5 years are not met, serious questions arise regarding the continued ability of the System to provide adequate electric power to its customers and to remain financially sound. (See p. 34.)

FUNDING FOR TMI-2 CLEANUP MUST BE RESOLVED TO INSURE GPU'S FINANCIAL VIABILITY

As of December 31, 1980, GPU had spent about $180 million in its accident recovery effort, yet much remains to be done in decontaminating

the containment building. Four major accident recovery cost estimates, including funds previously expended, were made in 1980. The estimates ranged from $652 million to $1.3 billion--net of $300 million in insurance proceeds. (See pp. 42 and 44.)

A cleanup cost estimate prepared in April 1981, projected that the remaining cleanup process will cost about $600 million--net of remaining insurance proceeds. A proposed cost-sharing plan by the Governor of Pennsylvania on July 9, 1981, estimated the cleanup costs at $760 million --including operation and maintenance expense and $90 million of insurance proceeds remaining as of January 1982. Improvements in the regulatory environment and the cleanup methodology could reduce these estimates, but they appear to be reasonable for current planning purposes given the present regulatory and financing uncertainties. (See pp. 44 thru 46 and 71.)

The cost estimates for cleanup will be about the same regardless of a decision to restore or decommission TMI-2. A final decision cannot be made, however, until the damaged fuel is removed and a closer examination of the nuclear reactor components is completed. (See pp. 47.)

GPU has budgeted about $60 million for TMI-2 expense in 1981 with about $40 million covered by insurance. If this expenditure level continues, insurance proceeds will run out in late 1983 with much of the cleanup work undone.

To complete the cleanup as scheduled, about $100 to $150 million a year will be needed. According to some investment analysts, it is extremely doubtful that GPU will be able to borrow the needed funds for other capital requirements, such as bond retirements, as long as the company and its stockholders continue to be solely responsible for TMI-2 cleanup costs.

The threat of bankruptcy appears to have passed, but GPU's inability to renegotiate a favorable short-term borrowing agreement in October 1981, or refinance its maturing bonds in 1983, could still trigger such an event. Although there are too many uncertainties to specifically state what would be best for GPU, it appears that costs to GPU's consumers--and those of other

utility companies as well--will be higher if GPU goes into bankruptcy. One study has estimated that the added costs for new debt and equity could increase by $400 million annually because of the increased risks perceived by investors. It also is not clear that bankruptcy would resolve GPU's financial problems or accelerate the cleanup of TMI-2. (See pp. 34 and 49 thru 54.)

OPTIONS FOR FINANCING TMI-2 CLEANUP

A number of options have been proposed to provide support for the TMI-2 cleanup. While each may have some degree of acceptance, a combination of some of the more doable options would probably be the most equitable. GAO selected six options as representative of the kinds of support that are being proposed:

--New ownership of the TMI units. (See pp. 56 and 57.)

--A nuclear fuel enrichment surcharge. (See p. 58)

--A mandated insurance assessment for nuclear reactors. (See pp. 59 and 60.)

--Increased consumer rates, possibly supplemented by some portion of stockholder earnings. (See pp. 61 thru 67.)

--Federal research and development assistance. (See pp. 67 and 68.)

--Electric utility industry support. (See pp. 69 and 70.)

PROPERTY INSURANCE COVERAGE FOR THE INDUSTRY NEEDS TO BE EXPANDED

An early stumbling block to the growth of the nuclear industry was its inability to obtain adequate third-party liability insurance. The Congress took action through the Price-Anderson Act of 1957 to develop the necessary insurance coverage and thereby foster the growth of the industry. Although both liability and property insurance coverage have grown since 1957, the TMI accident has demonstrated that the $300 million of property insurance available at the time of the TMI accident was inadequate.

Some increase in property insurance coverage has occurred since the accident at TMI, but nuclear units still remain underinsured because insurance companies have been reluctant to commit their resources to an industry that is perceived as stagnant. Different methods for providing additional coverage are being explored by the utility and private insurance industries with some prospects for increasing coverage to $1 billion. (See pp. 81 thru 86.)

Mandatory utility self-insurance might be needed if the industry is unable to obtain the level of coverage determined to be adequate by NRC through voluntary means in a timely manner. While there has been some favorable response to this proposal, congressional action will probably be required to give NRC authority to require such coverage. (See pp. 87 and 88.)

Current legislative proposals would involve the Federal Government more directly in providing additional property insurance coverage. Through the formation of a quasi-governmental insurance corporation, mandatory premiums would be collected from utility companies to cover both future accident losses and part of the TMI-2 cleanup costs. The legislation provides that the corporation would be converted to a private mutual insurance company at some future date. (See pp. 59, 60, 88 and 89.)

NRC REGULATORY CHANGES NEEDED FOR FUTURE ACCIDENT RECOVERY EFFORTS

NRC's response to GPU's accident recovery needs was not as constructive as it might have been. The initial priority given to its activities in responding to the accident diminished and lengthy delays in obtaining NRC approval for specific actions began to adversely affect GPU's recovery efforts. The problems were compounded because NRC relied on GPU to initiate all the proposals as to how to proceed with the cleanup effort while NRC simply reacted to them. There was little or no consideration given to the unique conditions that existed at TMI-2 and the need for a departure from the routine way of carrying out its regulatory responsibilities.

NRC had approved GPU's plan for cleaning up the auxiliary building by mid-October 1979, but took 25 months from the time of the accident to make a decision on cleaning up the more highly contaminated water in the containment building. Although the proposed technology was not new, NRC believed it had a responsibility to assess the environmental impact of the cleanup process and allow opportunity for public input into its final decision. (See pp. 90, 93 and 94.)

Current regulatory efforts appear to be responsive to GPU's needs but it is too early to tell whether the change will be sufficient to allow GPU to expedite the cleanup activities. The lessons learned from the TMI-2 experience should provide a good basis for a change in NRC's approach to a major accident recovery effort. (See pp. 94 and 95.)

RECOMMENDATIONS TO THE CHAIRMAN, NUCLEAR REGULATORY COMMISSION

Because another nuclear accident at an under-insured utility company could seriously affect public health and safety, GAO recommends that NRC closely follow the current efforts of the insurance and utility industries to increase insurance coverage to what it determines to be an acceptable level. GAO further recommends that no later than December 31, 1981, NRC assess the progress being made. This assessment should include an evaluation of the insurance available in the private sector and a determination as to whether a mandated insurance coverage program is necessary.

To mitigate future regulatory constraints on nuclear accident cleanup activities, GAO recommends that NRC establish a set of guidelines that would facilitate the development of recovery procedures by utility companies in the event of other nuclear reactor accidents.

RECOMMENDATION TO THE SECRETARY OF ENERGY

To assure the availability of funding needed to complete an expanded research and development program at TMI, GAO recommends that DOE prepare a multi-year budget proposal for Federal

participation in the TMI cleanup effort and present it to the Congress. The budget proposal should recognize the primary leadership role of State officials in working with GPU and the industry in the cleanup effort and within that parameter should clearly specify the objectives to be achieved by the Federal involvement, the work steps required in each fiscal year, the application of the program results, and the total funding needed to successfully meet the research and development objectives.

RECOMMENDATIONS TO THE CONGRESS

Given past congressional support for the commercial development of nuclear power, the continued Federal regulatory oversight of nuclear reactor operations and radioactive waste disposal, and the need to reduce the economic burden imposed by the TMI accident as much as possible, GAO recommends that the Congress provide the required multi-year funding to DOE for its research and development program at TMI.

GAO further recommends that the Congress closely follow the current efforts to resolve the funding problems for the TMI-2 cleanup through State and utility industry financing and DOE's research and development program. If these State-led efforts are not successful, GAO recommends that the Congress devise a mechanism which would serve to obtain the required financial assistance to complete the TMI-2 cleanup.

AGENCY COMMENTS AND OUR EVALUATION

GAO provided a draft copy of its report to NRC and DOE for review, and both agencies responded with comments. (See app. I and II.)

The Nuclear Regulatory Commission agreed with GAO on the need to increase insurance coverage and stated that the NRC staff will keep abreast of the two current proposals outlined in the report. NRC pointed out that it has a proposed rule out for comment that, if approved as a final rule, would require power reactor licensees

to provide the maximum amount of property insurance available. NRC did not comment on our recommendation that it determine an acceptable level of insurance coverage. GAO believes this to be a critical element in monitoring industry efforts to increase insurance coverage since the maximum amount of insurance available may not be sufficient to cover the full costs of an accident recovery effort.

NRC did not disagree with the GAO recommendation that it develop accident recovery guidelines but suggested that additional clarification was needed as to what the guidelines should include. Accordingly, GAO expanded its previous discussion of this need by defining some of the matters that might be covered in the guidelines that would be useful in developing acceptable accident recovery procedures in the minimum amount of time. (See p. 97.)

The Department of Energy disagreed that a multi-year funding proposal for its proposed 3-year research and development program is necessary. DOE believes that the normal annual review and Congressional authorization and appropriation processes will assure the program's consistency with DOE's objectives and the cleanup needs. GAO believes, however, that a commitment of Federal sector support for the TMI-2 cleanup is extremely important in eliciting the support of other interested parties and that such support can best be expressed through an approved financial commitment for the entire effort rather than simply a multi-year plan with no total funding commitment to insure its successful completion.

Contents

ABBREVIATIONS

ANI	American Nuclear Insurers
APIC	American Power Insurance Corporation
DOE	Department of Energy
EEI	Edison Electric Institute
ERA	Economic Regulatory Administration
FERC	Federal Energy Regulatory Commission
GAO	General Accounting Office
GPU	General Public Utilities Corporation
GwH	gigawatt hour
kWh	kilowatt hour
MAELU	Mutual Atomic Energy Liability Underwriters
MAERP	Mutual Atomic Energy Reinsurance Pool
Met Ed	Metropolitan Edison Company
MW	megawatt
NEIL	Nuclear Electric Insurance Limited
NJBPU	New Jersey Board of Public Utilities
NML	Nuclear Mutual Limited
NRC	Nuclear Regulatory Commission
O&M	Operations and Maintenance
PaPUC	Pennsylvania Public Utilities Commission
PEIS	Programmatic Environmental Impact Statement
Penelec	Pennsylvania Electric Company
PJM	Pennsylvania-New Jersey-Maryland Interconnection
RCA	Revolving Credit Agreement
SDS	Submerged Demineralizer System
SEC	Securities and Exchange Commission
TMI	Three Mile Island

CHAPTER 1

INTRODUCTION

In a December 12, 1980, letter, eight Congressman jointly requested that we analyze several issues related to the future role of the General Public Utilities Corporation (GPU) as a provider of electric power in Pennsylvania and New Jersey. We were asked to respond to a number of questions relating to (1) the costs of cleaning up the nuclear-powered Three Mile Island (TMI) generating unit; (2) the financial status of GPU and its subsidiary companies; (3) reorganization alternatives for GPU; (4) the effects of the accident on the companies, their shareholders, and consumers; and (5) alternatives available to the Federal government in the event one or more companies become insolvent.

OVERVIEW OF GPU

GPU is an electric utility holding company owning the outstanding common stock of its three operating companies: Jersey Central Power and Light Company in New Jersey, the Metropolitan Edison Company (Met Ed), and Pennsylvania Electric Company (Penelec) in Pennsylvania. GPU's investment in the common stock of the three companies is about $1.4 billion, or 28 percent of the $5 billion in total assets.

Under normal operating conditions, GPU issues its own common stock to the public on which it pays dividends from its earnings on the common stock of the operating companies. The operating company dividends, and some small unsecured lines of short-term credit, represent all of GPU's cash resources since GPU is generally prohibited from issuing long-term debt securities. The operating companies receive capital contributions from the parent and obtain other capital by issuing long-term debt securities and preferred stock.

The GPU System's normal operating methods were severely affected by the accident at TMI-2 on March 28, 1979, and a subsequent Nuclear Regulatory Commission (NRC) order to keep the undamaged TMI-1 shut down until mandated changes had been made and certified by NRC. 1/ The loss of these two units resulted in greatly expanded replacement power purchases to economically meet consumers' needs. The utility companies were not allowed to recover these purchased power costs in

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1/Unit 1 had been down for refueling and was ready to restart on the day of the accident.

rates for some time after the accident and they had to be paid for through short-term bank borrowings. All costs associated with TMI-2 that are normally collected through customer rates were disallowed almost immediately following the accident. Similar costs have been disallowed for TMI-1 since the second quarter of 1980. In addition, the companies have had to pay from their earnings all costs to date for NRC-mandated changes to TMI-1 and for the non-insured cleanup items for TMI-2. As a consequence of the financial drain on their resources, only Penelec has made dividend payments to GPU on its common stock. GPU has not made dividend payments for six successive quarters, has no market for its common stock, and none of its companies can sell bonds or preferred stock.

AGENCIES WITH REGULATORY RESPONSIBILITY FOR GPU

Three Federal agencies and the Pennsylvania and New Jersey public utility commissions exercise jurisdiction over various segments of GPU System activity. GPU's efforts to restart TMI-1, proceed with the cleanup of TMI-2, and remain financially viable have all been particularly affected by the regulatory controls exercised by these entities.

The Nuclear Regulatory Commission

NRC is responsible for licensing and regulating activities at nuclear facilities, including TMI-1 and 2, under the Atomic Energy Act of 1954, as amended, and the Energy Reorganization Act of 1974, as amended. This responsibility includes providing reasonable assurance that the use of nuclear reactors does not result in undue risks to the health and safety of the public. In accordance with this responsibility, NRC is conducting restart hearings for TMI-1 and approves and monitors all cleanup activities at TMI-2. NRC is also responsible for establishing specific waste storage and/or disposal criteria and regulations, consistent with the Environmental Protection Agency's criteria and general environmental standards, and for licensing and regulating long-term, high-level waste storage or disposal facilities.

The Department of Energy

The Department of Energy (DOE), in consultation with the Federal Energy Regulatory Commission (FERC), has the responsibility for assuring the reliability of electric bulk power supply throughout the United States. The basic authority for Federal regulation of electric utility companies comes from the Federal Power Act of 1935. The DOE Organization Act of 1977 (P.L. 95-91) divided the responsibilities held by the Federal Power Commission until September 30, 1977, between the Secretary of Energy and FERC. The Secretary in turn delegated to the

Economic Regulatory Administration (ERA) responsibility for assuring the adequacy of bulk power supply. FERC has jurisdiction over the filed tariffs for interstate transmission of electric power and approval of wholesale rates for electricity. It also has jurisdiction over facility agreements, interstate transmission rates, and capacity and energy sales between companies and between power pools.

DOE was given additional authority in the electric power area by the Public Utilities Regulatory Policies Act (P.L. 95-617). ERA was empowered to (1) provide assistance on regulatory reform and support FERC on ratemaking and cost of service matters, (2) intervene in regulatory cases at both State and Federal levels on national energy policy issues, (3) perform studies relating to power supplies and reliability, and (4) monitor State regulatory bodies' reviews of various rate structures and standards.

In addition to these general responsibilities related to the electric utility industry, DOE is responsible for developing waste disposal methods and for long-term storage and/or disposal of both Federal and commercial high-level wastes and Federal program transuranic contaminated waste.

The Securities and Exchange Commission

The Securities and Exchange Commission (SEC) administers the Public Utility Holding Company Act of 1935 (15 U.S.C. 79, et seq.). The purpose of the Holding Company Act is to protect the public, investors, and consumers from abuses associated with the control of electric utility companies by use of the holding company device. In part, it is a specialized antitrust statute with the objective of reorganizing and constraining the operations of utility holding companies, and a regulatory statute providing for continued surveillance of the corporate structure, financial transactions, and operational practices of public utility holding company systems.

State public utility commissions

The Pennsylvania Public Utility Commission (PaPUC) and the New Jersey Board of Public Utilities (NJBPU) have key roles in determining the future financial viability of the GPU operating companies. Through the ratemaking process, State regulators may review a utility's expenses, set the amount of revenues the utility will be able to collect, and determine the allowable rate of return it can earn on its investments. Through these mechanisms, the regulators determine the amount of profit a company can make.

OUR OTHER RELATED WORK

We have issued several reports closely related to the questions addressed by this report. Our report, "Three Mile Island: The Financial Fallout" (EMD-80-89, July 7, 1980) provided the basis for the congressional request that initiated this assignment. In that report, we examined the financial status of GPU and the problems facing the utilities that needed resolution. We recommended that NRC expedite the restart hearings on TMI-1 and that DOE continue the assessment of GPU started by us and report to the Congress on the need for any external assistance. Our report, "The Nation's Nuclear Waste--Proposal for Organization and Siting" (EMD-79-77, June 21, 1979) discussed the failure of the Federal Government to develop a publicly acceptable nuclear waste disposal system. A letter report, "Analysis of the Price-Anderson Act" (EMD-80-80, Aug. 18, 1980) discussed the need to reassess the provisions of the Price-Anderson Act 1/ as they relate to liability insurance protection afforded the public and the nuclear industry in the event of a nuclear accident.

OBJECTIVE, SCOPE AND METHODOLOGY

The broad range of questions raised by the congressional requestors required an analysis of the current situation at TMI and GPU as well as some assessment of what the next few years hold for the companies and their customers. The time period covered in our analysis goes back to mid-1980, and in some instances, extends forward to the year 2009.

Although each of the three operating companies functions as an independent utility, much of the administration, technical support, and documentation for their operations are maintained at the GPU headquarters at Parsippany, New Jersey. Consequently, almost all of our work with the companies was done at that location. We held numerous meetings with corporation officials, obtained and analyzed documents, reports, studies, rate filings, demand and generating capacity forecasts, and related data. We also developed the kilowatt hour (kWh) costs that would be needed to regain and maintain some measure of financial viability.

1/The act was passed by the Congress in 1957 and is in section 170 of the Atomic Energy Act of 1954. It provides for insurance coverage of up to $560 million for off-site personal and property damage claims resulting from a nuclear accident.

We also visited the TMI plant site, and discussed restart and cleanup issues with responsible GPU and Met Ed officials, contractor representatives, and on-site representatives of NRC and DOE.

Discussions were held with the president of the NJBPU and the chairwoman of the PaPUC and their staffs concerning GPU's financial problems and the role of the State commissions. We met with the key staff person in the Pennsylvania Governor's office and with Pennsylvania tax officials on the GPU insolvency issue.

We contacted key NRC officials responsible for both the TMI-1 restart and TMI-2 cleanup. Copies of pertinent NRC documents were obtained and analyzed. We also met with DOE's Nuclear Energy staff and obtained information on their proposed participation in the TMI-2 cleanup effort.

To assist us in making an independent assessment of the reasonableness of GPU's proposed construction program over the next few years, we arranged with DOE for the necessary engineering staff to develop computer simulations of the GPU system using 19 mutually agreed on scenarios of facility construction and load growth. The simulations were run on the GPU computer using our own assumptions. DOE technical staff assisted us by analyzing the results and discussing them with us and GPU. Load flow analyses of the transmission system were also provided. DOE staff made revenue requirement computations for us based on the construction activities simulated in the model, and we reviewed these computations for reasonableness.

During the course of the audit, we met with officials of the banks holding the short-term loan notes for GPU, bond trustees, investment firms, private consulting firms, engineering firms involved in nuclear plant construction, other utility companies, and insurance companies. Each of the officials contacted were considered to be experts in their field, and they shared with us their perceptions and/or the results of studies or analyses done on the issues included in our assignment.

We limited our scope of work in several areas--scenario analyses, utility bankruptcy and reorganization issues, and options for funding TMI-2 cleanup costs. An explanation of these limitations is provided in the body of the report where applicable.

CHAPTER 2

GPU'S CURRENT POWER SUPPLIES ARE ADEQUATE BUT LONG-TERM RELIABILITY IS QUESTIONABLE AND MORE COSTLY

The accident at TMI-2 and the lengthy delays encountered in restarting the undamaged TMI-1 generating unit have adversely affected the companies' pre-accident plans for maintaining system reliability through most of the next 2 decades. The loss of the TMI generating capacity has necessitated an unusually heavy reliance on purchased power to economically meet the System's energy requirements. The abandonment of the Forked River facility and slippages in other planned construction projects will continue this trend.

Although GPU was carrying the maximum property damage insurance available, the System has been materially constricted in its future planning because of the financial burdens resulting from the accident and exacerbated by the continued unavailability of TMI-1. The financial aftermath of the accident is one of the major factors contributing to the cancellation and deferment of ongoing construction of needed future capacity additions. This situation could ultimately affect the reliability of service provided to GPU's customers and cause the power provided to customers to be more expensive.

The System's ability to continue providing reliable, economical power to its customers is strongly influenced by how fast consumer demand for electricity grows over the 1981-94 study period. In fact, the rate of load growth has more influence on power costs and system reliability than other more obvious factors such as fuel prices and construction delays. Other factors influencing the continued supplies of reliable, economic power are (1) the return to service of the undamaged TMI-1, (2) the continued availability of external firm power purchases, and (3) the maintenance of a strong transmission network.

GPU's SYSTEM PLANNING HAS CHANGED SINCE THE ACCIDENT

Prior to the TMI-2 accident, GPU ranked as the 14th largest investor-owned electric utility. The total investment in the System was about $5 billion, and it collected about $1.3 billion in annual revenues. The GPU System was experiencing an increasing growth in electrical demand prior to the accident. Electricity sales had grown about 4 percent annually since 1976, and an ambitious construction program

had been initiated to meet the anticipated future customer demands. In addition to the 8,281 megawatts (MW) of winter generating capability already installed on the GPU System, the utility planned to bring at least 6 new major projects on line beginning in 1983 and continuing until 1992. These additions would have increased the net winter generating capacity of the GPU System to about 10,952 MW.

Following the accident at TMI-2, GPU significantly curtailed its plans for future generating capacity additions. This curtailment was caused by a number of factors including (1) a reduction in consumer demand for electricity consistent with national trends, (2) increased financial obligations resulting from TMI-2 cleanup, (3) decreased access to financial markets, and (4) loss of revenues caused by removing the TMI units from the companies' rate bases. The curtailed activity involved deferring new project completion dates for several years, or cancelling the projects entirely. The proposed 625 MW Seward No. 7 coal plant, for example, was anticipated to be in service by December 1985. Due to financial uncertainties, reduced energy demands, and regulatory delays, GPU has deferred the completion of this unit until 1989.

The following table compares the current planning for the GPU System with the plans in effect immediately prior to the accident at TMI-2.

Table 1

Schedule of Slippages and Deferrals on GPU System Before and After TMI-2 Accident

Unit	Type	Capacity	In-service date prior to accident	Current in-service date	Months deferral
Forked River	Nuclear	1,120 MW	1983	Canceled	-
Seward No. 7	Coal	625 MW	1985	1989	48
COHO	Coal	625 MW	1988	1991	36
Undesignated	Coal	625 MW	1989	1993	48
Undesignated	Coal	625 MW	1990	1994	48
Undesignated	Coal	625 MW	1992	1995	36
Undesignated	Coal	625 MW	1994	1996	24
Undesignated	Coal	625 MW	1996	1997	12
Pumped Storage	Hydro	850 MW	1991	1994	36
Pumped Storage	Hydro	1,000 MW	1993	Canceled	-
Undesignated	Coal	625 MW	-	1998	-
Undesignated	Coal	625 MW	-	2000	-
Ontario Hydro	a/Purchase	1,000 MW	-	1985	-

a/Although this capacity addition had been tentatively considered prior to the accident, considerations were formalized as a result of the accident.

GPU SERVICE HAS BECOME MORE COSTLY AND LESS RELIABLE

The accident at TMI-2 not only had a significant impact on the financial integrity of the GPU System, but also placed it under stress from a technical standpoint as well. The outage of the two units at TMI reduced System capacity by 1,656 MW, or about 21 percent of total net capacity.

To offset the loss of this source of relatively inexpensive energy, large amounts of replacement power have been purchased at costs ranging from $20 to $25 million a month. Power purchases in 1980 totaled over 12 billion kWh--nearly three times the amount purchased in 1978. The GPU System currently has short-term purchase contracts for over 1,600 MW of capacity and associated energy with utilities outside its System. Because of the current excess generating capacity in neighboring utility systems, as much as 1,200 MW in additional capacity may be obtained through these purchase contracts.

In planning for future System requirements, GPU is currently negotiating for the purchase of 1,000 MW of capacity and associated energy under either a firm 10-year contract with a Canadian power supplier or with other potential long-term power suppliers. If the negotiations are successful, facilities may have to be constructed before the power can be brought into the GPU system. Under the proposed schedule for the Canadian project, this additional source of power could be available by January, 1985.

Other measures affecting reliability--in addition to the power purchases--have been required as a result of the loss of the TMI units and cancellations and delays of proposed generating facilities. Because of continuing cash constraints, a program designed to curtail construction and maintenance expenditures has been instituted at each of the companies. A separate austerity program reflecting reduced budget levels has been instituted for Met Ed. The program is based upon meeting minimum System needs, and according to company officials, provides less than prudent levels of cash outlays necessary to maintain System reliability, provide acceptable emergency response, and serve the economic and social interests of Met Ed's service territory.

The curtailment in expenditures covers a broad range of System functions, from reductions in expenditures for operations and maintenance in generation, transmission, and distribution to restricting maintenance at TMI-2. Since technical operations have been curtailed, other reductions in Met Ed's workforce have occurred which may affect service to customers. Personnel reductions have touched even the most routine

service activities such as tree trimming. For the period 1976 through 1980, this item alone has resulted in a 12-fold increase in the average customer outage time due to tree-related causes. The austerity program has also affected new customer hookups, causing them to take longer than normal. These changes, while not immediately visible throughout the GPU service area, will probably become more apparent as the austerity program continues, and could cause future service to be somewhat more expensive and less reliable.

CHANGES IN LOAD GROWTH AND CAPACITY ADDITIONS AFFECT GPU SYSTEM

DOE staff performed a detailed analysis of the future reliability and cost of power for the GPU System as part of our study. The approach used by DOE, and agreed to by us, developed a base case scenario using the currently planned GPU capacity-addition schedule and load growth forecasts through 1994. The base case assumes a financially-sound GPU System. Eighteen additional scenarios were developed by varying the base case capacity additions and load growth assumptions. For each of the 19 scenarios, GPU's incremental revenue requirements were calculated and the overall System reliability was assessed. DOE and GAO selected the scenarios to indicate the possible operating conditions and revenue requirements for the System under differing assumptions regarding fluctuations in the consumer demand, variations in the planning and scheduling of additional generating capacity, and the availability of both TMI generating units.

A major focus of the study was on the economic value of the TMI units to the GPU System. Since many of the capital projects planned by GPU will have economic lives beyond 1994, and the operating licenses for both units are scheduled to expire in 2009, we calculated GPU's incremental revenue requirements--costs associated with building new facilities and providing power--to 2009. We did this to better illustrate the useful value of the TMI units to the System and allow comparisons between various System configurations over the economic lives of the projects considered. The incremental revenue requirements shown in our scenario analyses, therefore, reflect the value of the production facilities installed between 1981 and 1994 but operated through the year 2009.

For comparability, all costs in the scenario analyses were "levelized" to reflect the magnitude of change from the base case. Levelizing illustrates what the average annual cost would be--taking into account the time value of money--if the cumulative present value of revenue requirements were spread evenly over each year of the life of the asset. The actual amount of revenues

collected through rates each year will vary from the levelized figure because near-term annual cost increases are small, with larger increases occurring in the latter years of the study period due to the escalating cost of doing business.

GPU is a member of the Pennsylvania-New Jersey-Maryland Interconnection (PJM). PJM's purpose is to provide, through contractual agreement among the members, the service, reliability, and economy that would result if PJM were one company while recognizing individual company constraints. In daily operation, the amount of interchange power flowing between GPU and the rest of PJM is a function of several factors on both systems such as system demand, fuel type and cost, and availability of generating capacity. The reliability of the GPU electric system is a function of the reliability maintained throughout the entire PJM generating and transmission systems. However, an indication of GPU's System reliability may be provided by analyzing its generating capacity reserve margins and the amount of electric power GPU sells to and buys from PJM (net interchange).

Our analysis of GPU's current and projected reserve margins under the various capacity additions and load growth scenarios showed a relatively consistent relationship between reserve margin levels--which normally indicate a level of system reliability--and quantities of energy interchange with PJM. We noted that the quantity of energy interchanged tended to increase as GPU's reserve margins decreased. Therefore, in our scenario analyses, we have used the energy interchange levels as an indicator of the relative reliability of the GPU System.

GPU's planned System configuration and scenario modifications

The base case, used to determine the effects of changes in future System configurations, was developed from the latest available load growth and capacity addition forecasts published in October 1980, by GPU. The forecasts show a compound annual load growth rate of 2.6 percent over the period 1981 to 1994. In order to meet this projected demand for electricity, the company anticipates returning TMI-1 to service in 1982 and TMI-2 to service by 1988 as well as relying on firm power purchase arrangements. Although some small capacity additions are anticipated by 1985, no new major generating units are expected to be in service before 1989. Between 1989 and 1994, however, GPU sees a need to place three 625 MW coal-fired

generating units and one 850 MW pumped-storage hydroelectric facility in service. Other capacity additions to the System are expected, but these occur beyond 1994. Table 2 shows the base case assumptions as well as the variations to the base case that were used in this analysis to assess potential System reliability and cost impacts.

Change in consumer demand and capacity additions affect cost of power and reliability

Based on an analysis of the various case scenarios, changes in the rate of load growth, i.e., consumer demand for electric energy, greatly influence the cost of power (or revenue requirements) and reliability of the GPU System. As demand increases, more costly sources of energy must be tapped, whether they are the utilities' own less efficient generation or higher-cost purchases from other utilities. A decrease in demand from the present forecasted levels permits the load to be met with more efficient, less expensive GPU generation or outside purchases. Given that construction activities planned by other PJM utilities proceed as scheduled, interchange transactions could produce some cost savings which would be passed through to the consumer.

As an example, the scenario analysis indicates that if the GPU System growth rate were reduced from the currently projected 2.6 percent to 1.6 percent, the levelized revenue requirements could be reduced by an average of about $469 million per year in 1981 dollars as compared to projected costs in the base case. Conversely, a 1/2-percent increase in the load growth rate to 3.1 percent could raise the annual revenue requirements by an average of about $311 million. These projected savings and increases in power costs would occur during the period 1981 through 2009.

Variations in consumer demand have a similar effect on the projected reliability of the System. As indicated earlier, the amount of interchange power can be used as a measure of the relative System reliability because for GPU, decreased purchases generally indicate the utility is satisfying more of its consumers' demands with its own economical generating units. Reduced levels of interchange tend to imply a more reliable system. For example, the 41,329 gigawatt hours (GwH) 1/ of interchange power in the base case would be reduced to 4,248 GwH if the rate of growth in consumer demand were reduced by 1 percent. Conversely, an increase of 0.5 percent in the growth rate of annual consumer demand would require 61,360 GwH of electric power interchange.

1/One gigawatt hour equals 1,000 megawatt hours or 1 million kilowatt hours.

Table 2

Description of Scenarios For the General Public Utilities System

Case	Load growth rate	Forced outage rates	Fuel prices	Cost of capital	TMI-1	Warrior Ridge	Ontario Hydro purchase	Raystown	TMI-2	Seward 7	880 MW TMI-2 coal	625 MW coal 1	625 MW coal 2	Peaking	PJM additions
1	Base	Base	Base	14.25%	1982	1982	1985	1985	1988	1989	-	1991	1993	1994	Base
2	1% Higher	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	1/2% Higher	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	1983	1983	-	1986	1989	1989	-	1992	1994	1995	-
5	1% Lower	-	-	-	1983	1983	-	1986	1989	1989	-	1992	1994	1995	-
6	1/2% Higher	-	-	-	1983	1983	-	1986	1989	1990	-	1992	1994	1995	-
7	-	-	-	-	-	-	-	-	Not returned	-	1991	-	-	-	-
8	1% Lower	-	-	-	-	-	-	-	Not returned	-	1991	-	-	-	-
9	1/2% Higher	-	-	-	-	-	-	-	Not returned	-	1991	-	-	-	-
10	-	-	-	-	-	-	Canceled	-	-	-	-	-	-	-	-
11	-	-	-	-	-	-	-	-	Not returned	-	-	-	-	-	-
12	-	-	-	-	-	-	Canceled	-	Not returned	-	-	-	-	-	-
13	-	-	-	-	Not returned	-	Canceled	-	Not returned	-	-	-	-	-	-
14	-	+5%	-	-	-	-	-	-	1986	-	-	-	-	-	-
15	-	-5%	-	-	-	-	-	-	-	-	-	-	-	-	-
16	-	-	-10%	-	-	-	-	-							
17	-	-	-	-	-	-	-	-	1986	-	-	-	-	-	-
18	-	+5%	-	-	-	-	-	-	-	-	-	-	-	-	Delay nuclear
1A	-	-	-	-	-	-	-	-	High cost for cleanup	-	-	-	-	-	-

Notes: 1. Case 1 is considered the base case. Capacity additions and load growth are based on the GPU Load and Capacity Forecast dated October 17, 1980.

2. Cases 2 through 18 and 1A show generating capacity plans, loads, forced outage rates and fuel prices only as they differ from the base case. Reading across the page for a given case will show all assumptions which have been changed from the base case (Case 1).

Changing the presently planned System configuration by delaying or cancelling planned generating capacity additions affects power costs amd reliability in a manner similar to that produced by changing load growth rate assumptions. Cancelling or delaying capacity additions increases GPU's own cost of producing power and requires greater reliance on power purchases from other utilities to economically meet customer needs in its service area. Delaying all expected capacity additions in the base case by 1 year, for example, would increase annual revenue requirements by $81 million and increase interchange power by about 42 percent or 17,500 GwH over the base case. The same delays, coupled with the assumption of increased load growth, however, can quadruple the incremental annual revenue requirements, and cause an additional 33 percent increase in interchange power.

Table 3 shows the impact on revenue requirements and interchange energy of changing the load growth rate and capacity additions on the GPU System.

TMI restart decisions will affect System costs and reliability

The base case assumptions shown in table 2 on page 9 include the restart of TMI-1 in January 1982, and the return to service of TMI-2 in 1988. The following scenario analyses demonstrates the value of restarting these units to the GPU System and its customers.

TMI-1 restart

GPU never envisioned a 3-year outage of TMI-1 when the unit was taken out of service for its annual refueling on February 16, 1979. Although scheduled for power generation on April 2, 1979, TMI-1 was kept out of service, voluntarily by GPU, and later by NRC orders, following the TMI-2 accident. GPU initially expected the unit to be restarted later in 1979, but numerous NRC orders requiring certain technical and operating changes, safety improvements initiated by GPU, and protracted public hearings on restart issues have kept the unit unavailable for service. There are still a number of technical requirements that must be successfully completed before NRC can authorize restart. However, GPU now expects a favorable NRC decision on restart by October 1981, with the unit returning to commercial operation by early 1982.

Because of the expected return to service of the unit in early 1982, a scenario deviating from the base case only by the assumption that TMI-1 would never be restarted was not specifically modeled. However, by examining the difference between System configurations 10 and 12 shown in Table 3

Table 3

Changes From Base Case Revenue Requirements and Total Interchange Energy Resulting From Varying Load Growth Rates and/or Revising System Configuration

System configuration	Annual compound load growth rate	Incremental Annual Revenue Requirements	Total net interchange energy (note a)
	(percent)	b/($, millions)	(GwH)
1. Base case	2.6	-	41,329
2. Unchanged	1.6	(468.7)	4,248
3. Unchanged	3.1	311.3	61,360
4. Capacity additions delayed 1 year	2.6	80.6	58,883
5. Capacity additions delayed 1 year	3.1	382.6	78,789
6. TMI-2 replaced with 880-MW coal unit	2.6	191.9	53,980
7. TMI-2 replaced with 880-MW coal unit	1.6	(305.3)	16,582
8. TMI-2 replaced with 880-MW coal unit	3.1	494.5	68,999
9. TMI-2 not returned to service	2.6	397.7	72,801
10. TMI-2 not returned to service and no Ontario-Hydro purchase	2.6	658.5	118,118
11. TMI-2 returned to service in 1986	2.6	(29.7)	33,123
12. TMI-1&2 not returned to service, no Ontario-Hydro purchase	2.6	1,079.4	172,635
13. TMI-1 not returned to service	2.6	420.8	More than 118,118 but less than 172,635

a/The sum of GPU's annual purchases less sales for the period 1981-94.

b/1981 dollars.

page 14, we can approximate the cost to the System of not restarting TMI-1 (Item 13, page 14). Under this scenario, TMI-1 is retired by 1985 with no capacity replacement. As shown below, this would increase the levelized revenue requirements by nearly $421 million per year (in 1981 dollars) as compared to the base case assumption of a January 1982 restart.

Case description	Annual levelized incremental revenue requirements
	(millions)
Base case without TMI-1, TMI-2, or Ontario-Hydro	$1,079
Base case without TMI-2 and Ontario-Hydro	(658)
Increased annual cost attributable to not restarting TMI-1	$ 421

Assuming the resultant costs of permanently closing down TMI-1 were to be shared in the same proportion as the companies are now buying replacement energy, the individual companies' shares of the $421 million would be as follows:

	Current share of replacement energy	Estimated annual share of incremental costs
	(percent)	(millions)
Met Ed	45.4	$191
Penelec	18.2	77
Jersey Central	36.4	153
Total	100.0	$421

The increase in annual levelized revenue requirements of $421 million is only meaningful when compared to the base case and other scenarios. Actual annual revenue requirements would differ from year to year and could be increased or decreased by changes in the load growth rate, the construction of a replacement generating plant, inflation, and by utility commission decisions on how amortization and decommissioning costs of the retired unit would be recovered.

TMI-2 restoration

The return to service of the damaged TMI-2 unit by 1988, as assumed in the base case, is much more uncertain than the date of restarting TMI-1. Consequently, several scenarios involving TMI-2 were developed to assess the probable consequences of decisions that might be made regarding its future use. In the following sections, these scenarios are compared to the base case and to each other in order to assess the cost and reliability impact of various dispositions of TMI-2.

Comparison A (TMI-2 out, and TMI-2 back in prior to 1988)

This comparison evaluates the permanent retirement of TMI-2 relative to restoring it to service in 1986, two years earlier than planned. If TMI-2 is abandoned and decommissioned, and the other base case elements remain as projected, GPU's levelized revenue requirements could increase by about $398 million per year over the base case for the period 1981-2009. In addition, GPU would have to increase interchange energy purchases by 31,472 GwH over the base case.

The completion of the Ontario-Hydro project in 1985 as scheduled assumes added significance if TMI-2 is decommissioned. If the Ontario-Hydro project is cancelled, considering that TMI-2 is permanently retired, annual revenue requirements are projected to increase by $658 million over the base case for the period 1981-2009 and interchange energy purchases would increase by 76,789 GwH for the 1981-94 period.

The early restart of TMI-2 in 1986, on the other hand, could reduce GPU's costs and enhance System reliability compared to the base case. If TMI-1 is restarted in 1982, and the Ontario-Hydro project is completed in 1985, a 1986 TMI-2 restart date could result in a decrease in annual revenue requirements of $29.7 million from the base case. Furthermore, GPU's reliance on interchange power would be reduced by almost 8,000 GwH to about 33,100 GwH for the period 1981-94.

Comparison B (TMI-2 retired but replaced with a coal unit)

This comparison evaluates the base case with a System configuration in which TMI-2 is decommissioned and its capacity is replaced with an 880-MW coal-fired unit in 1991. With an annual load growth rate of 2.6 percent, levelized revenue requirements would increase by about $192 million and interchange energy purchases would increase by about 13,000 GwH when compared to the base case.

The dramatic effect of shifts in load growth rates on System costs and reliability is particularly noticeable in this comparison. Reducing the annual load growth rate by 1 percent and replacing TMI-2 with a coal-fired generating unit decreases GPU's annual revenue requirements by over $305 million as compared to the base case. The reduced consumer demand would also result in reducing interchange energy purchases by 24,747 GwH compared to the base case and 37,398 GwH when compared to the 2.6-percent growth rate scenario. If, however, the load growth rate increases by only 0.5 percent per year, the annual revenue requirements would increase from $192 million to $495 million and interchange energy purchases would increase by 15,019 GwH when compared to the 2.6-percent load growth scenario.

Comparison C (TMI-1, TMI-2, and Ontario-Hydro out)

This comparison evaluates the GPU System configuration over the next 14 years with no TMI units in service, no Ontario-Hydro project, and an annual compound load growth rate of 2.6 percent. Under these assumed conditions, annual revenue requirements could increase by about $1.079 billion when compared to the base case. This higher cost results from the need to increase interchange energy purchases to a possible total of 172,600 GwH to economically meet consumer demand.

ADEQUACY AND RELIABILITY OF GPU'S TRANSMISSION NETWORK

All three of GPU's subsidiaries are interconnected with the PJM power pool. The PJM pool also includes interconnections with other utilities in the region, and operates the entire interconnected system as one large system in order to obtain the most economical balance between consumer demand and production costs. Projected power flows on transmission lines were analyzed using computer simulation as a means of determining the adequacy and reliability of GPU's System and its relationship with the PJM power pool. These techniques can identify potential problem areas by altering the configuration of the transmission system and noting changes in various parameters of the Systems' operation.

The geographic location of TMI's generating capacity in the PJM System had supported the PJM voltage prior to the accident. The power flow analysis indicated that under some conditions, the lack of the TMI generating capacity in the eastern portion of the PJM power pool could result in some reductions in voltage levels. The analysis also indicated that some isolated minor power overloads and voltage fluctuations may occur, but these could be corrected by system operators. The corrections would require, however, that some generating units may have to be operated uneconomically, resulting in some incremental increases in power production costs.

Based on the results of the load flow analysis for the GPU and PJM systems, it appears that the integrated transmission network could respond to single major facility disturbances without adversely affecting the adequacy or reliability of power supplies to GPU's customers. The loss of the TMI generating capacity has placed a greater burden on some aspects of PJM's operations, but only at the expense of a slight reduction in overall system reliability.

CONCLUSIONS

The energy production costs and reliability for the GPU System result from the interrelationships of the following fluctuating and critical factors--(1) consumer demands, (2) generating capacity used to meet consumer demand, and (3) the extent to which GPU must purchase interchange electric power from other systems in order to provide adequate and reliable service.

Based on the analysis performed in conjunction with DOE and interviews with GPU officials, and in view of the financial and regulatory constraints placed upon the company, we believe that GPU (1) can presently provide adequate power to its customers and (2) is planning for future energy needs in a prudent manner. While it is true that the costs for electric power have increased since the accident at TMI-2, and will probably continue to increase over the near-term, to a great extent they are attributable to the measures that GPU has had to take to maintain System reliability. For economic reasons, the GPU System has been forced to purchase large amounts of power from neighboring utilities and utilities outside its service area, and that power, due to the types of generation facilities required to produce and transmit it, has been more expensive than if it had been produced within GPU's own service area with the TMI units available.

Because of the operational constraints that have been placed upon GPU, it has had little recourse but to rely on outside power purchases. We believe that continued long-term usage of this practice is less than prudent, however, because it makes GPU's System reliability subject to the ability of outside sources to supply power. Similar concerns exist regarding GPU's reliance on PJM. There is no guarantee that the contractual agreements which have served GPU's needs will be renewed because the other parties to the agreements may not be willing to continue devoting a disproportionate share of the total system's capability just to meet the needs of GPU. We do not believe it is in the best interest of GPU as an electrical generating utility to rely on outside power sources to maintain adequate and reliable long-term power supplies for its System.

The measures that GPU has taken to provide reliable service in the long-term future appear to be reasonable, yet are greatly dependent on the ability to quickly restart the undamaged unit No. 1 at TMI. Once that is accomplished, the amounts of purchased energy needed by GPU should diminish, thereby decreasing the System's reliance on outside power sources and its revenue requirements. As indicated by our scenario analyses of past and future capacity additions, it appears that GPU has planned its service system in a prudent manner to date. If the company is provided adequate resources to resolve the challenges currently facing it, we see no reason why GPU should not continue to provide this same level of service in the future. As long as GPU is forced to continue relying on outside power purchases, however, the cost of the service it provides will be somewhat higher, with a greater probability of service interruptions.

CHAPTER 3

GPU'S FINANCIAL CONDITION CONTINUES TO DETERIORATE

Two years after the TMI-2 accident, the GPU System continues to experience a number of serious financial problems and uncertainties. The financial indicators of long-term stability within the System have continued to decline from their pre-accident levels. Consolidated net income is down, with Met Ed experiencing a net loss for 1980. No dividends are being paid on GPU's common stock. Earnings levels preclude access to the financial markets and security ratings have been downgraded to unfavorable levels. This leaves the future financial viability of the System in a precarious condition. Met Ed faces the most difficult and pressing problems while Penelec is the most viable of the three operating companies.

The short-term cash requirements precipitated by the need to make large expenditures for TMI-1 and 2 replacement power purchases were initially met by the operating companies. Short-term borrowings expanded rapidly to meet the companies' cash needs until adequate rate relief could be obtained. Favorable State utility commission decisions on recovering the purchased power costs from consumers have helped alleviate some of the serious cash flow problems experienced by Met Ed and Jersey Central. Millions of dollars from stockholder's earnings on the non-TMI units, however, are being used to pay for unrecovered costs for the TMI units and this continues to adversely affect the companies financial recovery. No customer revenues or stockholder earnings have been used to pay direct cleanup costs as these have been covered by insurance proceeds.

Each of the companies has a continuing need to obtain money for refinancing long-term debt and making capital improvements in its operating facilities. Over the next 5 years, this could amount to over $2.7 billion, much of which will have to be obtained from sources outside the GPU System. The inability of the companies to obtain these funds could adversely affect tne long-term operation of the System.

At the present time, the only accessible source of external cash for the companies is short-term borrowings through a line of credit agreement with a consortium of 45 banks. This arrangement has limited application to the companies' needs, however, and Met Ed has had its access to these funds severely curtailed in recent months. The expiration of the agreement on October 1, 1981, may see a further drastic change in the companies' access to external cash resources.

COMPARATIVE INCOME AND EARNINGS DATA FOR THE GPU SYSTEM HIGHLIGHTS ITS PROBLEMS

Although the financial soundness of each of the individual companies varied, the consolidated pre-accident position of the GPU System appeared to be favorable. Outside experts testified to the fact that the companies were soundly and prudently capitalized. Our analysis of the System financial statements for the period 1975-77 showed a steadily increasing earnings picture. 1/

This situation changed rapidly following the TMI-2 accident. Net income and return on common equity declined for all the companies with Met Ed experiencing losses. The favorable pre-accident earnings levels eroded. Dividends to GPU's common stockholders were discontinued and the companies lost their ability to attract long-term capital.

The following financial statistics provide a general overview of how the operating companies and the GPU System have fared during the last 3 years. We have included data for 1978 as a measure of company performance in the last full year preceding the TMI-2 accident. Tables 4 and 5 show the effects of the TMI-2 accident on two key elements of the operating companies financial situation--net income and return on common equity.

Table 4

Schedule of Net Income (Loss) (note a)
1978-80

	Year		
	1980	1979	1978
	-------(000s omitted)---------		
GPU System (note b)	$20,591	$95,783	$138,774
Met Ed	(9,979)	15,585	48,318
Penelec	24,068	42,045	40,296
Jersey Central	22,770	50,621	56,561

a/After paying taxes and preferred dividends.

b/Net of parent company expenses.

Source: 1980 annual reports.

1/U.S. General Accounting Office, "Three Mile Island: The Financial Fallout," EMD-80-89, July 7, 1980.

Table 5

Schedule of Return on Average Common Equity
1978-80

Company	Year 1980	1979	1978
	(percent)		
GPU System	1.5	6.9	10.4
Met Ed	(2.7)	4.2	12.9
Penelec	5.8	10.1	9.9
Jersey Central	3.4	8.2	10.1

Source: GPU.

Table 6 shows the declining pattern of those common stock statistics which reflect GPU's reduced ability to raise money in the equity market since the accident.

Table 6

Schedule of General Public Utilities Corp.
Common Stock-Related Financial Statistics
1978-80

Common stock statistic	Year 1980	1979	1978
Dividends paid	-	$73,385,000	$106,424,000
Dividends paid per share	-	$1.20	$1.77
Dividend payout ratio	-	76.9%	77.0%
Earnings per share	$0.34	$1.56	$2.30

Source: 1979 and 1980 annual reports.

GPU's ability to obtain external financing is further limited by the continued omission of its cash dividends. To date, stockholders have lost about $200 million in omitted dividend payments. During the first quarter of 1979, GPU stock was selling at nearly $19 per share and stockholders received quarterly dividends of 45 cents per share. In the second quarter of 1981, GPU stock sold for for a high of just under $6 per share and stockholders received no dividend for the sixth consecutive quarter.

Because over half of the operating companies' capital is provided by long-term debt, the trends of two other financial statistics--coverage ratio and bond ratings--are of vital importance. The bond indentures and SEC regulations require that a company's earnings be at least two times the interest cost for any 12 of the 15 months preceding a bond issue for new money. As indicated in the following table, only Penelec met the legal requirement for issuing bonds as of December 31, 1980.

Table 7

Schedule of Interest Coverage Ratios For GPU Subsidiaries 1978-80

Company	Year 1980	1979	1978
Met Ed	1.02	1.99	2.44
Penelec	2.06	2.73	2.41
Jersey Central	1.86	1.95	2.38

Source: GPU System Statistics, 1980.

By February 28, 1981, however, Penelec's coverage ratio had declined to the point where it could not meet the required SEC provisions and it also was precluded from issuing any long-term debt. GPU estimates that the recent PaPUC and anticipated NJBPU base rate orders will increase earnings sufficiently for Penelec and Jersey Central to achieve the minimum coverage requirement starting sometime after 1981.

A second factor affecting a company's ability to issue long-term debt is the quality rating given to the proposed security offering. The two most frequently quoted ratings are those given by Moody's, and Standard and Poor's. At the time of the accident, all but one of the companies' securities had a "Baa" or better rating. This represents a medium-grade security which is considered to be neither highly protected nor poorly secured. A "B" rating represents a lack of desirable investment characteristics.

Table 8 shows the downgrading of the companies' securities that has occurred since the accident.

Table 8

Moody's Quality Ratings of GPU Company Securities (note a)

Company	3/28/79	4/19/79	6/29/79	3/28/80	3/28/81
Jersey Central:					
Bonds (note b)	Baa	Baa	Baa	Ba	Ba
Debentures	Ba	Ba	Ba	B	B
Preferred stock	"baa"	"baa"	"baa"	"b"	"b"
Met Ed:					
Bonds (note b)	A	Suspended	Baa	B	B
Debentures	Baa	Suspended	Ba	B	B
Preferred stock	"a"	Suspended	"ba"	"b"	"b"
Penelec:					
Bonds (note b)	A	Baa	Baa	Ba	Ba
Debentures	Baa	Ba	Ba	Ba	B
Preferred stock	"baa"	"ba"	"ba"	"b"	"b"

a/Definition of Moody's rating symbols listed in app. III.

b/Includes pollution control bonds.

Source: Moody's Public Utility Manual.

The significance of the ratings assigned to the securities and the investors' perception of their desirability was demonstrated at Penelec. On October 1, 1980, Penelec submitted an application to SEC proposing a $50 million bond offering for private placement. Although the company met the legal coverage requirements, the bond offering was withdrawn when it could not be sold.

CURRENT RATE ORDERS HAVE ONLY PARTIALLY ALLEVIATED CASH FLOW PROBLEMS

The cash flow problems that have confronted Met Ed and Jersey Central on an almost continuous basis since the accident were again alleviated by the April 1981 PaPUC and NJBPU rate orders. Current replacement power costs and prior energy costs paid for by the companies are now being recovered from consumers in the rates.

The PaPUC and NJBPU orders that removed the costs of TMI-1 and 2 from base rates, however, continue to have an adverse impact on the companies' cash flow. Certain expenses such as interest, preferred stock dividends, and operations and maintenance that are major components of the base rates continue to accrue for

these units and must be paid from non-TMI stockholder earnings. In addition, extensive capital improvements that require cash outlays are being made on TMI-1 prior to its restart. Until these costs are also allowed to be recovered in customer rates, the cash flow problems are likely to continue.

Ratepayer contributions to accident recovery costs have been limited to paying for replacement energy

The unanticipated loss of the TMI units in 1979, and their continued outage over 2 years later, precipitated a need for GPU to make extensive energy purchases to replace the output of the lost generating units. There is now little likelihood that TMI-1 will be ready to restart until early 1982, and replacement energy purchases for that unit will have to continue until then. TMI-2 is not expected to be returned to service until 1988. As indicated in table 9, replacement energy costs for sales subject to the jurisdiction of PaPUC and NJBPU total about $605 million through June 1981.

Table 9

Estimated Cost of TMI Replacement Energy--April 1979 through June 1981 (note a)

Company	Year 1979 (9 mos.)	1980 (12 mos.)	1981 (6 mos.)	Total
	----------(millions)----------			
Met Ed	$100	$110	$ 60	$270
Penelec	35	55	25	115
Jersey Central	75	95	50	220
Total	$210	$260	$135	$605

a/Does not include Pennsylvania and New Jersey gross receipts tax.

Source: GPU.

The levelized energy adjustment clause provisions 1/ used by the PaPUC and NJBPU to account for fluctuations in energy costs did not provide for the rapid increase in energy costs. The fuel cost for generating electric power by the TMI units was about 0.4 cent per kWh and the initial replacement cost from PJM following the accident ranged as high as 4 cents per kWh. Because

1/A ratemaking mechanism to allow for changes in fuel and purchased power costs. Projected costs are set annually in Pennsylvania and every 6 months in New Jersey.

the companies could not immediately pass this increased cost to consumers, a large outlay of cash was required by the companies during the first year following the accident. Funds were obtained from bank borrowings and internally generated sources. The companies' deferred energy balances--funds expended but not collected through consumer rates--increased from $103 million on December 31, 1978, to a high of $261 million in March 1980.

Based on several rate orders issued by the PaPUC and NJBPU subsequent to the accident, the companies have been allowed to recover the TMI-related replacement energy costs on a current basis and to begin recovering their deferred energy balances. As a result of these orders, the companies have had the replacement energy cost burden lifted and placed on their ratepayers. Ratepayers, however, have not been assessed for any of the cleanup costs. The following table shows the dates and amounts of the companies' authorized collections for TMI-related energy costs.

Table 10

Schedule of Replacement Energy
Cost Recovery-TMI Related
April 1979 through June 1981

Date of Order	Jersey Central	Met Ed	Penelec	Total
	----------(millions)----------			
June 18, 1979	$148	-	-	$148
June 19, 1979	-	$ 98	$ 42	140
Feb. 8, 1980	-	73	-	73
Apr. 1, 1980	42	-	-	42
May 23, 1980	-	a/82	a/48	130
Apr. 9, 1981	-	(6)	-	(6)
Apr. 23, 1981	1	-	-	1
Total collections	191	247	90	528
Less: Base rate exclusion (note c)	(88)	(160)	(78)	(326)
Net cost to consumer	a/$103	b/$ 87	b/$ 12	$202

a/Includes $50 million and $20 million in deferred energy cost collections for Met Ed and Penelec, respectively.

b/Includes revenue taxes of $12 million, $4 million and $0.5 million for Jersey Central, Met Ed, and Penelec, respectively.

c/Includes tax surcharge.

Source: GPU.

Under the energy clause provisions, the companies have collected about $528 million (including taxes) from ratepayers through June 1981 with the balance of the estimated $605 million for replacement energy deferred for later collection. The net cost to consumers, however, has only been $202 million because about $326 million of TMI-related costs that would have been paid by consumers was deleted from the rates.

Unrecovered expenses affecting cash requirements are paid by stockholders

Consumers' payments for replacement energy costs are being complemented by payments for other accident-related costs from common stockholders' earnings. As in the case of consumers, however, no stockholder contributions have been used to pay for direct cleanup costs. As of July 1, 1981 these costs were still being covered by insurance proceeds.

The stockholders' contributions to the accident recovery effort have been used primarily to cover certain fixed expenses for generating units normally collected in the base rate portion of the consumers' total bill. These expenses include interest payments to bondholders for long-term debt issues, dividends on preferred stock, taxes, operation and maintenance, and depreciation. In addition, a return on stockholders' equity is normally allowed as part of the base rates.

At the time of the accident, these costs for TMI-1 were included in all three companies' base rates. Similar costs for TMI-2 were being collected by Penelec and Jersey Central, but not by Met Ed. 1/ By PaPUC and NJBPU orders of June 19, 1979, and June 18, 1979, respectively, the base rates to cover TMI-2 costs for Penelec and Jersey Central were reduced by the amounts previously approved and Met Ed's authorization to collect these costs was withdrawn. As a result, the companies lost $108 million in revenues that they would normally have been allowed to collect on an annual basis if TMI-2 costs had been in their base rates.

PaPUC and NJBPU, relying on company estimates that TMI-1 would be returned to service in late 1979 or early 1980, left the fixed costs of the unit in the companies' base rates until early 1980. On April 1, 1980, NJBPU removed $18 million for TMI-1 expenses from Jersey Central's base rates. A similar action was taken by PaPUC on May 23, 1980, when it removed $27 million from Met Ed's rates and $12 million from Penelec's rates for TMI-1 costs. As a result of these actions, the companies' annualized revenue from base rates for the TMI units was effectively reduced by a total of $165 million.

1/PaPUC had approved Met Ed's request, but rates had not yet been increased.

Additional fixed cost increases of $19 million since 1980 were disallowed in the April 1981 PaPUC order. The NJBPU order on Jersey Central's latest filing was issued on July 23, 1981, and it disallowed similar cost increases amounting to about $20 million.

In summary, the elimination of TMI costs from the companies' rates is estimated to have the following effects on common stockholders' earnings through 1981.

Table 11

TMI Costs Eliminated From Rates and Estimated Effects on Stockholder Earnings-April 1979 through June December 1981 (note a)

Cost component	GPU Company			
	Met Ed	Penelec	Jersey Central	Total
	(millions)			
Operations/maintenance	$ 19	$ 10	$ 10	$39
Depreciation	30	15	17	62
Reserve capacity credit	(28)	(12)	(7)	(47)
Taxes	53	24	24	101
Interest	34	17	17	68
Preferred dividends	9	5	6	20
Common equity return	43	19	21	83
Total costs and return eliminated	160	78	88	326
Less: Tax reductions	(86)	(42)	(46)	(174)
Net reduction in stockholder earnings	$ 74	$ 36	$ 42	$152

a/Does not include effects of possible accounting changes for TMI depreciation and reserve capacity costs.

Source: GPU.

In addition to the costs charged against stockholder earnings shown in table 11, the companies have incurred other unrecovered costs. For example, PaPUC and NJBPU have not allowed the companies to pass through the interest costs on the

short-term borrowings required to pay for the energy purchases. These costs have been tied to the prime interest rate and at times exceeded 23 percent per annum. From June 1979 through December 1980, stockholders have absorbed over $52 million of these interest costs.

Certain costs for TMI-1 activities have also not been passed on to ratepayers. NRC required, and GPU voluntarily proposed, a number of changes for TMI-1 that are being made prior to restart. These changes have resulted in capital expenditures of about $20 million and GPU expects to spend an additional $21 million in 1981. These costs, however, will presumably be added to the total cost of TMI-1 and collected from the ratepayers through depreciation expense. Until that is allowed, however, the expenditures represent a current drain on the companies limited cash resources.

Jersey Central's finances have been adversely affected by an added side effect of the TMI-2 accident. The company was constructing the Forked River nuclear plant with an expected completion date in the mid-1980s. Construction of the facility was suspended shortly after the TMI-2 accident partly because of its impact on Jersey Central's financing capability. On November 6, 1980, the project was formally abandoned and the company requested NJBPU approval to amortize its approximately $400 million investment in the facility for ratemaking purposes. This was approved on July 23, 1981, but $14 million in annual interest charges and preferred dividends on funds invested in the project, after reflecting the tax loss, must be paid from Jersey Central's other earnings.

GPU HAS LONG-TERM FINANCING NEEDS THAT MUST BE MET

The recent PaPUC and the anticipated NJBPU rate orders that provide the rate relief necessary to avoid near-term insolvency, particularly for Met Ed, are not sufficient to improve the companies' financial posture to the point where they can obtain funds in the long-term capital markets. There are two areas of financial need that are nearly always met through these long-term borrowings--debt refinancing/redemption and financing construction costs. Over the next 5-year period, the total capital financing needs of the companies in these two areas amount to more than $2.7 billion.

Debt refinancing/redemption requirements

Between 1981 and 1985, the three operating companies have over $400 million in long-term debt and preferred stock issues that come due and/or have to be redeemed. Table 12 shows that most of the replacement/redemption will occur in 1983, 1984, and 1985.

Table 12

Schedule of Long-Term Debt Replacement
and Preferred Stock Redemption
1981-85

Company	Year 1981	1982	1983	1984	1985
	(millions)				
Met Ed:					
Long-term debt	a/$15.23	$10.03	$52.23	$17.19	$46.98
Penelec:					
Long-term debt	6.93	11.43	14.43	58.93	1.84
Preferred stock	2.85	2.85	2.85	2.85	2.85
Jersey Central:					
Long-term debt	10.28	11.30	41.07	20.64	58.99
Preferred stock	1.25	2.50	2.50	2.50	2.50
GPU Service Corp.	.53	.58	.42	4.13	.15
GPU Corporation	39.00	-	-	-	-
Total	$76.07	$38.69	$113.50	$106.24	$113.31

a/Includes $13 million in bonds maturing October 1, 1981.

Source: GPU

If new bonds are issued and the funds used to retire bonds that are maturing, the two times interest coverage ratio requirement commented on earlier generally does not apply. It would apply if the interest rate on the new bonds is lower than the old bonds or the maturing date of the old bonds at the time of replacement is greater than 2 years--an unlikely situation for GPU. However, if the companies' earnings do not demonstrate to potential investors that the bond offering is a sound investment, then it is unlikely that the new bonds can be sold even if all legal requirements are met. The consequences of the failure to retire the debt on the due date is uncertain. The bond trustee would presumably evaluate the company's financial prospects at the time and determine how the interests of the bondholders would best be protected.

Construction funding requirements

The System's ability to continue furnishing reliable power to its customers requires a large annual outlay of funds. In addition to constructing generating units to replace older, inefficient units, new units must be added to meet load growth. Existing units also require certain capital improvements. Transmission and distribution systems require expansion and upgrading to allow new customer hookups and to prevent system degradation. Maintaining service reliability on an individual company basis is important to the continued integrated operation of the GPU System and to the PJM power pool.

During the 5-year period ending December 31, 1980, the operating companies expended over $1.78 billion in connection with their construction programs. New generation capacity costs--such as those for TMI-1 and 2--are usually shared by the companies, while other construction costs are independently financed by each company. As shown in table 13, the companies reduced their construction outlays in 1979 and 1980 principally as a result of the cash flow drain resulting from the accident.

Table 13

Schedule of Construction Costs for GPU Operating Companies 1976-80

Company	Year 1980	1979	1978	1977	1976
	(000s omitted)				
Met Ed	$ 43,182	$ 53,559	$ 87,657	$101,503	$ 90,324
Penelec	68,347	68,615	87,246	121,721	133,752
Jersey Central	132,889	221,086	225,749	185,019	141,354
Total	$244,418	$343,260	$400,652	$408,243	$365,430

Source: 1980 Annual Reports.

Planned construction expenditures for the 5-year period 1981-85 amount to over $2.3 billion. The details of these expenditures are shown in table 14.

Table 14

Schedule of Proposed Construction Expenditures by GPU Operating Companies 1981-85

	Met Ed		Penelec		Jersey Central	
	(millions)					
New generation:						
Sayreville coal conversion (note a)	-		-		$50	
Raystown (Hydro)	-		$ 18		-	
Seward-7 (Coal)	-		130		12	
Coal #1	$28		5		14	
Coal #2	1		3		4	
Pumped storage	4		-		6	
Other	-		-		6	
Total		33		156		92
Existing generation:						
Oyster Creek (Nuc)	-		-		341	
TMI-1 (Nuc)	71		34		35	
Other	33		189		18	
Total		104		223		394
Transmission:						
Ontario Hydro	-		-		213	
All other	45		78		119	
Total		45		78		332
Distribution:		145		199		296
Nuclear fuel:		50		26		124
General:		10		12		13
TOTAL		$387		$694		$1,251

a/Assumes 50 percent of cost paid by Government. If no assistance is provided, the conversion to coal will probably not occur.

Source: GPU.

Proposed construction expenditures for new generating capacity tend to be relatively low during the 1981-85 period but are expected to increase significantly over the 1986-95 period. Seward-7 is the first major capacity

addition planned for completion during that period. Originally scheduled for service in 1985, this date has now slipped to 1989. Completion of the remaining new units is now planned for the early 1990s. Consequently, most of the new capacity expenditures are expected to occur between 1986 and 1994 as expenditures are made to complete Seward-7, the two coal units in 1991 and 1993, and the pumped storage project by 1994.

Planned generation expenditures for 1986-88 will be further increased if the decision is made to recommission TMI-2. Current cost estimates (including the replacement of the nuclear fuel) are over $500 million when adjusted for a 10-percent annual inflation factor. Recommissioning funds are expected to come from the capital markets as opposed to the companies' expectations that the estimated $600 million for cleanup activities will come from other sources.

FINANCING DIFFICULTIES MAY AFFECT COMPLETION OF FUTURE CONSTRUCTION PROJECTS

At the present time, the only sources of money for meeting the System's capital needs are its internally-generated funds from non-TMI earnings and its short-term borrowings. These sources are expected to be sufficient to meet the planned capital requirements of $389 million in 1981. Utility company financing plans rely on short-term borrowings to "smooth out" deficiencies in internally generated funds for the next year or two. Access to the long-term capital market will eventually be essential, however, if planned capital expenditures are to be funded after 1982.

Internally generated funds are generally meeting current capital requirements

The continuing costs for TMI-1 modification; generation, transmission, and distribution system construction and/or upgrading; and expenditures for bond redemptions and sinking fund requirements have had to be met primarily from internally generated funds since 1980. Shortly after the accident, Penelec issued $50 million of first mortgage bonds in June 1979. Jersey Central later raised $97.5 through two first mortgage bond issues to reduce short-term bank loans and refinance a maturing bond issue. Since 1979, however, no financing through long-term debt obligations has been possible.

The companies spent $279 million in 1980 to meet their capital obligations. Of this amount, $246 million was for construction and $33 million was needed to retire matured securities and for sinking fund purposes. A portion of the approximately $20 million collected in base rates for TMI-1 through May 1980, provided part of the required

funding. The balance of the money came from depreciation expense and earnings on non-TMI assets plus deferred taxes and deferred energy collections. While the $33 million for retiring securities and sinking fund purposes met pre-accident budget expectations, the $246 million available for construction was 52 percent less than the $515 million budgeted before the accident.

Capital expenditures for 1981 and 1982 are again expected to be primarily financed from internally generated funds. Construction activities costing $259 million--and comprising only 36 percent of the $720 million for the pre-accident budget--are proposed for 1981, including $21 million for TMI-1 modifications and $54 million for accrued construction liabilities. Bond retirement and sinking fund requirements are budgeted for an additional $76 million. The source of these funds continues to be the non-TMI revenue receipts plus short-term borrowings.

GPU expected to meet part of its 1982 capital needs from external sources since the return of TMI-1 to service in January 1982 should increase the interest coverage ratio to the required levels. This would have allowed an increase in construction expenditures as well as funding the $77 million needed for bond retirements and sinking funds. It does not appear, however, that the companies can realistically count on selling any planned bond issues until after 1982 and capital expenditure levels will again depend on revenue receipts and short-term borrowings.

Short-term borrowings remain GPU's only external source of funds

Short-term bank borrowings have been the key element in keeping the GPU system current with its cash requirements. Although less reliance is placed on short-term debt in future budget plans, it remains a necessary component of continued System viability. On June 15, 1979, GPU officials negotiated a Revolving Credit Agreement (RCA) with 43 banks 1/ to finance the unrecovered cost of purchased replacement energy and other current cash obligations. A maximum borrowing level of $412 million was authorized for the System but thus far, the banks have limited the amount of outstanding loans to $292 million. Each of the three operating companies and the parent corporation had individual sublimits set with the aggregate borrowing limited to $292 million. The loans have 6-month maturity dates but thus far have been extended each time

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1/Two other banks added later.

the renewal period has come up. The RCA expires on October 1, 1981, at which time the banks will have the option of continuing, amending, or terminating the agreement.

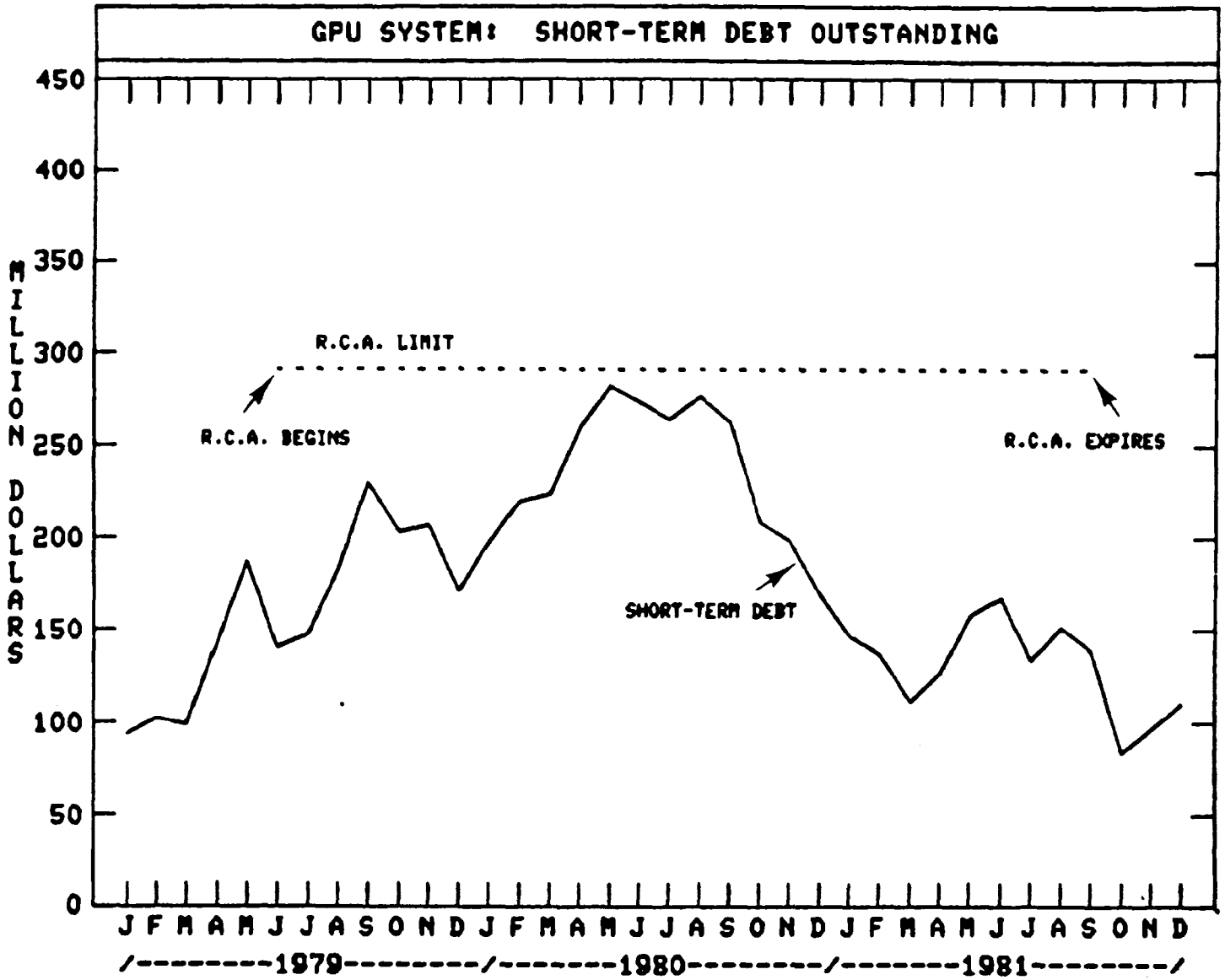
The RCA provided a ready source of funds to cover the time lag between payments for power purchases, and PaPUC and NJBPU approval to collect the added costs in customer rates. This was reflected in the increased borrowings that occurred during the early part of 1980, as shown on the graph on page 36.

Penelec made limited use of RCA and by 1980 had repaid its outstanding loans. As indicated by the graphs on page 37, however, Jersey Central, Met Ed, and the GPU Corporation relied extensively on RCA for cash supplements to their depleted finances.

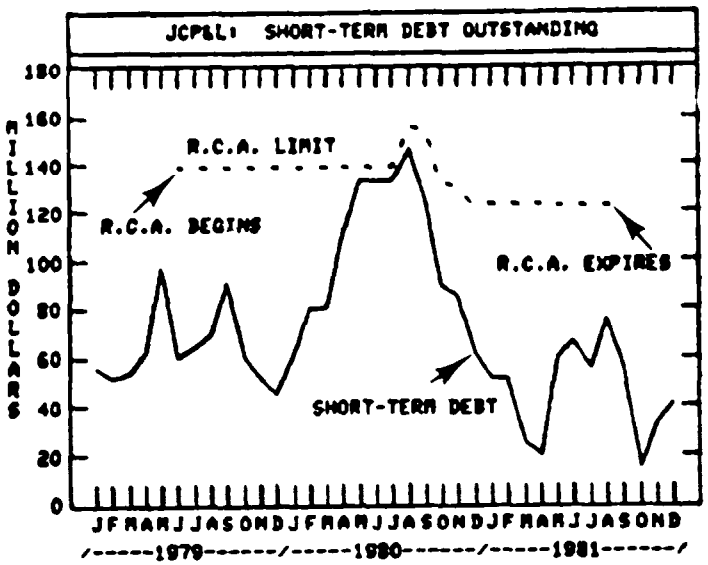
Although Met Ed and Jersey Central had nearly reached their credit limits in April 1980, Met Ed is the only company that is currently being constrained by the terms of RCA. Jersey Central was able to reduce its outstanding borrowings when the NJBPU granted the company $60 million in interim emergency rate relief in May 1980, subject to refund. Met Ed's request to PaPUC for $34.1 million in interim rate relief, however, was rejected on August 28, 1980. The banks viewed this as leading to a further deterioration of the assets supporting Met Ed's loans and limited Met Ed's credit to the value of its liquid assets. Starting in late 1980, liquid assets were defined as the sum of Met-Ed's deferred energy balance, 80% of Customer Accounts Receivable balance, and an assigned value ($20 million) of pledged uranium stocks at the end of each month. In June 1981, Met-Ed's cash needs were such that they had to pledge to the banks their coal inventory in order to increase their liquid assets formula. The banks have accepted the coal pledge but have reduced Met-Ed's liquid assets formula by $5 million for July and $10 million thereafter. The historical and forecast components of Met-Ed's 1981 liquid assets credit limit is shown by the graph on page 38.

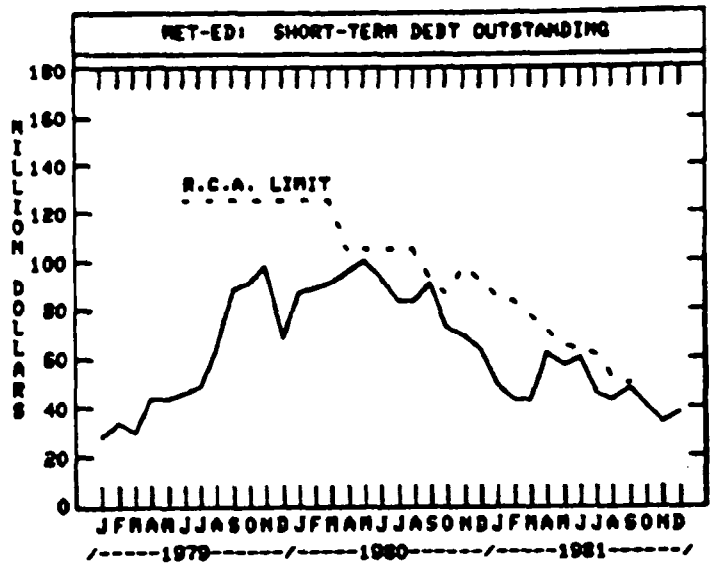
CONCLUSIONS

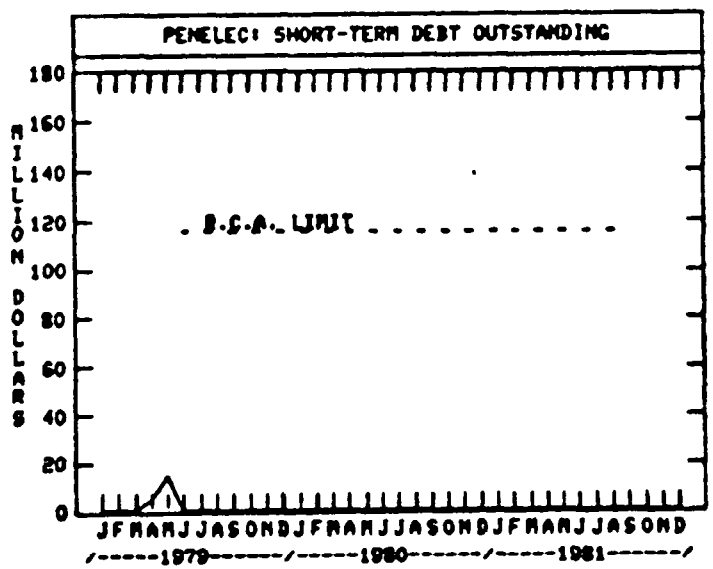
It is apparent that the financial condition of the GPU System has deteriorated significantly since the TMI-2 accident and that the rate relief granted to date by PaPUC has done little more than maintain the companies in a solvent condition. The present inability to obtain external sources of capital, coupled with the need to increase capital expenditures over the next 5 years, raises serious questions as to the System's continued viability as a provider of electric power.

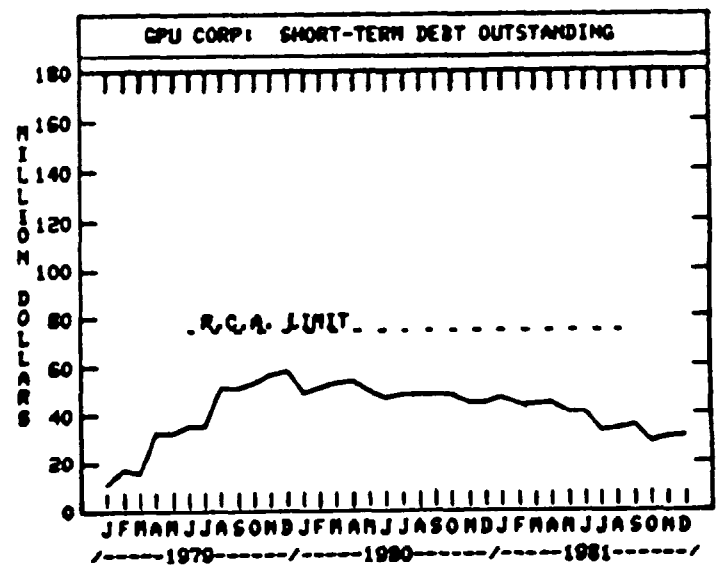

GPU SYSTEM: SHORT-TERM DEBT OUTSTANDING
MILLION DOLLARS
450
400
350
300
250
200
150
100
50
0
R.C.A. LIMIT
R.C.A. BEGINS
R.C.A. EXPIRES
SHORT-TERM DEBT
J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
1979
1980
1981

Source: GPU

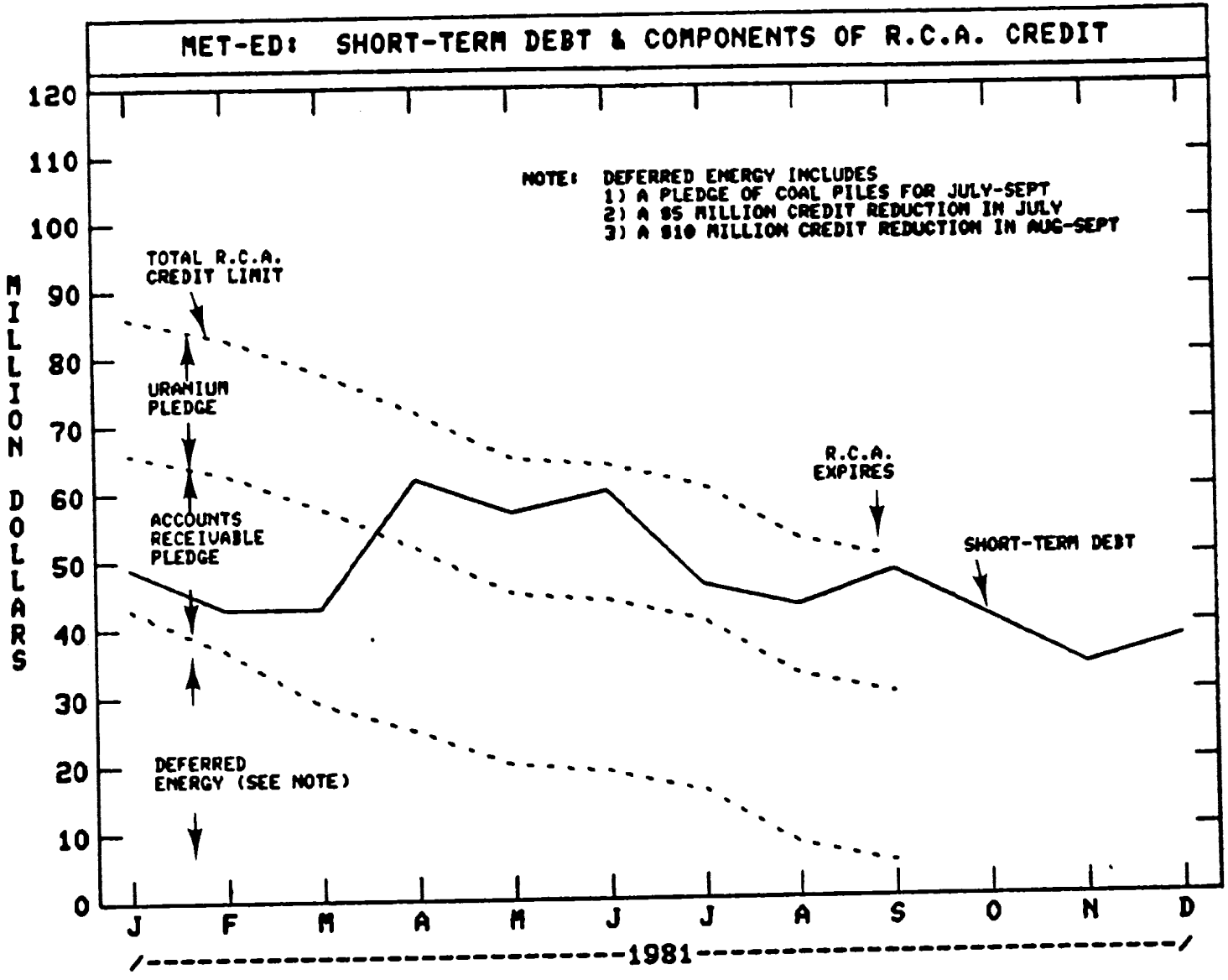

JCP&L: SHORT-TERM DEBT OUTSTANDING
MILLION DOLLARS
R.C.A. LIMIT
R.C.A. BEGINS
R.C.A. EXPIRES
SHORT-TERM DEBT
1979
1980
1981


MET-ED: SHORT-TERM DEBT OUTSTANDING
MILLION DOLLARS
R.C.A. LIMIT
1979
1980
1981


PENELEC: SHORT-TERM DEBT OUTSTANDING
MILLION DOLLARS
R.C.A. LIMIT
1979
1980
1981


GPU CORP: SHORT-TERM DEBT OUTSTANDING
MILLION DOLLARS
R.C.A. LIMIT
1979
1980
1981

Source: GPU


MET-ED: SHORT-TERM DEBT & COMPONENTS OF R.C.A. CREDIT
NOTE: DEFERRED ENERGY INCLUDES
1) A PLEDGE OF COAL PILES FOR JULY-SEPT
2) A $5 MILLION CREDIT REDUCTION IN JULY
3) A $10 MILLION CREDIT REDUCTION IN AUG-SEPT
TOTAL R.C.A. CREDIT LIMIT
URANIUM PLEDGE
ACCOUNTS RECEIVABLE PLEDGE
DEFERRED ENERGY (SEE NOTE)
R.C.A. EXPIRES
SHORT-TERM DEBT
MILLION DOLLARS
120
110
100
90
80
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1981

Source: GPU

Barring the possibility of losing another major generating station or a disruption in the System's transmission grid, customer service could probably be sustained at an austerity budget level for some time before brownouts and possible extended power outages occur. New customer hookups would probably have to be restricted, however, and continued access to outside power purchases would be essential.

Of greater concern is the need to obtain funds to retire long-term debt, beginning in 1983, and to continue meeting sinking fund requirements. Strong positive signals from the State regulatory commissions that the System's financial viability will be maintained are needed. Without them, we seriously question the ability of the companies, and Met Ed in particular, to sell any kind of long-term borrowings that would provide funds to meet these obligations.

Two events appear to hold the key to the continued existence of the GPU System--the restart of TMI-1 with the appropriate rate increases and the development of an acceptable way to fund the uninsured portion of TMI-2 cleanup costs. The importance to the System of restarting TMI-1 was discussed in chapter 2. Chapter 4 provides our analysis of the cleanup cost problems.

CHAPTER 4

FUTURE FINANCIAL VIABILITY OF GPU MAY BE CONTINGENT ON RESOLUTION OF FUNDING FOR TMI-2 CLEANUP COSTS

The accident at TMI-2 on March 28, 1979, left GPU with the longest and most costly nuclear accident recovery process experienced to date by the electric utility industry. Through December 31, 1980, GPU has spent about $180 million, largely from insurance proceeds, for the cleanup effort with little progress in decontaminating the reactor containment building. Current estimates indicate that it will take another $600 million--net of remaining insurance funds--and from 4 to 6 years to complete the job. This cost estimate assumes that changes will be made in the regulatory process experienced to date so that expedited cleanup procedures can be implemented.

The need to complete the cleanup effort is not in question, but the source of adequate funding is. Insurance proceeds have been covering most of the costs to date, but they will be exhausted by late 1983, even under the present limited rate of expenditure. The current position of the PaPUC is that no ratepayer funds will be used to pay for cleanup costs. Under current regulatory constraints, GPU does not have the financial resources to both continue the cleanup effort after the insurance money runs out and continue with even a limited capital improvement program to maintain System reliability.

Although a near-term bankruptcy action is no longer imminent, the failure to resolve the cleanup funding issue could adversely affect GPU's financial condition to the point where a future insolvency could occur. We believe, however, that there are too many uncertainties as to what might result from a bankruptcy action to make this a viable solution to the GPU System's problems from almost any point of view. Moreover, the current GPU problems are creating substantial additional costs for many electric utility customers throughout the country and these have been estimated to increase further if GPU were forced into bankruptcy.

CURRENT CLEANUP COST ESTIMATES ARE STILL BEING REFINED

Shortly after the accident at TMI-2, GPU contracted with the Bechtel Corporation to help develop a cleanup and reactor restoration cost estimate. Accurate information on the conditions inside the containment building was generally not available, so numerous assumptions had to be made. The initial

estimate assumed that the reactor core could be removed within 20 months after the first containment building entry and that TMI-2 restart could occur around mid-1983. It was estimated the cleanup costs would be about $133 million in 1981 dollars, excluding all operations and maintenance (O&M) costs. Restoration costs were expected to be about $102 million plus $60 million to replace the damaged core. A contingency fund of $105 million brought the total cost of decontamination and restoration to $400 million.

The first major revision to the 1979 estimate was released in August 1980. Prepared jointly by Bechtel and GPU, it was considered to be the first truly comprehensive cost estimate. The time schedules for removing the nuclear core and restarting the unit slipped to 1983 and 1985, respectively. The total cost of $952 million for cleanup and restoration included $97 million for O&M expenses. All costs were computed in 1980 dollars. The August 1980 estimate has served as the basis for all further analyses and revisions, not only by GPU and Bechtel, but by Theodore Barry and Associates, consultants to PaPUC, and also by Nuclear Energy Services, consultants to NRC.

The revisions to the August 1980 estimate incorporated changes to the basic assumptions used regarding the inflation factor and more particularly to the time schedule for core removal and restart. The adjustments made to the August 1980 cost estimate and the assumptions used are shown in table 15.

The current cleanup cost estimate of about $701 million was prepared by GPU and Bechtel in April 1981. It reflects the costs expected to be incurred between 1981 and 1987 to complete the cleanup effort and is the latest in a series of cost revisions that grew out of the first estimate prepared in June 1979. A further revision to the April estimate is under study by Bechtel and is expected to be available by August 1981.

GAO ASSESSMENT OF CLEANUP COST ESTIMATES

The development of a series of cost estimates, each with a different total cost was probably inevitable, given the lack of good information and the uncertainty about containment conditions that went into the initial estimates. As additional containment entries were made and more data was available for analysis, assumptions changed and the cost estimates began to vary. It is notable, however, that very few of the cost variables changed during the early revisions, and it was not until recognition was given to a possible 2-year delay in removing the core and restarting the unit that the costs escalated appreciably.

Table 15

Summary of Total TMI-2
Recovery Cost Estimates

Cost component	Source/date of estimate: GPU, 8/80 (note a)	Theodore Barry, 9/80 (note b)	GPU, 11/80 (note c)	GPU Nuclear Corp., 12/80 (note d)
	(millions)			
Cleanup	$598	$598	$598	$937.1
O&M	97	90	90	169.0
Core replacement	70	70	70	123.9
Damaged core	-	37	-	-
Restoration	187	187	187	290.9
Restart	-	-	-	81.3
Inflation	-	252	175	-
Total	952	1234	1,120	1,601.2
Less: Insurance	(300)	(300)	(300)	(300.0)
Net Cost	$652	$934	$820	$1,301.2

a/Based on core removal in April 1983 and restart in 1985. Estimate is in 1980 dollars.

b/Based on GPU August 1980 estimate but added the book value of the damaged core and inflated entire cost by 10 percent annually. 1979 O&M costs of $7 million were not included.

c/Based on GPU August 1980 estimate but inflated restoration costs only by 10 percent annually. 1979 O&M costs of $7 million were not included.

d/Based on core removal in 1985 and restart by December 1987. All costs are in time-of-expenditure dollars. Restoration means meeting pre-accident conditions. Restart means capital modifications to incorporate new NRC requirements.

Source: GPU.

The various methods used to account for inflation tended to confuse the estimated cost totals. The Theodore Barry estimate in September 1980, for example, applied an inflation factor against all costs. We also noted that while four of the estimates included restoration costs and one included restart costs, frequent mention was made of only the cleanup portion in public information releases or hearings. When the cleanup costs were reported, O&M costs were usually included, although they are carried as a separate cost item in the estimates.

To assess the current financial needs of GPU to complete the TMI-2 cleanup, we believe a more realistic approach is to isolate the cost of cleanup from all other cost elements. This is suggested for several reasons. Previous attempts to aggregate all the costs incurred to restart TMI-2 have had to take into account too many uncertainties, thereby affecting the reliability of the estimates. The number of containment entries made to date has improved GPU's knowledge of cleanup requirements over what was available in August 1980, and a cost estimate for this phase of the work can now be made with some degree of precision. A detailed understanding of the requirements to restore and restart the unit, however, is still not available. Consequently, we believe any attempt to incorporate cost estimates for restoration is premature and tends to confuse, rather than clarify, the needs of the utility. Furthermore, it is possible that if and when restoration work is started on TMI-2, it will be viewed as new construction, with the necessary funds available through normal construction financing methods.

We also believe that cleanup costs should not be aggregated with O&M expenses. These expenses--which are expected to average about $20 million annually over the cleanup period--are for activities that would normally be required if the plant were running. Therefore, we view these costs as not attributable to the accident and subsequent cleanup costs.

The cleanup cost revision prepared by GPU/Bechtel in April 1981, is probably the best representation of the financial needs of GPU to complete the TMI-2 decontamination process. The estimated cost on an annual basis is shown in table 16.

Table 16

Estimated TMI-2 Cleanup Costs
Bechtel Reassessment, April 1981 (note a)

Actual expenditures		Estimated future costs (note a)							
1979	1980	1981	1982	1983	1984	1985	1986	1987	Total 1981-87
(millions)		(millions)							
$94.5	$86.7	$44.8	$117.4	$177.9	$131.4	$145.9	$80.8	$3.2	$701.4

a/Does not take into account insurance proceeds.

b/Estimate is in year-of-expenditure dollars.

Source: GPU.

Of the approximately $180 million in actual costs incurred in 1979 and 1980, about $170 million has been covered by insurance payments. About $130 million of insurance proceeds remain to be applied against the estimated $701 million total cleanup cost, leaving a balance to be funded of just under $600 million. This estimate has the benefit of data and observations gained from the latest containment entry and the GPU experience in decontaminating the auxiliary building, and we believe it probably represents a reasonable expectation of what the total cleanup cost might be.

Our assessment of Bechtel's estimate is generally supported by the initial observations of a NRC consultant. NRC contracted with a private consulting firm, Nuclear Energy Services, to conduct a technical assessment of the proposed cleanup program. The consulting firm reviewed the technical aspects and associated costs of the GPU/Bechtel estimate with engineers from both companies. Although the assessment is not yet complete, the consultant has tentatively concluded that the cleanup program is technically adequate and the costs reasonable if one accepts the GPU/Bechtel assumptions about worker productivity in decontaminating the containment building and the physical condition of the reactor vessel components.

DOE officials, however, consider the GPU/Bechtel estimate to be on the high side and believe the cleanup can be done for less cost. The major difference appears to be in the labor cost category. DOE feels that the radiation levels need not be reduced to the levels proposed in the GPU/Bechtel estimate. Therefore, less decontamination effort would be required before putting workers into the containment building

to prepare for core removal and fewer manhours are expended. The tradeoff appears to center around the amount of worker exposure one is willing to risk in order to reduce the cleanup time and thereby the total cost.

ESTIMATED COST COULD VARY GIVEN DIFFERINC CIRCUMSTANCES

Although we believe that the $600-million estimate for the remaining cleanup is reasonable and prudent for planning purposes at this time, several events could occur that would tend to either decrease or increase the actual incurred costs.

One such event, while beyond the control of the utility, could affect the time presently planned for core removal and possibly allow some cost reductions. GPU/Bechtel engineers have assumed that considerable damage was done to the components within the reactor vessel due to the overheating of the core, and have planned their work schedule accordingly. If the reactor vessel components are not as badly damaged as anticipated, core removal would be expedited and costs would be reduced.

Worker productivity is another area of cost uncertainty. Bechtel/GPU labor cost estimates for decontaminating the containment building are based primarily on the experience gained from cleaning the auxiliary building. The engineers believe that similar extensive manual scrubbing of the exposed surfaces in the containment building with chemical additives will also be required. The physical effort required, coupled with the protective clothing needed to minimize radiation exposure, was found to limit the time an individual could spend actually working. There is also some concern about processing the waste water generated by the cleanup which would contain the various chemical additives used in the decontamination process.

During a containment building entry in June 1981, DOE and GPU conducted a decontamination experiment on a selected area using a hot water spray under 1000 lbs. pressure as a cleaner. Initial results were mixed, but were sufficiently encouraging to warrant further testing. If the hot water method for decontaminating the containment building surfaces proves to be feasible, it will eliminate the need to filter out any chemical additives. The demonstration also showed that less water than anticipated was used which could further decrease the time and effort needed to process the cleaning water. The use of the hot water spray treatment could serve to reduce both the time and labor costs of decontaminating the containment building.

An increase in the present $600-million estimate could also occur, even though we believe the estimate prudently recognizes the possibility of some adverse conditions occurring.

Just as reductions in the anticipated time schedules hold out the possibility of decreasing cleanup costs, slippages and delays in meeting the projected time schedules can result in increased costs. As an example, revising the time schedule for core removal from 1983 to 1985 and restart from 1985 to 1987 increased costs by about $150 million.

Cleanup delays could result from several reasons. Among these are (1) a public perception that the radioactivity in TMI-2 is safely contained and can remain there for a long period of time and (2) legal requirements for public hearings on NRC decisions for TMI-2 cleanup. The combination of these two reasons could result in protracted public scrutiny of each NRC decision through the hearing process. GPU officials estimated that public hearings on each major item could add 6 to 12 months to the cleanup schedule. Such a move could extend the cleanup time well beyond 1987 with an attendant increase in costs.

It is the general consensus of nuclear and other scientific experts that TMI-2 poses no immediate public health and safety hazard in its present condition. However, it is also their consensus that the cleanup process should be carried forward as expeditiously as possible. In particular, it is important to immobilize the radioactivity in the 700,000 gallons of water in the containment building and establish barriers to its release to the outside environment as soon as possible. The only barrier to the radioactive water at the present time is the containment building itself. Regardless of the decision made on the future of the facility, the containment building has to be decontaminated and the reactor core removed and disposed of. The longer cleanup is delayed, the greater the opportunity for TMI-2 to become a health and safety hazard.

NRC also sees a need to continue with the cleanup and waste disposal because the island is not a designated waste repository. The NRC staff, in a Programmatic Environmental Impact Statement (PEIS) on TMI-2, stated that

> "The staff has concluded that TMI should not become a permanent radioactive waste disposal site. If the damaged fuel and radioactive wastes are not removed, the Island would, in effect, become a permanent waste disposal site. The location, geology, and hydrology of Three Mile Island are among the factors that do not meet current criteria for a safe long-term waste disposal facility. Removing the damaged fuel and radioactive waste to suitable storage sites is the only reliable means for eliminating the risk of widespread uncontrolled contamination of the environment by the accident wastes."

It is important, therefore, that undue delays in proceeding with the cleanup are minimized while giving full consideration to health and safety concerns.

CLEANUP COST SAVINGS WILL BE MINIMAL IF TMI-2 IS DECOMMISSIONED

We found that cost estimates for cleanup will be about the same regardless of a decision to decommission TMI-2 rather than restore it to pre-accident condition and restart it. Based on the present assessment of what happened during the accident, GPU expects that the major components of the unit--primarily the reactor vessel and steam generators--will be reusable and the unit can eventually be put back in service. Consequently, all cost estimates for cleanup are based on that expectation.

A final decision on the condition of the reactor components will not be possible until the nuclear core is removed and the reactor vessel and steam generators can be examined and tested more closely. If too much damage has occurred, it is probable the unit would be decommissioned. However, such a decision would negate very little of the cleanup effort presently anticipated as part of a restart program. Our discussions with NRC officials and statements included in NRC's PEIS, indicate that decommissioning TMI-2 would probably require an equal, if not greater, decontamination effort than restarting it. Although the component and reactor support systems within containment might be handled differently if the unit were being decommissioned rather than restored, any savings would probably be offset by more stringent NRC decontamination requirements. In its March 1981 PEIS, NRC concluded that an early decision to decommission TMI-2 would have little effect on the choice of alternatives for the cleanup tasks because essentially the same procedure is required to remove and dispose of the damaged fuel. Because of the importance of a restart versus decommissioning decision, GPU officials said they are continually reviewing the situation.

GPU IS UNABLE TO FUND THE CLEANUP COST WITHOUT JEOPARDIZING ITS FINANCIAL VIABILITY

The current estimated cleanup is beyond GPU's ability to fund on its own, given its present financial condition. As we pointed out in chapter 3, Met Ed operated at a net loss in 1980, and the System as a whole is just barely staying solvent. No long-term financing funds are available to the companies and even continuation of the short-term funding arrangement is questionable.

The GPU companies have not been allowed to recover any of their fixed expenses and a return on investment in TMI-2 since March 1979, and in TMI-1 since the second quarter of 1980. All of the fixed costs are being paid from revenues related to non-TMI properties. In 1980, these unreimbursed expenditures amounted to $78 million. The loss of stockholders' earnings and unrecovered depreciation expense on the TMI investment amounted to an additional $66 million.

GPU has budgeted about $60 million for 1981 TMI-2 expenses. About $20 million is for O&M expenses and $40 million for maintaining the plant in a safe condition and some cleanup, including processing the water in the containment building. The $40-million expenditure is largely covered by insurance payments. At this continued level of expenditure, the insurance payments will run out in late 1983 with much of the work required to clean up the reactor remaining undone. As shown previously in table 16, about $100 to $150 million per year will be needed to complete the cleanup as scheduled.

The restart of TMI-1 in early 1982 will provide some relief to GPU but is likely to have little effect on the availability of cleanup funds. The 1981 unrecovered cash outlay for O&M expenses will presumably be recovered through revenues once TMI-1 is allowed to restart. Interest costs, preferred stock dividends, depreciation expense and a return on investment will also be recovered. The companies, however, will not be able to use all of these revenues to help fund cleanup costs. The payments being made on the unrecovered fixed costs for the TMI units have drained GPU's resources that would normally have gone into maintenance and construction projects to maintain system reliability, improve customer service, and to pay common stock dividends. The drastic cuts in construction programs necessitated by the loss of earnings on the TMI units cannot continue during the rest of the decade without seriously impairing GPU's ability to maintain reliable and economical customer service. Consequently, it will be necessary to allocate most of the restored TMI-1 earnings to uses other than for TMI-2 cleanup.

A further complicating factor would be a continuation of PaPUC restrictions on the use of operating revenues to fund cleanup costs. PaPUC has held to the position taken shortly after the accident that ratepayers should not pay for the cleanup. In its June 1979 order, PaPUC stated its opposition to ratepayer financing of TMI-2 cleanup.

> "The Commission is of the view that none of the costs of responding to the incident including repair, disposal of wastes and decontamination are recoverable from ratepayers."

In a September 1980 rate order, PaPUC again reiterated its position against ratepayer financing of TMI-2 cleanup. PaPUC suggested a possible role of GPU stockholders and the Federal Government when it ordered Met Ed to

> "cease and desist from using any operating revenues for uninsured cleanup and restoration costs* * *those cleanup costs and expenditures not covered by insurance ultimately are the responsibility of the company's stockholders and/or the Federal government; however, they are not the responsibility of the ratepayers."

GPU also has to be concerned about its ability to meet the heavy financial obligation for retiring maturing bond issues over the next 4 years. As we pointed out in chapter 3, this will require new capital financing of about $400 million. According to some investment analysts, it is extremely doubtful that GPU will be able to access the capital market for these funds as long as financing the cleanup costs remain the sole responsibility of the company and its stockholders.

BANKRUPTCY IS A QUESTIONABLE WAY TO RESOLVE GPU'S FINANCIAL PROBLEMS

The PaPUC approval of Met Ed's rate increase request in April 1981, and the quick bank response to Met Ed's loan request for funds to meet its tax obligation, removed the near-term possibility that Met Ed would be in default and, therefore, subject to possible bankruptcy actions. A bankruptcy action is still possible, however, if GPU is unable to negotiate a satisfactory short-term borrowing agreement with the banks when the RCA expires October 1, 1981, and Met Ed again finds itself in a cash-short position when its tax payment comes due in April 1982. If that obligation is met, the potential for default again exists if one or more of the GPU companies cannot meet bond refinancing obligations beginning in 1983.

Several studies 1/ have been made of the effects that a bankruptcy action for a GPU company might have on the parties involved--the company, its ratepayers, its creditors, and even the utility industry as a whole. To assess the possibility that a reorganization of the GPU System under bankruptcy would resolve the financial difficulties brought on by the TMI-2 accident, we examined the various bankruptcy studies and discussed possible issues and consequences with knowledgeable people. Our general conclusion is that there are too many uncertainties in a utility bankruptcy to make a strong

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1/See app. IV for a listing of these studies.

case for a bankruptcy action for GPU. We believe that it is likely that costs to consumers will be higher under a bankruptcy--not only to GPU customers but to customers of many other utility companies. We also believe that a bankruptcy will not necessarily resolve the financial issue surrounding TMI-2 cleanup that would most likely precipitate the action.

The following brief analysis of what a bankruptcy might entail for a GPU company is intended only to identify, not resolve, issues that would most likely arise. It is also intended to point out how few precedents are available on which to make a judgment that a bankruptcy would be good or bad for GPU.

The nature of a bankruptcy initiation is quite clear

In its simplest form, a company that is unable to meet its financial obligations as they come due may be placed under the supervision of a bankruptcy court. Just a failure to pay its bills, however, would not automatically render a company bankrupt. A bankruptcy court would first have to be petitioned for an "order for relief." This step can be taken on a voluntary basis by the company filing a petition or it can be an involuntary action forced upon it by three or more unsecured creditors jointly filing a petition to protect their interests.

The nature of the bankruptcy process is to provide for an equitable distribution of the assets of the bankrupt company among its creditors and for the discharge of the bankrupt company from its debts. Ideally, the process should benefit both the creditors and the debtor. This can be done through (1) a liquidation of the debtor's estate by filing the petition under Chapter 7 of the Bankruptcy Code or (2) a reorganization of its financial structure under a Chapter 11 filing so that it can continue its business operations. In a Chapter 7 case, the court-appointed trustee is required to collect the debtor's assets and reduce them to money. Thus, a Chapter 7 proceeding culminates in a sale of individual assets of the debtor or of the debtor's business as a whole. The purpose of a Chapter 11 proceeding, on the other hand, is to implement a reorganization plan for the debtor. This goal implies that the bankrupt firm would continue its business operations during the reorganization proceedings.

It is generally assumed that a Met Ed or GPU bankruptcy would be in the form of a reorganization, rather than a liquidation. In a situation where the debtor supplies the public with a basic necessity, such as electricity, the public's needs would be better satisfied by reorganization. The remainder of this discussion adopts this assumption and addresses only the Chapter 11 reorganization process.

Once the court issues an order for relief, the interested parties begin the process of developing a reorganization plan to rehabilitate the debtor. The commencement and continuation of most proceedings against the debtor and its property are stayed. Committees representing the various classes of creditors and equity interests may be organized to protect their particular interests. A trustee may be appointed to administer the estate and the reorganization process although the debtor company could be allowed to manage its own affairs during a reorganization. Business continues, as normal as possible, but under the court's supervision.

During the reorganization period, the debtor is provided some special relief to allow it to initially suspend payment on its liabilities and protect its assets with a view towards reorganizing its financial structure. For instance, most actions against the debtor and its property are automatically stayed and the accrual of post-petition interest on unsecured indebtedness is suspended. The company, acting under the court's supervision, is allowed to reject "executory contracts" and avoid preferential transfers. Creditors, of course, will petition the court seeking adequate protection for their interests. Thus, a bankruptcy court will be faced with such issues as whether (1) relief can be granted from the automatic stay, (2) there is sufficient collateral to pay interest on secured debt, (3) a particular contract is executory, (4) certain assets may be sold, or (5) particular expenses are administrative and, therefore, entitled to first priority for payment.

Possible effects of a bankruptcy difficult to assess

It is difficult to assess the consequences of bankruptcy for several reasons. For example, the current bankruptcy law, enacted in 1978, 1/ has not been interpreted by the courts to any great extent. Furthermore, because no investor-owned electric utility has ever become bankrupt, there is little experience in this area on which to draw.

1/The Bankruptcy Reform Act of 1978, P.L. 95-598.

The nature of the bankruptcy proceeding itself is unpredictable, and most decisions made by a bankruptcy judge during a reorganization process are influenced by the facts peculiar to the particular situation.

A Met Ed or GPU reorganization would probably be complicated. Not only would a bankruptcy court have to face the normal bankruptcy issues referred to previously, but it would also have to address some rather complex issues related to Met Ed's status as a public utility and member of a holding company, as well as issues related to the TMI cleanup. Some of the questions that would require answers follow:

--Are the GPU subsidiaries so linked that a Met Ed bankruptcy would force the other companies into bankruptcy too?

--How will the TMI-2 cleanup costs be treated by the bankruptcy court?

--What is the effect of bankruptcy on the TMI operating agreement?

--What is the effect on the TMI operating license?

--What authority does the bankruptcy court have in relation to the PaPUC?

--How can electrical service to consumers be maintained?

It is unclear whether these would actually become issues in a reorganization proceeding and, if they were raised as issues, how the court would resolve them. Because of the complexity of the issues, however, what can be predicted with some certainty is that a Met Ed reorganization would be a long and protracted proceeding involving numerous parties with diverse and often inconsistent interests. Met Ed, its stockholders, and its creditors would not be the only participants in the proceedings because of the company's status as a regulated public utility and member of a holding company. The Securities and Exchange Commission would play a prominent role in the reorganization as a result of its regulatory responsibilities under the Public Utility Holding Company Act of 1935. PaPUC, NJBPU, and Federal regulatory agencies might be allowed to participate.

Bankruptcy proceedings could have a disrupting influence on customer service. Each party would undoubtedly appear before the court to establish its claims and priorities and to intervene in management and operation matters in order to protect its interests. Efficient operation and management could

become quite difficult. The reorganization process would become expensive to administer. The company's access to capital markets and its relations with its suppliers of fuel and materials could be affected. All of this would undoubtedly translate into a higher cost to the ratepayer. Furthermore, the NRC staff has concluded that bankruptcy would not solve the problems which initially led to financial distress. The site of the accident would still have to be decontaminated, and replacement power would still have to be purchased to meet the requirements of the public.

Some tentative costs of bankruptcy have been identified

The uncertainty attached to the actions that could be taken by the court in a bankruptcy proceeding involving a public utility affects any cost estimate attempting to show the possible consequences of a bankruptcy action. Despite this uncertainty, the Arthur Young and Company bankruptcy study for the NJBPU on Jersey Central, did quantify some of the costs that might be incurred by the different parties. The costs of a bankruptcy proceeding for Jersey Central and its customers were estimated to range from $630 to $800 million over a 10-year period. These costs include the loss of the relatively low interest rate on outstanding long-term debt and preferred stock, a higher required return on common stock, the increased cost of debt and preferred stock for future capital needs, and the administrative costs of the legal proceedings. Since these costs are primarily debt related, comparable costs for Met Ed would likely be somewhat less since the outstanding debt and future capital requirements are lower. The Arthur Young study also calculated that even under the most favorable evaluation of bankruptcy using extreme but possible assumptions as to what might happen, costs could reach $190 million over a 10-year period.

The impact of a bankruptcy on financing costs would probably not be limited to the GPU companies. The expected effect of a utility bankruptcy on the industry as a whole was considered by the Arthur Young study, although it was not quantified. In the study, it was pointed out that a bankruptcy of Jersey Central (and a similar effect could be presumed for any other utility) would likely introduce new, precedent-setting concepts of risk bearing and return on investment in the utility industry. The risk premium applied to the bankrupt company was viewed as possibly spreading to other utility companies across the country. The study concluded that if the risk premium is spread broadly enough, even a small differential in financing costs would have large overall costs to consumers of electric power.

A recent study on the effects of a utility bankruptcy by a major securities firm, 1/ however, did quantify the additional financing costs resulting from the TMI accident. The authors of the study concluded that TMI-related issues have already added a risk premium of about 0.75 percent to recent utility debt and equity offerings. They estimated that based on 1981 new-debt and equity-financing needs of $16 billion, ratepayers will be paying about $170 million more each year in added financing costs. The study postulates that given a GPU bankruptcy, at least an additional 1-percent risk premium would likely be assessed for utility financing, raising the total costs to ratepayers across the country by $400 million annually.

Some short-term benefits are possible but uncertain

The potential costs of a bankruptcy need to be considered in light of possible benefits that might accrue if a bankruptcy action were an option. Our assessment of such possible benefits tends to parallel the Arthur Young observation that although some benefits might emerge from a bankruptcy action, they could probably be achieved without such action at less cost and with greater efficiency. It is important to note that the value that might be assigned to both advantages and disadvantages of bankruptcy is a reflection of the views of each interested party. The Arthur Young study concluded that these views are dependent upon and influenced by factors such as judgments about equity, potential fault, public policy, and social values.

A proposed benefit from a bankruptcy could be an improvement in the company's short-term cash flow. As we indicated earlier, one of the first steps the court would take would be to stop the payment of pre-petition debts and suspend interest and dividend payments. Met Ed, for example, paid over $57 million for interest charges in 1980 and had current liabilities on the books of nearly $129 million at year end. However, the court could decide that the company should continue paying interest to secured debt holders, and the cash availability would be reduced accordingly. The Arthur Young study also pointed out that the transfer of costs from ratepayers to creditors if interest payments were suspended does not create a new economic savings. Any short-term advantage will likely result in additional costs to future ratepayers as investor's required higher risk premium and bankruptcy costs are recovered through rates.

1/M. Anthony May and Evan J. Silverstein, "The Electric Utility Industry: The Cost of Capital Effects of the Three Mile Island Mishaps," L.F. Rothschild, Unterberg, Towbin, New York, Apr. 8, 1981.

Other benefits that might result from a bankruptcy include (1) a new atmosphere for change that might trigger financial assistance from State or Federal legislators or regulatory agencies and (2) an opportunity for the orderly treatment of the TMI accident costs. Whether these or other perceived advantages would actually materialize in a bankruptcy action is as uncertain as what the actual costs might be.

CONCLUSIONS

GPU cleanup cost estimates have been plagued by the lack of accurate data on the conditions inside the TMI-2 containment building and the uncertainty of the regulatory environment within which the cleanup activities will take place. The $150-million cost increase that resulted when the restart was slipped by 2 years indicates the economic impact of extending the cleanup schedule.

We do not believe that the lack of immediate danger to the public health and safety from TMI-2 in its present state should result in unwarranted delays in expediting the cleanup. We believe that the continued financial viability of the GPU System is vital in maintaining reliable service to Pennsylvania and New Jersey customers and that a dissolution of that viability is entirely possible until the cleanup cost issue is resolved.

Bankruptcy is always an option for a company that is facing severe financial distress, and there appears to be a potential for some short-term advantages to a GPU bankruptcy. We believe, however, that the uncertainty that surrounds the treatment of the issues by a bankruptcy court, the potentially adverse effects on the utility industry as a whole, the ultimate longer-range cost impact on GPU consumers, and the lack of assurance that a bankruptcy would resolve the cleanup issue tend to disfavor bankruptcy as a means of alleviating GPU's financial problems.

CHAPTER 5

SEVERAL OPTIONS EXIST FOR FINANCING THE TMI-2 CLEANUP COSTS

The inability of GPU to finance both the cleanup costs and maintain system reliability requires that most of the necessary funding for TMI-2 cleanup will have to come from sources other than GPU System earnings.

Numerous options have been proposed for providing cleanup cost support. These include (1) new ownership for the TMI units, (2) nuclear fuel enrichment surcharge, (3) mandated insurance assessment, (4) GPU funding from increased rate revenue and stockholder earnings (5) Federal research and development assistance, and (6) industry contributions. These options are not all inclusive and each one has its limitations, some more so than others. We believe, however, that they represent a cross-section of the kinds of solutions that are being proposed for funding the cleanup costs. Within the options listed, we further believe that a combination of options rather than any single one has the greatest chance for successfully resolving the cleanup funding problem. One such combination would be a sharing of the costs among ratepayers, the Federal and State Governments, and the utility industry. GPU is currently working to develop such a shared funding arrangement and DOE officials have developed a proposed research and development program at the Federal level.

The successful resolution of the current impasse over cleanup funding will require leadership which we believe rests with State officials in Pennsylvania and New Jersey. State officials should, in our view, take the lead in working with GPU and the utility industry in reaching agreement on a method for resolving the TMI-2 cleanup effort. It will also take close cooperation and support of the Federal sector, however, since the key cleanup components of public health and safety and high-level radioactive waste management and disposal are within its purview. In our opinion, the Federal sector response to requests for cooperation and assistance in connection with the TMI-2 cleanup will greatly influence the future direction of nuclear power as a commercial undertaking.

The following is our analysis of the six options enumerated above. Probably no one option satisfies the concerns of all the potential contributors and some appear to have serious implementation problems.

NEW OWNERSHIP OF TMI UNITS

The takeover of the TMI units by a non-GPU entity has been discussed in several studies as a means of relieving the GPU companies from the cleanup cost burden. A number of possible

new owners have been considered, including State public power authorities, the Federal Government, and another utility company. It is obvious that the units would have to be sold as a package, since the new owner would assume the TMI-2 cleanup responsibility and TMI-1 revenues would provide a source of funds for that purpose. The Edison Electric Institute (EEI) Task Force on Nuclear Institutional Issues estimated that perhaps $80 to $100 million annually could be raised for cleanup purposes by selling TMI-1 energy at something less than GPU's current replacement power cost. The ratepayers would not get the full benefit of the lower-cost TMI-1 energy but would get some reduction in current power costs. Increases in operation and maintenance expense and capital cost since the EEI study, however, could reduce the expected level of cleanup funds available from TMI-1 energy sales to $30 to $40 million.

In certain instances, either a lease or sale of the TMI units could become mired in regulatory red tape and jurisdictional issues which raises questions as to the practicality of the option. The transfer of ownership would involve both PaPUC and NJBPU at the State level. While the State regulatory agencies would lose control over any rates charged for wholesale energy sales from TMI-1, PaPUC would probably exercise jurisdiction over any ownership transactions involving the TMI units because of their location.

FERC would assume rate jurisdiction over future wholesale energy sales from TMI-1 but would not have to approve any sale or lease arrangement. At the Federal level, such approval would involve the SEC under the provisions of the Public Utility Holding Company Act.

Any transfer of authority for nuclear plant operations would of necessity involve NRC. Met Ed is the licensed operator and it would be necessary for the new owner to assure NRC that it could safely operate the facility. This could involve an extensive licensing review by NRC.

The biggest problem of course, is finding a willing buyer. The uncertainties attached to obtaining all the necessary approvals would certainly affect any evaluation of TMI as an investment opportunity. Our discussion with PaPUC indicated that a takeover of TMI that would exclude State jurisdiction over setting rates would not be viewed in a favorable light. The creation of a public power authority to buy TMI and operate it is not a new idea, but it would probably take considerable time to accomplish since Pennsylvania has no provision for such an authority at this time. It is also questionable whether the State would back the necessary bond issues needed to raise sufficient capital to buy the units.

NUCLEAR FUEL ENRICHMENT SURCHARGE

The EEI task force considered as one option increasing the price DOE charges domestic utilities for enrichment of their uranium fuel. The task force estimated that a 12-percent increase in cost would provide about $100 million annually, which would be used to provide cleanup funding. It was assumed that since the increase would relate directly to fuel costs, it could probably be passed on to consumers as part of fuel adjustment clauses without formal public utility commission hearings. Such a procedure would also limit participation in the cleanup to utilities operating nuclear facilities.

There are a number of problems with the concept, however, that would have to be overcome. The present statute requires that enrichment charges by DOE are to be based on the cost of the service rendered. 1/ The statute is probably not broad enough to allow a surcharge for another purpose, such as TMI-2 cleanup. It is not clear that additional legislation could be passed that would permit DOE to make such an assessment.

If the surcharge were applied to all customers, foreign utilities who presently receive enrichment services would also be required to bear part of the cleanup cost burden since DOE cannot discriminate in the prices charged to its customers. This could involve serious contractual and diplomatic considerations.

We believe the assumption that an enrichment surcharge could be passed to customers through a fuel adjustment clause without a hearing is probably invalid. Opposition to using the surcharge for TMI-2 cleanup costs could easily result in regulatory determinations that such costs would not be allowed in the fuel costs.

The timing of the cost recovery would pose a major hurdle for some utilities. The task force report pointed out that while most of the fuel enrichment surcharge would ultimately be recovered through higher fuel adjustment charges, such recoveries would not occur until the fuel is actually used to produce electricity. This could be as long as 5 years. The utility industry, therefore, could be faced with financing as much as $340 million by 1986, before the added enrichment charges could begin to be recovered.

1/Atomic Energy Act of 1954, Section 161.

MANDATED INSURANCE ASSESSMENT

GPU had the TMI units insured for $300 million--the maximum amount available at the time of the accident. The insurance proceeds are being used to cover most of the cleanup costs incurred, but they will not be sufficient to cover all expected costs. Current estimates indicate that about $600 million in excess of insurance proceeds will be required over the next 4 to 6 years to completely decontaminate the unit.

One option for meeting at least part of the estimated financial needs is to require an increased level of property insurance coverage for each nuclear reactor beyond what is presently available. Part of the premium proceeds would then be used to help pay cleanup costs. The argument advanced in support of this option is that if the utility industry had been aware of the magnitude of the financial exposure resulting from a TMI-type accident prior to March 28, 1979, it would have taken the appropriate steps to increase the existing property insurance levels above the $300-million limit. Payments from insurance premiums for the TMI-2 cleanup are viewed as a corrective action to rectify a prior failure to adequately assess the real need for insurance coverage.

Payments for damage from an insurance fund established after an accident has occurred has some precedent in the insurance industry and/or Federal government programs. We think it highly unlikely, however, that the insurance industry would voluntarily enter into such a program for the TMI-2 cleanup. Furthermore, there is some question as to whether public utility commissions would allow their jurisdictional utility companies to collect any insurance premiums marked for TMI-2 cleanup costs in their rates.

Total participation by utilities with nuclear generation would be required to make the program work. Such participation could be obtained either as a condition of a NRC operating license or through specific legislation. 1/ .State utility commission approval of an expense passthrough to utility company consumers is also viewed as more likely if participation is mandatory.

Two separate legislative bills proposing an expanded insurance/TMI-2 cleanup cost coverage have been introduced in the Congress. House bill 2512 2/ proposes the establishment of a quasi-governmental National Property Insurance Corporation with mandatory participation by all utilities having nuclear facilities. In essence, annual premiums would go to pay 75

1/If court challenges to such a retroactive insurance scheme occur, its usefulness as an option may be impaired.

2/Nuclear Powerplant Property Damage Insurance Act of 1981.

percent of the non-insured TMI-2 cleanup costs if certain conditions regarding the financial integrity of GPU or its successor were agreed to by PaPUC and NJBPU. Under the clean-up assistance plan, one-half of the insurance contributions would be a grant, with the remaining half repayable by GPU over some future time period through an increased premium.

Senate bill 1226 1/ is essentially the same as H.R. 2512. It, too, proposes mandatory participation in an insurance program, with payments to GPU for cleanup from insurance premium proceeds. The principal difference between the House and Senate bills is that S. 1226 would provide all insurance proceeds on a grant basis to GPU--no repayment is envisioned.

The bills have two predominate features. They propose (1) a specific course of action regarding resolution of the TMI-2 cleanup issue and the underinsured status of utilities with nuclear units, and (2) that funds for TMI-2 cleanup and any future nuclear accidents will be derived from those who benefit from the use of nuclear power.

Criticisms of the bills from some electric utility and insurance company representatives include (1) industry concern about the open-ended obligation of future utility contributions, (2) a reluctance by private sector interests to have the Government involved in an insurance program when all private alternatives for providing such insurance have not been exhausted, and (3) a feeling that TMI-2 cleanup and increased insurance coverage should be addressed separately.

Proponents of the bills, however, point out that ceilings on utility contributions can easily be set by amending the proposed legislation. They also point out that the bills do not exclude utility or private insurance industry participation in providing insurance but only provide an additional layer of insurance to increase the total coverage available.

GPU FUNDING FROM INCREASED RATE REVENUES AND STOCKHOLDER EARNINGS

Revenue received from customers for electric service provides the only significant source of funds for the GPU companies. As we pointed out in chapter 3, the revenue is used to pay the normal expenses of the companies and provide an equitable rate of return on stockholders' equity. The level of revenue collections allowed is set by PaPUC and NJBPU within the general guidelines that rates must be just and reasonable and that the companies are allowed to earn a fair return on their investment.

1/Nuclear Powerplant Property Damage Insurance Act of 1981.

One of the options for funding TMI-2 cleanup is to pass these costs through to the companies' ratepayers. This could be done either as a direct surcharge which would be specifically marked for cleanup expenses or through some other ratemaking methodology that would indirectly provide the companies sufficient revenue to meet normal expenses and earnings plus enough additional funds to pay for the cleanup.

PaPUC has not been allowing any operating revenues collected by Met Ed to be used for cleanup expenses. Furthermore, TMI-related rate increases granted by PaPUC and NJBPU since the accident generally have only been sufficient to cover replacement energy costs, although the April 9, 1981, order by PaPUC included $16.5 million annually for TMI-1 restart-related operations and maintenance expenses. These increases were more than offset by reductions in base rates. Several rate increases have been granted to Jersey Central for non-TMI expenses in addition to those that are TMI-related.

The effect of the PaPUC and NJBPU rate orders has been to increase average residential costs per kWh for GPU System customers at only a slightly higher rate than those experienced by customers of neighboring utilities in Pennsylvania, New Jersey, and New York. This is illustrated in table 17.

Over the 1976-80 period, for example, the kWh costs for the GPU System's residential customers increased at an average annual rate of 11.13 percent while kWh costs for non-System customers increased an average of 10.66 percent annually. GPU System costs increased at a higher rate for the 1979-80 post-accident period, however, with the average annual increase amounting to 14.5 percent as compared to an 11.13 percent annual increase for non-GPU companies during the same period.

In addition to comparing average residential costs on a per kWh basis, costs can also be compared based on the percent of disposable household income used to pay for electric energy. These percentages were computed for 1980 actual energy costs. The computations show that energy costs as a percent of disposable income ranged from 1.4 percent to 2.6 percent with the GPU System customers in the mid to upper range--1.8 to 2.2 percent.

GPU has estimated that it would need about $150 million per year to expeditiously move forward with cleaning up TMI-2. We estimated what GPU System rates would have been in 1980 if the entire $150 million had been financed through consumer rates. Table 18, page 63, shows the effect of this additional cost on average residential rates for the three GPU companies, the percent of disposal household income used for electric energy costs, and the relative ranking of the companies with the cleanup costs added to their rates.

Table 17

Average Residential Electric Rates for Met Ed, Penelec, and Jersey Central Customers Compared to Customer Rates for Neighboring Utilities (1976-80)

1976		1978		1980	
Utility	¢/kWh	Utility	¢/kWh	Utility	¢/kWh
Consolidated Edison Co. of New York, Inc.	8.78	Consolidated Edison Co. of New York, Inc.	9.60	Consolidated Edison Co. of New York, Inc.	11.82
Orange and Rockland Utilities, Inc.	6.76	Orange and Rockland Utilities, Inc.	8.10	Orange and Rockland Utilities, Inc.	9.84
Public Service Electric and Gas Co.	5.75	Public Service Electric and Gas Co.	6.60	Public Service Electric and Gas Co.	8.42
Long Island Lighting Co.	5.19	Long Island Lighting Co.	6.27	Long Island Lighting Co.	8.42
Philadelphia Electric Co.	4.94	Duquesne Light Co.	5.92	Central Hudson Gas and Electric Corp.	7.72
Atlantic City Electric Co.	4.78	Jersey Central Power and Light Co.	5.54	Jersey Central Power and Light Co.	7.55
Central Hudson Gas and Electric Corp.	4.75	Philadelphia Electric Co.	5.50	Philadelphia Electric Co.	7.33
Duquesne Light Co.	4.73	Central Hudson Gas and Electric Corp.	5.43	Duquesne Light Co.	6.83
Jersey Central Power and Light Co.	4.71	Atlantic City Electric Co.	5.11	Atlantic City Electric Co.	6.71
Metropolitan Edison Co.	4.47	Metropolitan Edison Co.	4.65	Metropolitan Edison Co.	6.21
Pennsylvania Electric Co.	4.10	Pennsylvania Electric Co.	4.70	Pennsylvania Power Co.	5.94
Pennsylvania Power Co.	4.08	New York State Electric and Gas Corp.	4.59	Pennsylvania Electric Co.	5.51
Rochester Gas and Electric Corp.	3.80	Pennsylvania Power Co.	4.56	New York State Electric and Gas Corp.	5.25
New York State Electric and Gas Corp.	3.71	Rochester Gas and Electric Corp.	4.28	Rochester Gas and Electric Corp.	5.09
Pennsylvania Power and Light Co.	3.55	Pennsylvania Power and Light Co.	4.06	Niagara Mohawk Power and Light Co.	4.88
Niagara Mohawk Power and Light Co.	3.41	West Penn Power Co.	3.99	Pennsylvania Power and Light Co.	4.34
West Penn Power Co.	3.27	Niagara Mohawk Power and Light Co.	3.95	West Penn Power Co.	4.12

Source: Statistics of Privately Owned Electric Utilities in the United States, 1976 and 1978 and FPC Form 1, 1980.

Table 18

Estimated Met Ed, Penelec, and Jersey Central Residential Rates for 1980 With TMI-2 Cleanup Surcharge of $150 Million Per Year

Utility	¢/kWh	Percent of Disposable Household Income
Consolidated Edison Co. of New York, Inc.	11.82	1.4
Orange and Rockland Utilities, Inc.	9.84	2.6
Public Service Electric and Gas Co.	8.42	1.5
Long Island Lighting Co.	8.42	1.9
Jersey Central Power and Light Co.	7.8	2.3
Central Hudson Gas and Electric Corp.	7.72	2.4
Philadelphia Electric Co.	7.33	2.0
Metropolitan Edison Co.	7.2	2.3
Duquesne Light Co.	6.83	1.5
Atlantic City Electric Co.	6.71	2.3
Pennsylvania Power Co.	5.94	2.3
Pennsylvania Electric Co.	5.8	1.9
New York State Electric and Gas Corp.	5.25	2.0
Rochester Gas and Electric Corp.	5.09	1.5
Niagara Mohawk Power and Light Co.	4.88	1.6
Pennsylvania Power and Light Co.	4.34	1.7
West Penn Power Co.	4.12	1.8

The addition of the cleanup charge would have had the greatest impact on Met Ed customers since it has a 50-percent share of TMI-2. The 1.0 cent per kWh increase would raise the actual 1980 average residential rates by 15.5 percent and would increase electric energy's share of disposable income by 0.3 to 2.3 percent--equal to or below the percentages experienced by customers of five other utilities including Jersey Central. Penelec's and Jersey Central's customers' rates would increase 6 percent and 3.8 percent respectively, while the disposable income percentage would increase by 0.1 percent for customers of each utility.

The resolution of the cleanup funding issue is important, but so is the continued ability of the GPU System to meet its construction and long-term financing needs. As we pointed out in chapter 3, the present rate revenues are not sufficient for the companies to meet these commitments on a continuing basis and present a favorable investment opportunity for the financial community. Additional rate increases beyond the amounts needed for cleanup costs will be required to maintain the system's financial viability. To demonstrate the effect of this increase, we also estimated what the companies' residential rates would have been in 1980 if the TMI capital and operating costs had been allowed to remain in the companies' base rates. The

inclusion of these costs would have added an additional 0.9 cent per kWh for Met Ed, 0.3 cent per kWh for Penelec, and 0.3 cent per kWh for Jersey Central ratepayers. The following table illustrates what the relative residential rates would have been in 1980 if GPU ratepayers had financed $150 million of cleanup costs and the TMI units had been left in the base rates. 1/

Table 19

Estimated Met Ed, Penelec, and Jersey Central Residential Rates For 1980 With TMI Units in Base Rates and a TMI-2 Cleanup Surcharge

Utility	¢/kWh	Percent of disposable household income
Consolidated Edison Company of New York, Inc.	11.82	1.4
Orange and Rockland Utilities, Inc.	9.84	2.6
Public Service Electric and Gas Co.	8.42	1.5
Long Island Lighting Company	8.42	1.9
Jersey Central Power and Light Co.	8.2	2.4
Metropolitan Edison Co.	8.0	2.6
Central Hudson Gas and Electric Corp.	7.72	2.4
Philadelphia Electric Co.	7.33	2.0
Duquesne Light Co.	6.83	1.5
Atlantic City Electric Co.	6.71	2.3
Pennsylvania Electric Co.	6.1	2.0
Pennsylvania Power Co.	5.94	2.3
New York State Electric and Gas Corp.	5.25	2.0
Rochester Gas and Electric Corp.	5.09	1.5
Niagara Mohawk Power Corp.	4.88	1.6
Pennsylvania Power and Light Co.	4.34	1.7
West Penn Power Co.	4.12	1.8

The addition of these two costs would increase rates to Met Ed customers by 29.3 percent over 1980 actual costs. Penelec's and Jersey Central's residential rates would increase by 11.5 percent and 8.2 percent respectively. In addition, the added costs would increase the share of disposable income paid by Met Ed customers for electricity to 2.6 percent--the highest level for all 17 companies.

Estimating future consumer rates is speculative. While table 19 indicates the relative consumer rates in 1980 under

1/These consumer rates included State and local taxes. We recalculated consumer rates after subtracting these taxes to determine the net cost of electricity. We found no significant shifts in Met Ed, Penelec, and Jersey Central relative rates.

the conditions described, we cannot make any definitive statements about future consumer rates. All major GPU and non-GPU Pennsylvania, New Jersey, and New York utilities have increased their consumer rates from 1976-80 by an average of about 11 percent per year. We would expect this general trend to continue. There are a number of factors that will specifically affect future GPU consumer rates. Among these are

--TMI-1 restart, which will ultimately reduce annual purchased power costs;

--expiration of the deferred energy cost surcharges;

--continued availability of economical coal-based energy purchases;

--completion of a major purchase agreement;

--completion of the TMI-2 cleanup; and

--increased rates for non-TMI attrition, restoration of O&M to normal levels, improved return on shareholders' equity, Forked River amortization, and increased "non-TMI" energy costs.

The key parties in exercising this option are PaPUC and NJBPU. PaPUC has made its position quite clear, and it is questionable at this time how much of a rate increase related to cleanup costs would be allowed in Pennsylvania. Jersey Central serves an area heavily populated by fixed income residents with electrically heated homes. NJBPU officials said that past increases in rates have already imposed a heavy burden on these customers; hence, they are reluctant to add any more to their customer's cost of energy. Cleanup costs could be passed through to industrial and commercial users only. Such a regulatory decision might have serious economic repercussions, however, particularly if the affected consumers have high energy consumption.

A possible offset to some of the consumer cost increases described above is to divert part of GPU's earnings to the cleanup effort. As we pointed out in Chapter 3, stockholders have already lost over $150 million in earnings as a result of the accident and no dividends have been paid for the last six quarters. For future financing purposes, it is important that common stock dividend payments be restored as rapidly as possible. It may be, however, that the restoration of GPU's earning capacity should be accompanied by a contribution from the stockholders to the cleanup funds. In 1978, for example, the GPU System had a consolidated net income of over $138 million and paid common

stock dividends of over $106 million. If GPU's earnings level were restored to comparable levels, some portion of the dividend payments could conceivably be withheld from stockholders and used to reduce the consumer's share of cleanup costs.

Support for this part of the option may be derived from the benefits that would probably accrue to the stockholders if the cleanup funding problems were quickly resolved. In addition, since GPU's customers would be paying higher electric rates as a result of the accident, an argument can be made that the stockholder should also bear a portion of the cleanup burden.

Allocating a portion of the stockholders' earnings for cleanup costs, however, could adversely affect the utility and the entire industry. GPU investors may perceive that the contribution already made is sufficient, especially in view of the fact that while consumer rates have increased, GPU has not been allowed by PaPUC to apply any of the proceeds to the cleanup. The attractiveness of continued investment in GPU, or other electric utilities, would probably be diminished because investors may perceive that the risks of utility investment outweigh the benefits due to the future uncertain nature of predictable dividend payments that existed prior to the accident.

FEDERAL RESEARCH AND DEVELOPMENT ASSISTANCE

There are several aspects of the accident at TMI-2 which have been offered as justification for Federal research and development assistance in cleaning up the facility. The option is supported by the dual premise that (1) the Federal Government initiated and supported the shift to nuclear generation at electric utilities and (2) additional information can be obtained from TMI-2 which may advance reactor operating and waste disposal knowledge. Information gained from a research and development program could also reduce the cost of nuclear power by improving the safety and reliability of nuclear units and helping to reduce recovery time from any future accidents.

Since 1980, DOE has been working with GPU, NRC, and the Electric Power Research Institute (EPRI) on a program to obtain and exchange information on the technical aspects of the accident results. This program has been of value in providing limited information on the effects of a nuclear accident on reactor and containment building equipment, the distribution of radioactive contamination resulting from an accident, and the treatment and elimination of accident wastes. Because of the data-gathering nature of the program, DOE's research and development activities have not directly contributed to the cleanup. Appropriations for this initial program amounted to $10.5 million in fiscal years 1980 and 1981 with $10 million requested for fiscal year 1982.

DOE has also proposed a fiscal year 1982 research and development program of $27 million (possibly costing $75 million over 3 years) for TMI-2 to (1) develop tooling and methods to inspect the damaged reactor core before removing the pressure vessel head, (2) remove the core and perform examinations prior to, during, and after removal of the fuel, and (3) perform immobilization experiments on the radioactive wastes captured in processing the containment building water to demonstrate the feasibility of various techniques for immobilizing such wastes. This program is in addition to the on-going data acquisition program which will continue at approximately $10 million each year. Except for a small number of fuel specimens, the DOE plan does not include shipping or disposing of the damaged reactor core. Although TMI-2 does not appear to pose a current public health and safety hazard, DOE is anxious to begin this program so that the information obtained can be generically applied to current and future NRC licensing criteria as well as contributing to existing technology for processing and disposing of the unique wastes resulting from reactor accidents. New engineering and technological data obtained from accelerated access to the core could justify modifications to some NRC requirements relating to the safety of nuclear powerplant operations.

Even though there has been fairly widespread support for this limited DOE participation in the TMI-2 cleanup, administration officials have stated that Federal research and development assistance is contingent upon the development and implementation of a comprehensive cleanup program. Included in this program should be the participation of other entities which have an interest in the TMI-2 cleanup such as GPU, the electric utility industry, and other cognizant Federal and State regulatory organizations.

Implementation of the expanded DOE research and development program will require GPU participation in the proposed research and development effort, NRC cooperation, and congressional approval of the required DOE funding. It is expected that DOE's research and development program will cover at least a 3-year period and that the successful acquisition of the research data will depend to a large extent on DOE's participation in all of the stages of reactor disassembly and core removal. GPU also needs to know with some certainty the extent of DOE's participation in the reactor disassembly effort. Consequently, the administration and the Congress need to consider approving a total research and development fund with a multi-year spending provision to assure other interested parties of the Federal Government's concern for and interest in the TMI-2 cleanup project.

DOE participation in a research and development program at TMI will require congressional budget approval of the proposed funding levels. The current emphasis on curtailing Federal expenditures may make the required approval difficult

to attain. In addition to the budget restrictions, some objections have arisen to any Federal funding of the TMI-2 cleanup effort regardless of the purpose for which it would be used. Resistance to Federal participation in the cleanup is also based on the assessment that current technology is sufficient to perform all cleanup activities and that DOE would actually gain little new knowledge by its participation.

INDUSTRY CONTRIBUTION

The electric utility industry is perhaps the most affected by the accident at TMI on a long-term basis. As indicated in chapter 4, some increase in the cost of borrowing money for construction and other projects has already been attributed to the accident at TMI-2. As long as the cleanup problems continue to be unresolved, high financing costs are likely to continue or increase over time and contribute to the upward spiral of utility rates. Greater industry participation may also help reduce the threat of bankruptcy to GPU. If the company is forced into bankruptcy, not only are higher costs for utility borrowing likely to result but the actual supply of funds may be severely limited. Another incentive for industry participation in the cleanup is the potential to assist in the development of a more effective and precise regulatory program which could be applied to future accidents and reduce generating plant recovery timeframes. This option, therefore, proposes that it is in the best interest of the industry and its customers to clean up the damaged facility. The industry commitment can be in the form of monetary contributions, personnel assistance, or both.

An aggressive industry role in the TMI-2 cleanup could produce long-term benefits. Investment in electric utilities has typically been viewed by investors as a safe and reliable avenue for receiving dividend returns. The accident at TMI and its related regulatory uncertainty, however, seem to have been the most dramatic in a series of events that have been working to shake investor confidence in electric utilities--especially those owning nuclear facilities. Consequently, electric utilities in need of financing are finding that their access to the capital market is being restricted. The continuation of the TMI-2 dilemma will probably only work to exacerbate the difficulty for the industry in obtaining financing. If GPU is forced into reorganization, the ripple effect on capital access for the industry will probably create new and costly precedents in the interest rates electric utilities will be forced to accept to finance construction projects. It is less likely that long-term negative after shocks of TMI-2 will exist in the capital market if the industry is aggressive in quickly responding to the needs of GPU.

Electric utility industry response to the problems at TMI can come in several forms. Greater assistance could be directed

through EPRI, the industry's research organization. While a reprogramming of its projects to assist TMI may require the approval of State utility commissions, such realignment of EPRI's activities can be justified because similar accidents could occur at other member utilities. The knowledge gained from the EPRI involvement at TMI-2 could have direct application and could accelerate other utilities' recovery process.

Another avenue for greater industry participation is the contribution of personnel to assist in the decontamination process. Again, this may require State utility commission approval, but could result in a nucleus of trained and experienced industry personnel. The training received during the cleanup process could also be used as a foundation for industry development of more effective procedures for working in high-radiation areas for eventual decontamination of retired nuclear generating plants.

A possible incentive for greater industry participation in the resolution of TMI-2 is the potential to assist in the development of more precise and effective regulatory programs for accident recovery. There is general agreement that the TMI-2 cleanup process can be accomplished using existing technology. Although available, considerable debate has occurred on the application--and therefore the regulation--of this technology. Besides the direct knowledge obtained from the cleanup operation, industry participation in accident recovery programs could assist in upgrading recovery procedures and reducing regulatory timeframes. Such a program would in turn benefit utility customers who would have to rely on expensive purchased power for a shorter period of time in the event of an accident at another utility.

Edison Electric Institute task force officials said that industry participation at TMI on a voluntary basis probably does not offer the degree of assistance needed by GPU. They believe that State utility commissions responsible for the actions of the contributing utilities will be reluctant to allow them to voluntarily expend financial and personnel resources to assist GPU at the expense of their customers. Shareholders may also object to a utility making a contribution from its earnings. Industry support for the cleanup effort may, therefore, be limited unless some agreement is reached with State utility commissions or a retroactive insurance agreement can be negotiated.

CONCLUSIONS

There is little question that the first major nuclear accident has had a significant impact on a large utility system, its customers, both State and Federal regulatory agencies, and the electric utility industry as a whole.

We believe that the decisions made in the resolution--or lack of resolution--of the problems facing GPU will strongly influence the future course of the nuclear industry as it relates to the commercial production of electric power.

The resolution of GPU's problems will require the application of more than one single option, although some of the individual options described previously have the potential for funding all or a major part of the cleanup effort. For example, it is possible to impose the entire financial burden of cleanup and maintaining the GPU System on the ratepayers. The large increase over pre-accident rate levels, both in real terms and in relation to increases on other utility systems, however, could result in numerous hardship cases. An argument can be made that System customers have benefitted from the low rates in the past--due in part to GPU's use of nuclear power--and that TMI-2 is a System cost that rightfully should be borne by its customers. In addition, Pennsylvania residents and businesses, in particular, will reap the major economic benefits of having the cleanup issue expeditiously resolved.

On the other hand, there are benefits to be gained by both customers of other utilities with nuclear reactors and the Federal Government that would warrant some assistance to GPU for the TMI-2 cleanup. The increased risk investors have attached to utility financing has already raised the cost of borrowed money. A failure to successfully resolve the cleanup issues could add to this cost, particularly if there were a bankruptcy on the GPU System. The increased costs for long-term capital are passed on to ratepayers, not only in the short run but over the life of all securities bearing the higher interest rates.

The Federal sector's involvement in nuclear power through the mandated regulatory activities of NRC and the responsibilities for the development of nuclear power and high level radioactive waste management of DOE, would also justify some Federal participation on the TMI-2 cleanup activities. It is apparent that the uncertainties surrounding the accident, particularly as they relate to the conditions inside the reactor itself, have made it more difficult for NRC to provide the positive, active guidance needed by GPU to move forward with the cleanup process. Much can be learned about what actually occurred that will be beneficial in improving the regulatory requirements regarding design and construction of similar nuclear facilities.

The argument can be made that the cleanup is a matter of concern to only the private sector and that the market place should decide the value of cleaning up the unit. While perhaps valid in many cases, it must also be remembered that the nuclear power industry is heavily regulated and that GPU

cannot make unilateral decisions that would then be judged by market-place responses. Consequently, we believe that along with the responsibility on the part of the GPU System customer and the utility industry to participate in funding the cleanup, there is also a Federal responsibility to participate. The Federal sector needs to use its regulatory authority in a manner that would expedite the cleanup while protecting the public health and safety, and participate in such a way as to enhance its knowledge of reactor accident consequences for providing guidance in future accident recovery efforts if necessary.

We believe a shared approach to funding the TMI-2 cleanup is fundamental and several potential participants have indicated a willingness to contribute to the project. DOE, as discussed previously, has proposed an expanded research and development effort at TMI-2 for at least one year. The utility industry, through EEI, has indicated a willingness to participate in the cleanup effort. On July 9, 1981, the Governor of Pennsylvania proposed a $760 million comprehensive cost-sharing plan for the TMI-2 cleanup, including the establishment of a "National Energy Research Institute" as a channel through which financial and technological support would be funneled. 1/

We believe that the primary leadership role in resolving the current impasse rightfully rests with State officials--the Governors of Pennsylvania and New Jersey, State legislators, and the PaPUC and NJBPU. These State officials, however, will need the cooperation and support of the utility industry and its regulators and the appropriate Federal entities--notably NRC in its Federally-mandated role over nuclear facilities, and DOE, with its research and development capability and responsibility for high level nuclear waste handling and disposal. The significance of nuclear power as a key element in the country's electric power generating mix over the next two decades would appear to justify the Federal sector's continued demonstration of interest in nuclear power by actively providing the support needed by the States in resolving the TMI-2 problems. The extensive studies performed on the TMI problems and issues should provide an adequate basis for a frank and open dialogue between GPU, industry representatives, and State and Federal regulatory agency officials on ways and means to resolve the cleanup impasse.

If the States accept the leadership role in resolving the cleanup issues, the Federal sector's cooperation could be provided in at least two ways. One way is for NRC to use its

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1/The proposed $760 million cleanup cost covers the period 1982-87. It also includes O&M costs for the period, a cost element not included in the cleanup estimate shown on page 44 of our report.

available authority to provide a regulatory environment that would expedite the cleanup effort and thereby reduce overall costs.

A complementary approach is to fund a multi-year research and development program using DOE's 3-year, $75 million projection as a benchmark for Federal involvement. The tasks performed during the program would provide important research and development data with some offset to GPU's reactor disassembly costs. DOE estimates that under a $75 million program, about $25 million of GPU's costs would be offset--or about 4 percent of the estimated $600 million needed to complete the cleanup.

Although DOE's proposed funding level may be adequate to support its research and development effort, it may not elicit the kind of financial support needed from other interested parties to allow any research and development activity. At the present time, OMB has restricted the use of future DOE funds until a program for funding the TMI-2 cleanup is developed.

We recognize that any requests for Federal funding will be matters for congressional consideration. In our opinion, positive support for any such requests will likely be interpreted by the industry, by State utility commissions, and by the financial community as a reaffirmation of the support of nuclear power given by past Congresses and administrations. A passive, or negative reaction, could have the opposite effect with a decided dampening of further nuclear power development in the private sector.

Beyond the Federal involvement projected above, we believe the remaining cleanup costs should be a matter for resolution by the involved States and the utility industry. We believe that the benefits that will accrue to all non-Federal entities should be sufficient to encourage an active participation in resolving the impasse. Various studies have indicated the cost to the utility industry if the cleanup issues are not resolved. It is also relatively easy to project the effect of various levels of cleanup funding on consumer rates. Therefore, any final sharing of the costs will undoubtedly require extensive negotiations among all parties. Strong leadership at the State level will be required, but we believe a precedent for handling future nuclear accident recovery problems can evolve from this experience.

The continued reluctance of the principal parties involved in the cleanup to initiate the actions necessary to resolve the funding problem may eventually require additional Federal sector involvement. If no resolution has been agreed on after a reasonable time period, it may be necessary for the Federal sector to develop a solution to the cleanup problems and obtain its implementation by the involved parties.

RECOMMENDATION TO THE SECRETARY OF ENERGY

To assure the availability of funding needed to complete an expanded research and development program at TMI, we recommend that DOE prepare a multi-year budget proposal for Federal participation in the TMI cleanup effort and present it to the Congress. The budget proposal should recognize the primary leadership role of State officials in working with GPU and the industry in the cleanup effort and within that parameter should clearly specify the objectives to be achieved by the Federal involvement, the work steps required in each fiscal year, the application of the program results, and the total funding needed to successfully meet the research and development objectives.

RECOMMENDATIONS TO THE CONGRESS

Given past congressional support for the commercial development of nuclear power, the continued Federal regulatory oversight of nuclear reactor operations and radioactive waste disposal, and the need to reduce the economic burden imposed by the TMI accident as much as possible, we recommend that the Congress provide the required multi-year funding to DOE for its research and development program at TMI. The information gained will be helpful in (1) developing procedures that will mitigate adverse consequences of any future accidents and (2) enhancing DOE and NRC nuclear power oversight activities.

We further recommend that the Congress closely follow the current efforts to resolve the funding problems for the TMI-2 cleanup through State and utility industry financing and DOE's research and development program. If these State-led efforts are not successful, we recommend that the Congress devise a mechanism which would serve to obtain the required financial assistance to complete the TMI-2 cleanup.

AGENCY COMMENTS AND OUR EVALUATION

DOE agrees that the rapid and safe cleanup of TMI-2 requires a cooperative effort of all concerned parties and that each one has a role to play in the process. DOE further stated that it is moving forward with a research and development program that will provide valuable data related to nuclear safety and cleanup technology and which it believes will be of substantial value to the entire nuclear community, DOE does not believe, however, that it is necessary to seek multi-year funding to support its proposed 3-year program. DOE officials feel that the normal annual review and Congressional authorization and appropriation processes will assure the program's consistency with DOE's

objectives and the cleanup needs. They further believe that DOE's plans for a multi-year program are sufficient bases for GPU and other parties to proceed with plans to fund and complete the cleanup.

We do not agree with DOE that a multi-year funding proposal for a TMI-2 research and development program is unnecessary. Although the Governor of Pennsylvania has taken the lead in proposing a method to fund the cleanup costs, we still believe that a commitment of Federal sector support for resolving the problems at TMI-2 is extremely important not only in eliciting the support of other interested parties but for the future of the nuclear utility industry as a whole. We believe that such support can best be expressed through an approved financial commitment for the entire effort rather than simply a multi-year plan with no total funding commitment to insure its successful completion. Within the total plan, we believe that an annual review of progress and need is necessary and should be an integral part of the overall program.

CHAPTER 6

CHANGES ARE NEEDED TO FACILITATE FUTURE ACCIDENT RECOVERY EFFORTS

Our review of the factors affecting the GPU System as a result of the TMI-2 accident disclosed two areas of concern that need correcting if the problems that face GPU are to be mitigated or eliminated in the event of another major accident at a nuclear generating unit. These concerns center around the (1) present underinsured status of utility companies which operate nuclear reactors and (2) changes needed in NRC's regulatory oversight of a utility's accident recovery efforts.

The early development of the nuclear industry was affected by the inability of the public utilities to obtain adequate levels of third-party liability insurance coverage for nuclear units. Passage of the Price-Anderson Act in 1957 helped solve this problem by providing a means for utilities to obtain this coverage. Property insurance coverage for nuclear units, however, was readily available to the utilities. Over the years, both liability and property insurance coverage for nuclear units have increased.

The TMI accident in March 1979, provided the first major test of the adequacy of existing liability and property insurance coverage. While the liability insurance coverage fostered under the Price-Anderson Act has been adequate in paying all claims to date, property insurance coverage has proven to be inadequate due to unanticipated decontamination expense. While only $300 million of property insurance coverage has been available, cleanup costs have been estimated at $1 billion. The recognition of this inadequacy has prompted an insurance and electric utility industry effort to increase property insurance coverage up to $450 million. However, property insurance coverage remains deficient.

Nuclear utilities are presently considering two broad proposals to provide a substantial increase in property insurance coverage beyond that which is currently available. In possible conjunction with existing sources of property insurance coverage, as much as $1 billion could be available to finance the cleanup of a nuclear accident under the proposed plans.

If the utilities are successful in obtaining the levels of property insurance coverage deemed adequate by NRC, we see no need for Federal Government involvement. However, if the utilities are unsuccessful in obtaining such coverage, a Federal Government requirement for mandatory insurance should be considered to protect the Government from the possibility of having to finance the future decontamination of a disabled nuclear unit in the event of another accident.

NRC has taken 27 months to allow GPU to proceed with the first phase of the cleanup efforts in the containment building. The initial priority given to the accident recovery efforts by NRC declined and by early 1980, criticisms were beginning to be made about the delays in moving forward with the cleanup process. GPU's proposal for processing the contaminated water in the containment building were held in abeyance by NRC until the Programmatic Environmental Impact Statement on the proposal was completed in March 1981. The uncertainties as to what cleanup methodologies would be appropriate, and public opposition to certain required cleanup activities, served to further limit or delay NRC regulatory approval of GPU's proposed efforts.

We believe that the experience demonstrates the need for NRC to develop a set of accident recovery guidelines that would be available for establishing procedures for any future accident recovery effort. The lessons learned from the TMI-2 experience should provide a sound basis for the development of such guidelines.

INCREASED UTILITY PROPERTY INSURANCE COVERAGE IS NEEDED

The present adequacy of third party liability insurance for covering offsite claims resulting from nuclear accidents to date is in contrast to the proven inadequacy of onsite property damage insurance coverage. The voluntary increases in property insurance coverage since 1957 reached the $300 million level just prior to the TMI-2 accident and have increased even further since then. The $450-million coverage level currently proposed is still less than what is needed, however, and the insurance organizations currently providing property insurance coverage are working to increase the level of coverage. Plans are under consideration to offer additional insurance coverage up to $1 billion through different insurance arrangements. If the present efforts in the private sector are not successful, the importance of, and need for, increasing property insurance coverage may require some type of Federally-mandated program.

Pre-accident growth of nuclear insurance coverage

The development of the private nuclear power industry was aided by congressional limitations established for third-party liability in the event of a nuclear accident. The offsite liability insurance coverage was accompanied by onsite property damage coverage designed to protect the interests of nuclear reactor owners.

Liability insurance had congressional backing

The Congress passed the Atomic Energy Act of 1954 to promote the peaceful development of atomic energy. It authorized private industry to construct and operate nuclear generating plants, subject to strict Government regulation. The early private development of nuclear power was delayed, however, because electric utilities were unable to obtain adequate insurance coverage for proposed nuclear plants. Insurance companies did not offer adequate third party liability coverage 1/ against a major nuclear accident. The companies were reluctant to underwrite this coverage because they felt that while the risk was remote, liability losses of several billion dollars from a single accident could be incurred.

To foster the growth of the nuclear industry and in recognition of the problems encountered in obtaining adequate third-party liability insurance the Congress enacted an amendment to the Atomic Energy Act. The amendment became known as the Price-Anderson Act of 1957. The act currently limits offsite liability to $560 million in the event of a major nuclear accident. Subsequent amendments to the Price-Anderson Act developed a complicated but effective means of providing this $560 million of liability insurance coverage.

The Price-Anderson Act now divides the liability insurance coverage into three "layers":

--The maximum amount of liability insurance available from private sources (first layer).

--Required utility industry self-insurance (second layer).

--Federal Government indemnity (third layer).

First-layer liabililty insurance coverage of $160 million is provided by two insurance pools in the private sector--American Nuclear Insurers (ANI) and Mutual Atomic Energy Liability Underwriters (MAELU). The two insurance pools are composed of insurance companies who have voluntarily pledged funds to either ANI or MAELU for insurance coverage. Their collective commitment determines the maximum liability insurance coverage provided. Currently ANI provides $124 million and MAELU provides $36 million of coverage.

If a major nuclear accident were to result in offsite liability greater than the $160 million first-layer coverage,

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1/Insurance to cover offsite claims by the public for bodily injury and/or property damage caused by a nuclear accident.

the second layer of utility self-insurance would become operative. The second layer of insurance coverage is also managed and administered by ANI-MAELU. If required, ANI and MAELU can order utility companies to pay a retrospective premium assessment of up to $5 million for each licensed operating nuclear unit to cover liability losses in excess of that provided by the first layer of insurance coverage. To protect the financial exposure of a utility, the Price-Anderson Act limits a utility's total assessment to $10 million per nuclear unit per year. As of May 1981, second-layer coverage would yield a maximum of $360 million in insurance coverage from the 72 licensed commercial reactors.

In the event of an accident which exhausts both the first- and second-layers of liability insurance, the Federal Government is currently liable for the third layer of $40 million under the Price-Anderson Act. Federal Government indemnity is the difference between the $560-million Price-Anderson Act limit and the sum of the first and second layers of coverage, which currently is $520 million. If a catastrophic accident results in offsite liability greater than $560 million, the Price-Anderson Act directs the Congress to review the incident and take whatever action is deemed necessary to protect the public interest.

Private sector financing of Price-Anderson liability insurance coverage has increased over the years by two means. Both ANI and MAELU have gradually increased first layer insurance coverage from $60 million in 1957 to $160 million in 1980. In addition, second layer insurance coverage has increased by $5 million as each new nuclear unit has been licensed. Under the Price-Anderson Act provisions, when total first- and second-layer liability insurance exceeds $560 million, Federal government indemnity will cease and the Price-Anderson $560-million liability limit could increase correspondingly.

There are two important characteristics of the Price-Anderson Act:

--Federal Government involvement in the program is minimal, and

--Those who have benefitted from the use of nuclear power are also responsible for financing the potential liability resulting from nuclear accidents.

The largest liability obligation under Price-Anderson has been a tentative $25-million settlement for the accident at TMI. This will be covered by the first layer of insurance coverage. The precautionary second and third layers of insurance coverage have never been needed. Although there is broad consensus that

the Price-Anderson Act is well structured and will work effectively, we have reported that the $560-million limit on liability provided under the act is arbitrary and should be realistically defined. 1/

Property insurance coverage was voluntary

Property insurance for nuclear facilities has been available through the private insurance market since 1957 and through a utility-organized mutual insurance company since 1973. Both insurers provide onsite property insurance coverage during the construction and operation of nuclear units.

Private insurance market-ANI and Mutual Atomic Energy Reinsurance Pool (MAERP) are the two private companies providing property insurance coverage for nuclear generating units. They have offered this coverage continuously since 1957 and now insure 37 nuclear units with operating licenses. ANI has received commitments from about 128 conventional stockholder-owned insurance companies, such as Allstate Insurance Company and Hartford Insurance Company, to pledge funds--insurance capacity--for property or liability insurance. In contrast, MAERP obtains its commitments for insurance capacity from about 100 mutual insurance companies, such as American Mutual Insurance Company and Nationwide Mutual Insurance Company. Both ANI and MAERP also solicit reinsurance capacity from insurers abroad. To date, approximately one-half of ANI-MAERP insurance capacity is derived from foreign insurers. Although they are separate organizations and write separate policies, the two companies work closely together to maximize insurance coverage. In practice, ANI and MAERP have combined their resources by extensively reinsuring each other to form, in effect, a single, larger ANI-MAERP pool. ANI-MAERP have gradually expanded their insurance coverage through the years--from $63.88 million of coverage in 1957 to $300 million in 1979.

Utility-organized mutual insurance--Nuclear Mutual Limited (NML) is a mutual insurance company established by utilities with nuclear power plants. NML has offered property insurance coverage since 1973 and now insures 15 utilities owning 32 units with operating licenses. It was chartered in Bermuda to avoid State regulatory requirements and to take advantage of tax benefits. As a result, NML is exempt from the cash reserve and other restrictive requirements of State insurance laws that would apply if NML

1/U.S. General Accounting Office, "Analysis of the Price-Anderson Act", EMD-80-80, Aug. 18, 1980.

were chartered domestically. According to a NML official, NML maintains a cash reserve which has grown steadily since 1973 to $86 million as of May 31, 1981. The official also said NML has also been successful in obtaining $75 million of reinsurance coverage from conventional insurers. Nonetheless, a major nuclear accident would exhaust both of these sources of financing property damage costs. To finance the costs of such an accident, NML management has the authority to assess each member utility its proportionate share of the insured balance due the member owner of the disabled nuclear unit. This is termed a retrospective premium adjustment. To limit the financial exposure of each member utility, in any one year, the maximum yearly retrospective premium adjustment is limited to 14 times the annual premium rate paid by the member utility. Based on NML's stated annualized premium level, this could provide an additional $580 million of insurance coverage above existing cash reserves and reinsurance. To date, current premiums have proven adequate to finance insurance claims and build cash reserves. No retrospective premium adjustments have been required. NML, like ANI-MAERP, has increased its insurance coverage since 1973--from an initial $100 million to $300 million in 1979.

Post-accident additions to insurance coverage

The TMI accident demonstrated the difficulty faced by a utility in paying replacement energy costs when a nuclear unit is suddenly put out of service for an extended period of time. In 1980, the newly formed Nuclear Electric Insurance Limited (NEIL) began offering replacement power insurance. NEIL is a mutual insurance company established by utilities with an insurable interest in nuclear power plants. The insurance coverage provides a maximum of $156 million to owners of a disabled nuclear plant to purchase replacement power for its utility customers. After a 26-week waiting period, the insurance coverage provides a maximum of $2 million per week for the first year of plant outage and $1 million per week for the second year. Most privately-owned utilities are members of NEIL.

NEIL is an offshore mutual insurance company chartered in Bermuda for legal and tax purposes. As an offshore insurer, NEIL, like NML, is exempt from State insurance laws. A NEIL official said the company's current reserve of available funds to pay for replacement power is relatively small--about $75 million. It has had limited success in obtaining reinsurance from established insurers. Consequently, NEIL would rely on a retrospective premium adjustment to finance major insurance payments to any member owner of a disabled nuclear unit. Total annual retrospective premium adjustments of any member utility

are limited to five times the annual premium rate paid by the member utility. According to a NEIL official, retrospective adjustments at present premium levels could provide an additional $340 million of insurance coverage above cash reserves and reinsurance.

In 1980, the American Power Insurance Corporation (APIC) was established to provide coverage for certain on-going expenses in the event of a prolonged nuclear plant shutdown. Formed under the auspices of the American Public Power Association, the insurance coverage is provided by private insurers. After a 120-day waiting period, it provides up to $50 million for principal and interest payments on plant debt and for the costs of plant maintenance and security. As of April 30, 1981, only one utility was insured through APIC although several utilities have expressed an interest in obtaining coverage.

Property insurance coverage has been increased but needs further expansion

The insurance industry has partially responded to utility requests for increased property insurance coverage. In April 1981, two years after the TMI accident, total ANI-MAERP property insurance coverage was increased from $300 million to $369 million per site per policy. ANI-MAERP repesentatives indicated that they plan to further increase property insurance coverage to about $450 million in January 1982. Correspondingly, NML coverage has increased from $300 million to $450 million since the accident. 1/ Coverage has not increased to the levels needed by many utilities, however, and they remain underinsured.

Electricity is now being generated by utilities with nuclear units that do not have adequate property insurance coverage. Insurers, bankers, investment brokers and the utilities themselves have all noted that utilities with nuclear capacity, such as Met Ed, are now exposed to the risk of bankruptcy in the event of a nuclear accident. A financial report by the investment firm of Paine, Webber, Jackson, and Curtis on the financial consequences of the TMI accident concludes:

> "We would like to emphasize that many investor-owned utilities engaged in nuclear construction or operating on-line plants presently do not enjoy the pre-TMI financial status of Met Ed. For many companies the nuclear involvement is so large that if a major nuclear accident were to occur, we submit that these companies could be in an even more precarious financial situation than the one in which we find Met Ed." 2/

1/The $450 million coverage became available on August 1, 1981.

2/Paine, Webber, Jackson, and Curtis, Inc., Metropolitan Edison: Financial Repercussions of a Major Nuclear Accident, November 1980.

The Edison Electric Institute is also concerned about inadequate property insurance coverage and has appointed a task force composed of utility representatives to investigate possible methods of financing the cleanup of TMI-2. The task force stated that "There is need for a substantial increase in property insurance coverage for nuclear power plants...EEI should promptly explore the development of an insurance program which would provide substantially greater property insurance coverage." 1/

Problems with increasing coverage

Due to regulatory and financial constraints, it does not appear that either ANI-MAERP or NML can significantly increase their existing full prepaid or retrospective-based property insurance coverage beyond what is currently available or planned in the near future. Although this assessment was obtained from both insurance groups, the reasons for the apparent limitation differed.

American Nuclear Insurers--Mutual Atomic Energy Reinsurance Pool

ANI-MAERP representatives do not believe that they can expand existing prepaid, full coverage property insurance to $1 billion in the immediate future. They stated that the insurance companies from which they derive their insurance capacity are reluctant to commit that level of coverage funds to the ANI-MAERP insurance pool.

Two factors combined to limit the insurance capacity provided by insurers. The first factor is the lack of actuarial knowledge of the risks involved in providing insurance coverage to nuclear units. Insurers view nuclear insurance as only one of several possible investment opportunities. Since millions of people have insured themselves and their property, insurance companies have good actuarial knowledge of the risks involved in providing conventional coverage for life, auto, commercial, and homeowner insurance. In contrast, the limited experience with nuclear plants does not provide a reliable actuarial basis for assessing risk, particularly since decontamination and other cleanup costs are not firmly established. As a result, many insurers simply prefer to avoid this actuarial uncertainty and limit their commitment to the nuclear insurance pools.

The second factor involves the insurance industry perception that the nuclear industry is particularly vulnerable

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1/Report of the Task Force on Nuclear Institutional Issues to EEI Board of Directors, Cleanup of Three Mile Island Unit No. 2, March 1981.

to future Federal Government intervention which could threaten future premium flows. To date, there are relatively few nuclear plants providing a relatively small annual premium flow to the insurers. Despite the low probability of a major nuclear accident in any given year, insurance losses from a nuclear accident can easily exceed total premiums collected by the insurers in that year, as at TMI. Consequently, an insurance technique known as inter-temporal loss spreading is applied to the nuclear industry. This approach means that while insurers may recognize a loss in any given year, over a period of several years insurers expect to realize a return on their investment. The TMI accident exhausted several years of previously accumulated premiums for ANI-MAERP insurers. Many of these insurers would be exposed to a net loss on their investment if another major nuclear accident occurs in the next few years and the Federal Government subsequently takes strong regulatory action against the nuclear industry. Government regulatory action could range from severe constraints placed on the industry to shutting it down entirely. Such Government action would threaten future premium flows and, as a result, the overall return on investment to insurers. Consequently, due to their fears of Federal Government regulatory action, insurers are hesitant to increase their insurance commitment to ANI-MAERP. Given the uncertainties of assessing the risk and the regulatory climate that surrounds the nuclear industry, many insurers would rather commit their insurance capacity to conventional insurance coverage where the risks and returns are more predictable.

Nuclear Mutual Limited

A representative of NML also stated that they do not anticipate being able to expand the property insurance coverage to $1 billion in the immediate future within the current company structure. They explained that property insurance coverage cannot be rapidly increased to $1 billion without a corresponding increase in retrospective premium adjustments, reserves, or reinsurance. Otherwise, a series of nuclear accidents could force NML into bankruptcy. NML member utilities are concerned, however, about increasing retrospective premium adjustments because they are uncertain whether a State public utility commission would allow the cost of a retrospective premium adjustment to be passed through to the ratepayer. Since retrospective premium adjustments have never been assessed, no precedents exist upon which to predict a State commission's ratemaking decision. We contacted State utility commission representatives in New York, Florida, Illinois, Wisconsin, and California. They stated that utilities usually contact their respective state commissions to determine their opinion regarding membership in NML and possible retrospective premium adjustments in consumer rates. The representatives speculated that the present commissions would probably be willing to include some or all of a retrospective premium

adjustment in the consumer rates if an accident occurred at a NML member utility. However, they could neither commit their commissions to this course of action nor predict the actions of any future State commissions.

If a State commission refused to allow a retrospective premium adjustment to be collected in the rates, the utility would be required to internally finance a retrospective premium adjustment. Most of the NML's member utilities own more than one unit. Depending on the number of units owned, a future retrospective premium adjustment could range from $5 million to over $100 million for each member utility in any given year. For example, Jersey Central has insured its Oyster Creek unit with NML. As a NML member, the company is subject to an annual retrospective premium adjustment of up to $19.6 million if a major incident occurs at a nuclear unit of any other member utility. If the New Jersey Board of Public Utilities decides, Jersey Central could be required to internally generate some or all of a retrospective premium adjustment. This possibility makes some utilities reluctant to expose themselves to increased retrospective premium adjustments. Due to its limited membership, relatively small insurance reserves, and concerns about State regulatory actions, NML does not now appear to have the capability of offering $1 billion in property insurance coverage without imposing extraordinary risk exposure on its member utilities.

Options for increasing property insurance coverage

The apparent inability of ANI-MAERP and NML to overcome the present inadequacy of nuclear property insurance coverage raises questions as to what other options might be considered. Although the present insurance organizations are limited, there are ways in which the insurance and utility industries can meet the property insurance needs of utilities with nuclear reactors. If these needs cannot be met voluntarily, some type of mandatory coverage may be required to provide sufficient funds from non-Federal sources to protect public health and safety in the event of another major nuclear accident.

Voluntary coverage by the insurance and utility industries

The first alternative for increasing nuclear property insurance is to rely on the insurance and utility industries to eventually increase property insurance coverage to adequate levels. As a result of TMI, some industry commitment toward increasing overall insurance coverage has been demonstrated by the formation of NEIL, APIC, and the increased property insurance coverage now offered by both ANI-MAERP and NML.

As described earlier, neither ANI-MAERP nor NML are individually capable of increasing property insurance coverage to adequate levels in the immediate future. However, the possibility exists for the utility and the insurance industries to increase property insurance coverage to adequate levels. Two possible methods will be discussed. They are (1) quota sharing and (2) primary/excess insurance coverage.

Quota Sharing--Quota sharing is a common practice in the insurance industry. In quota sharing, each insurer is responsible for its proportionate share of any covered loss. If applied to nuclear insurance, a utility could elect to purchase property insurance coverage from both ANI-MAERP and NML. With quota sharing, coverage from the combined resources of ANI-MAERP and NML would nearly double to about $675 million if a utility elected to obtain the maximum amount available.

In discussions with both insurers on quota sharing, however, several major problems surfaced. These include

--reduced premium flows to both ANI-MAERP and NML,

--possible violations of antitrust laws,

--differing safety and contract standards between ANI-MAERP and NML, and

--increased exposure of reinsurers who insure both ANI-MAERP and NML.

ANI-MAERP representatives have stated that they are willing to quota share with NML. However, NML representatives have argued that quota sharing would reduce NML annual premiums which have been used to build its reserves. As the reserves increase, the financial exposure of a member utility from a possible retrospective premium adjustment declines. If quota sharing were implemented, reserves probably would not increase as rapidly and, if an accident occurred, NML members would face a larger retrospective premium adjustment. In addition, NML representatives emphasized that quota sharing could impair the healthy degree of competition that now exists between ANI-MAERP and NML. They contend that this competition has improved the contract terms and amount of property insurance coverage offered to all of the nuclear utilities. Both insurers noted differing safety and contract standards as well as potential problems for reinsurers who provide insurance capacity for both ANI-MAERP and NML. Assuming all of these difficulties can somehow be resolved, quota sharing can be viewed as one possibiliity for increasing future property insurance coverage.

Primary/excess insurance coverage--Primary/excess insurance coverage is another common insurance practice. It means that one

insurer provides insurance coverage for the first layer (primary) while another insurer provides second layer insurance coverage (excess), up to a specified maximum, for losses in excess of the first layer. For example, insurer A would provide for insurance losses up to $375 million while insurer B would provide insurance coverage only for those losses in excess of $375 million, to a specified maximum. The major problem with this type of insurance coverage has been that both ANI-MAERP and NML wanted to provide the primary coverage to obtain the higher annual premiums. In the past, neither company has been interested in providing the second-layer coverage. Recent developments indicate this attitude may be changing.

The nuclear utility industry is currently considering two broad proposals to provide for a major increase in property insurance coverage. Under one proposed plan, NEIL would provide member utilities $500 million of property insurance coverage for losses in excess of $500 million.

The proposed excess property insurance program would be similar to NEIL's replacement power program and NML's property insurance program in that it would collect an annual premium to build reserves yet probably rely on retrospective premium adjustments to finance large losses. It is hoped that widespread industry participation will lessen the financial exposure of any one member. The relative amounts of coverage via retrospective premium adjustments and reinsurance from the insurance market have not yet been determined nor has any decision been made on possible quota sharing or primary/excess insurance layering with ANI-MAERP or other insurers. A spokesman for the insurance group stated that he believes that these issues will quickly be resolved and the new company could begin offering insurance by the end of 1981.

A second broad proposal has been advanced by ANI-MAERP. They are proposing three layers of property insurance coverage to the nuclear utilities. The first layer is the existing coverage available from either ANI-MAERP or NML. A second layer of $350 million insurance would be utility self-insurance in which a retrospective assessment or adjustment would be collected only if the first layer of insurance coverage was exhausted by a nuclear accident. 1/ The third layer would be ANI-MAERP pre-paid insurance coverage

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1/Present NML member utilities may be offered full second and third layer insurance coverage up to $1 billion for losses exceeding their NML coverage limit.

for losses exceeding $800 million up to a maximum of $1 billion. Despite the concerns of insurers about providing additional insurance capacity, ANI-MAERP representatives believe they can obtain the insurance capacity from the insurance market and begin to offer the additional coverage by January 1982.

These alternatives appear to provide realistic options for increasing property insurance coverage to $1 billion without Government intervention. The effectiveness of these options can be measured by (1) the unanimous, or near unanimous, participation in either insurance proposal by nuclear utilities and (2) the prompt provision of the additional property insurance coverage by these possible sources of additional property insurance coverage.

Mandatory insurance may become necessary

If the utility industry is unable to obtain adequate property insurance coverage in a timely manner, a mandatory insurance program may be required. One method for providing this coverage would roughly parallel the first and second layer liability coverage now required under the Price-Anderson Act. The objective of this requirement would be to minimize Government involvement in providing nuclear property insurance while providing an extra margin of insurance coverage so that the Government need not become financially involved in any future cleanup activities.

Under this proposal, there would be two required layers of property insurance coverage. NRC, as part of its licensing authority, would require commercial nuclear units to obtain the maximum amount of property insurance coverage reasonably available through ANI-MAERP, NML, or any other insurer. This should not impose any additional burden because all private nuclear utilities already have property insurance coverage. If an accident exhausted property insurance coverage from the first layer of insurance, the affected insurer would have to be given the authority by NRC to assess and collect from the owners of each licensed nuclear unit a prorated retrospective premium assessment, not to exceed some specified amount, which would be paid to cover additional property losses incurred from the accident. Based on the current number of licensed operating nuclear units, this second layer could provide an additional $720 million property insurance coverage if the maximum assessment established were $10 million. The congressionally specified maximum assessment per nuclear unit will determine the total amount of second-layer insurance coverage available. As under the Price-Anderson Act, NRC could require that each nuclear unit operator provide some measure of assurance that it will not default on an assessment. Assuming a maximum $10 million assessment per unit, total property insurance coverage could

exceed $1 billion. Both layers of insurance could be managed and administered by insurers in the private sector with minimal Federal Government involvement.

As the first layer of insurance coverage grows, and as new methodologies and a revised regulatory framework for coping with nuclear accidents are developed from the cleanup of TMI-2, the primary coverage from ANI-MAERP or NML could be adequate to cover the costs of a major nuclear accident. Under this proposal, however, the precautionary second layer of utility self-insurance would be available in the event of a nuclear accident with costs that exceed primary coverage. This shifts the burden of financing any radioactive cleanup from the Government to the nuclear industry.

We discussed this mandatory second-layer, self-insurance proposal with representatives from ANI-MAERP, NML, and the electric utility industry. Response to the proposal was favorable although it was stated that congressional action would probably be required to give NRC the statutory authority to require such property insurance coverage.

The mandatory insurance option is comparable to the voluntary insurance options now under active consideration by the utility industry. Both promote the idea of minimal Federal Government involvement in providing nuclear property insurance. However a possible major difference between a mandatory and a voluntary insurance program is that total nuclear utility membership is assured if the program is mandatory. Therefore, the maximum amount of nuclear utility funds would be available to finance a possible future cleanup if so required.

While widespread utility participation in any voluntary insurance program would also provide maximum insurance coverage, there is no assurance that such widespread industry participation will occur. Consequently, the possibility would exist that a major nuclear accident could occur at a nuclear unit which was not a participant in the voluntary insurance program. As a result, the Federal Government could become involved in financing decontamination efforts at a disabled nuclear unit.

Current legislation proposes more direct Federal Government involvement

The need for additional property insurance coverage was recognized in the House and Senate 1/ bills discussed previously in Chapter 5. Each of the bills proposed that a National Nuclear Property Insurance Corporation be established to provide for supplemental insurance to cover costs resulting from damage

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1/H.R. 2512 and S. 1226, respectively.

to nuclear powerplants. The corporation would be exempt from most taxes and from any general limitations imposed by statute on budget outlays of the United States. The Federal Government would not be liable for any obligation or liability incurred by the corporation.

The proposed legislation establishes a Nuclear Property Insurance Fund on the U.S. Treasury books which would be credited with insurance premiums, interest, and charges and other monies collected or accrued to the fund.

The corporation established by the legislation would be authorized to provide insurance to supplement that which is available from private sources. The proposed coverage would compensate the insured utility for costs that exceed the greater of $350 million per accident or $50 million plus the amount of insurance available from private sources. The maximum coverage for any one accident would be limited to the greater of $2 billion or an amount determined by the corporation's board of directors.

Utility participation would be mandatory with compliance linked to the issuance or validation of the nuclear operating licenses by NRC. Premiums would be assessed for each utility so that they equaled at least $150 million annually, and this would continue until a reserve of at least $750 million had been accumulated. If payments from the fund exceed the amount available, each insured utility would be liable for an additional assessment to cover the obligation.

The legislation provides for the corporation to be converted to a private mutual insurance company at some future date. As we pointed out in chapter 5, the corporation would be empowered to make partial payments to GPU for the TMI-2 cleanup from insurance premiums. The conversion would occur when the TMI-2 cleanup is completed or the reserve fund has accumulated $750 million, whichever is earlier.

NRC NEEDS TO ESTABLISH ACCIDENT RECOVERY PROCEDURES

NRC is responsible for regulating the operations of nuclear reactors used to generate electricity in the private sector and for protecting public health and safety with respect to radioactive exposure. This responsibility makes it mandatory that in the event of a nuclear accident, NRC must become directly involved in any accident recovery effort. This involvement covers two major areas--approving the recovery methods employed by the reactor owners and responding to public concerns over radiation exposure resulting from an accident.

TMI-2 was the industry's first major nuclear accident that tested NRC's response capability. The length of time NRC took to reach the point where it could approve GPU's plan for cleaning up the TMI-2 containment building indicates one thing: the need for NRC to develop accident recovery guidelines for use in establishing procedures for any future accident recovery efforts. The lessons learned from the TMI-2 recovery experience should provide a good basis for developing the guidelines.

NRC followed its normal procedures in responding to GPU's needs

The restrictive environment in which a utility company operates a nuclear reactor made it difficult for GPU to immediately begin cleanup activities without the full cooperation and approval of NRC. NRC did not have any specific guidelines or criteria pertaining to a nuclear accident recovery effort but followed its normal regulatory process. Under this process, GPU is required to propose the methodology for cleaning up the accident damage and submit it to NRC for evaluation and approval. If the NRC staff finds the proposal adequate, they send it to the Commission with their recommendation for approval. If the utility's proposal is not adequate, it is returned by the staff for more information and development. This process can take a long time to complete depending on how quickly the (1) utility submits a proposal, (2) NRC staff responds favorably, and (3) NRC accepts the staff's recommendation and gives its approval.

The accident resulted in over 500,000 gallons of intermediate-level contaminated waste water flowing into the auxiliary building tanks and over 600,000 gallons of high-activity waste water collecting in the basement of the containment building. The continued release of radioactive substances from this water required that it be processed and removed before the rest of the decontamination work could proceed.

Shortly after the accident, GPU began designing the systems needed to process the contaminated water in both locations. On May 25, 1979, NRC directed its staff to prepare an environmental assessment regarding GPU's proposals to decontaminate and dispose of the radioactive waste water at TMI-2. The first part of the assessment dealt with processing the water in the auxiliary building and was issued on October 3, 1979. On October 16, 1979, NRC approved the use of GPU's proposed EPICOR-II system.

The decontamination and disposal of the containment building's radioactive water was scheduled to be considered in a subsequent staff assessment. Before the assessment was completed, NRC, in a Statement of Policy dated November 21, 1979, directed its staff to prepare a programmatic environmental

impact statement on the decontamination and disposal of all radioactive wastes resulting from the accident. Consistent with the Commission's November 21, 1979 directive, the Director of NRC's Office of Nuclear Reactor Regulation imposed a requirement, as of February 11, 1980, that GPU not undertake the processing and discharge of water in the containment building and the reactor coolant system without NRC approval.

Lengthy delays affecting TMI-2 cleanup have occurred since November 1979

The initial emphasis given to the accident recovery effort appeared to diminish after NRC's November 21, 1979, Statement of Policy was issued. This was pointed out in a NRC staff task force report, utility company complaints, and in an industry report on the TMI-2 cleanup.

On February 28, 1980, a special NRC task force reported to the Commissioners on its evaluation of the cleanup activities at TMI-2. 1/ The task force's findings are summed up as follows.

> "The main thrust of our findings recommendation is that prompt action is needed by NRC to restore forward motion to the Three Mile Island cleanup process. During our meetings with NRC staff, licensee management, and Pennsylvania State officials, we observed frustration with the pace of the cleanup, the lack of criteria, the tedious decision process, and the erosion of what once was a high priority program. We have not observed strong initiatives to change these conditions.* * *.
>
> * * * * *
>
> "We believe the Commission should announce quickly a commitment to proceed as expeditiously as possible with the cleanup. Under the general umbrella represented by this commitment, we would expect to see increased priority given to cleanup-related activities and some reallocation of resources into these activities.* * *."

Utility company correspondence with NRC during 1980 continued to express GPU's concern over the lack of importance attached to the cleanup by NRC and the affect that regulatory uncertainty had on the cleanup timing and cost. On June 30, 1980, for example, GPU responded to a May 28, 1980, letter from the Director, Office of Nuclear Reactor Regulation, concerning the cleanup activities. In its response, a GPU official stated:

1/Report of a special task formed by NRC's Acting Executive Director for Operations, "Evaluation of the Cleanup Activities At Three Mile Island, "Feb. 28, 1980.

"Your May 28 letter does not reflect the importance we attach to the prompt clean-up of contaminated water in the the containment structure. It can, in fact, be read as requiring both completion of the entire PEIS and extensive consideration of all alternative treatment systems, regardless of their availability or state of development, before a decision is reached on operation of the SDS. This would not, in our view, be consistent with the Commission's policy statement of November 21, 1979, which recognized that the public interest in decontamination of the containment water might require early action in advance of the completion the PEIS. In fact, deliberate delay would foreclose the action we propose--namely, acceptable treatment of the containment water as quickly as possible."

In a September 12, 1980, letter to the NRC Chairman, GPU again expressed concern over NRC actions. In the letter, GPU stated that, based on NRC documents relating to TMI-2, it was led to conclude that:

"* * *we should not rely on any significant regulatory guidance or definition of criteria or approval to proceed with major cleanup activities until completion of the final PEIS. That completion had been scheduled for late 1980 but we understand that serious consideration is being given to extending the period for comments on the draft PEIS with resultant delay in its completion. Further, the draft PEIS indicates that even after issuance of the final statement, we cannot expect to have the definitive guidance and criteria required for us to establish firm plans. Instead, much of the cleanup criteria apparently will be developed in the process of reviewing our proposals on a case by case basis. We do not believe that such an approach permits timely, effective progress.

"We do not consider that this indicated regulatory approach provides the maximum assurance of protecting the public health and safety.* * *."

GPU recently prepared a synopsis of its accident recovery efforts, concentrating primarily on the costs incurred and the progress made. The synopsis pointed out that in spite of the nearly $200 million spent on the recovery, only a few key items in the overall scope of the recovery operations have been accomplished. GPU pointed out that, to some extent, when compared with actual results, the magnitude of expenditures to date is very much a function of delays in the regulatory process which have hampered an expeditious execution of the recovery process. GPU further stated that significant costs are incurred simply to maintain the status quo while waiting for regulatory approval to proceed.

A similar finding of regulatory delay was included in an Edison Electric Institute task force report on TMI-2 cleanup. 1/ In its report, the task force concluded that the regulatory environment is uncertain and during 1980, NRC had not permitted the program to be performed via previously established regulations and guidelines. The task force found that long delays occurred because minor technical and radiological problems were referred to NRC in Washington, D.C., for approval. It reported that NRC has informally indicated significant possible changes in its waste disposal regulations and has been reluctant to approve significant site activities. The report concluded that the present cleanup cost estimate will likely increase unless the regulatory process is accelerated. The report also postulated that under a more expeditious program, some savings could be achieved.

Union of Concerned Scientists 2/ officials were also critical of NRC's actions but from a slightly different perspective. Although they recognize the need to quickly complete the cleanup, they believe that NRC has not followed a planned and deliberate course of action in the cleanup process. The officials believe NRC may be acting too quickly, at least in certain areas. They pointed to the unresolved waste disposal issues resulting from processing the contaminated water in the auxiliary building as an example of NRC's approving a GPU action without having a well thought out plan for the entire process.

Notwithstanding its concerns over the delays imposed by NRC during 1980, GPU moved ahead with processing the water in the auxiliary building and decontaminating its interior surfaces. GPU also proceeded to design and construct the Submerged Demineralizer System (SDS) to process the containment water although it did so at it own risk since NRC had not given its approval to use the system. NRC finally allowed GPU to vent the accumulated Krypton-85 gas from the containment building in mid-1980, and subsequently a number of manned entries were made to determine conditions inside the building, Actual cleanup activity in the containment building, however, had been delayed until NRC gave its approval to the final PEIS in its Statement of Policy issued April 27, 1981--17 months after the PEIS was ordered and 25 months from the date of the accident.

1/Report of the task force on Nuclear Institutional Issues to EEI Board of Directors, "Cleanup of Three Mile Island Unit No. 2," March 1981.

2/A nonprofit corporation that is a coalition of scientists, engineers, and other professionals who are "concerned about health, safety, environmental, and national security problems."

Current NRC actions indicate a more responsive regulatory environment

NRC recognizes that delays have occurred in the cleanup effort but believes it has acted properly. The use of the SDS and procedures proposed by GPU, although representing currently available technology, had never been tested under conditions that existed at TMI-2. The November 21, 1979, decision to require a PEIS was based on NRC's perceived need to comply with the National Environmental Policy Act provisions. NRC also felt it necessary to incorporate public opinion in selecting the decontamination procedures. In summarizing the actions taken regarding TMI-2, NRC has stated that

> "* * * simply put, the Commission has a responsibility to fully evaluate the environmental impact of decontamination, including involving the public into the Commission's decisionmaking process regarding environmental issues and alternatives before commitments to specific choices are made."

Although the future regulatory environment imposed by NRC on cleanup activities cannot be predicted, the actions taken since the Commission approved the PEIS indicate that the availability of funds to proceed may be GPU's biggest hurdle in successfully resolving its problems.

Two of GPU's immediate concerns--processing the water in the containment building and disposing of the concentrated radioactive wastes resulting from the process--have apparently been resolved. On June 18, 1981, the NRC program director for TMI-2 sent GPU the NRC order requiring the prompt commencement and complete processing of both the intermediate-level contaminated water in the auxiliary building tanks and the highly contaminated water in the containment building sump and in the reactor coolant system using the SDS. On June 3, 1981, DOE notified NRC that it had proposed a waste immobilization research and development program in its fiscal year 1982 funding request to the Congress that would include acquiring all the SDS waste products generated by the water-processing system.

NRC staff are also developing criteria for disposing of radioactive wastes other than those generated by the SDS. A change in the regulations for this purpose is being prepared for NRC's consideration. In addition, a memorandum of understanding with DOE on the entire waste disposal problem is being prepared.

On June 26, 1981, NRC forwarded Amendment No. 16 to the operating license to GPU. The amendment, which had been requested by GPU on June 10, 1981, establishes the environmental release criteria that will be used for any radioactive air or water effluent generated by the cleanup.

NRC staff departed from their normal reactive method of responding to utility proposals when they engaged in a 2-day review meeting with GPU staff on its proposed use of the SDS to process the containment water. NRC arranged the meeting for face-to-face discussions of the health- and safety-related SDS issues in lieu of the time-consuming process of sending GPU a formal list of questions which would require a formal response. The meeting resulted in a mutually agreed upon list of commitments for additional information needed by NRC to take appropriate action on GPU's proposal.

NRC has also sought authority to amend a utility's operating license prior to holding a public hearing on the amendment if it determines that the amendment involves no significant hazards consideration. The need for legislation resulted from a November 19, 1980, Court of Appeals decision 1/ that NRC may not issue a license amendment, even if it involves no significant hazards considerations, prior to holding a hearing requested by an interested person under section 189(a) of the Atomic Energy Act of 1954, as amended. The case arose out of NRC's decision that allowed GPU to vent the Krypton-85 gas from the TMI-2 containment prior to granting a pending request for a hearing on the proposed order.

On March 11, 1981, NRC submitted proposed legislation to the Senate Committee on Environment and Public Works that would amend section 189(a). The request addresses NRC's concerns that the Court of Appeals decision could result in unnecessary disruption or delay in the operation of a nuclear powerplant and could impose unnecessary regulatory burdens on NRC that are not related to significant safety benefits.

The actions taken to date by NRC are only the first of many decisions that will be needed during the cleanup. The NRC staff now have authority to approve GPU activities covered by the PEIS. Not all cleanup issues were covered in the PEIS, however, and determinations will have to be made as to what further NRC steps will be required to authorize action on these issues.

CONCLUSIONS

We believe that the private sector has the resources to provide adequate property insurance coverage without

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1/Stephen Sholly and Donald E. Hossler v. NRC, et al., and People Against Nuclear Energy v. NRC, et al., Nos. 80-1691 and 80-1783, United States Court of Appeals, District of Columbia, Nov. 19, 1980. The Supreme Court accepted this case for review on May 22, 1981.

Government intervention. There is some indication that the nuclear utility and insurance industries are voluntarily taking positive steps to markedly increase current coverage levels. We believe that this is the preferable method and should be encouraged by Federal and State regulators. However, if the nuclear utility industry is not able to obtain adequate and prompt coverage for most, if not all, nuclear reactors, Government requirement for second-layer insurance coverage may be desirable to protect the Federal Government against the possibility of having to finance the decontamination of a disabled nuclear unit.

If mandatory coverage becomes necessary, we believe that it can be successfully managed by the private insurance and/or utility industry sectors. Therefore, the development of a quasi-governmental corporation as envisioned by H.R. 2512 and S. 1226 to provide the necessary supplemental coverage does not appear to be necessary at this time. Because the effects of a nuclear accident generally involve public health and safety issues, however, we believe that NRC should monitor the progress being made by the utilities to increase property insurance coverage to levels that NRC determines are adequate to preclude the need for Federal Government funding support. The electric utility industry's assessment that additional coverage could be available by the end of 1981 can be used as a benchmark for NRC's evaluation.

NRC's response to GPU's accident recovery efforts could have been more constructive. We recognize that the accident was not anticipated by either NRC or the utility company and consequently, no one was really prepared to respond to the resulting conditions. The severity of the accident and its uniqueness, however, should have been sufficient cause for NRC to depart from its traditional regulatory practices of reacting to utility proposals and take a more active role in working with GPU and others, such as DOE, in developing an appropriate response to the accident recovery needs. We do not believe that NRC's responsibility for maintaining health and safety standards would have been compromised had more frequent face-to-face meetings been held between and among the various participants to expedite the resolution of the numerous problems generated by the accident.

Our review of NRC's actions point up the need for NRC to develop accident recovery guidelines that a utility company can use in proposing procedures for any future accident recovery efforts. In some areas, the guidelines may simply better define which of the existing standards will apply to an accident situation. Effluent release and man-rem exposure standards used for operating units, for example, may be adequate during most accident recovery efforts and need only be designated

for use by the utility. In other cases, deviations from these operating standards may be necessary, and these should be defined for use in developing recovery procedures.

Guidelines could encompass both procedural and technical aspects of the recovery effort. It would be helpful to the utility if the "regulatory envelope" within which it will operate were clearly defined. More specifically, the guidelines could address such matters as (1) how to request approval for special situations not covered in the regulations, (2) which of the existing regulations would apply in a given accident situation, (3) how detailed do proposed cleanup plans have to be, (4) what is the criteria for the content and detail of Technical Evaluation Reports, and (5) what is the role and responsibility of NRC staff assigned to an accident site, i.e., are they limited to reviewing proposed actions or can they provide technical guidance as well. To the extent possible, it would be useful to have NRC-approved technical methodologies available for utility use so that lengthy studies of alternatives could be minimized. The knowledge that is being gained from the TMI-2 accident recovery process, and recovery efforts for less severe accidents at other utilities or nuclear installations, should provide NRC a good basis for the development of the necessary guidelines.

RECOMMENDATIONS TO THE CHAIRMAN, NUCLEAR REGULATORY COMMISSION

Because another nuclear accident at an under-insured utility company could seriously affect public health and safety, we recommend that NRC closely follow the current efforts of the insurance and utility industries to increase insurance coverage to what it determines to be an acceptable level. We further recommend that no later than December 31, 1981, NRC assess the progress being made. This assessment should include an evaluation of the insurance available in the private sector and a determination as to whether a mandated insurance coverage program is necessary.

To mitigate future regulatory constraints on nuclear accident cleanup activities, we recommend that NRC establish a set of guidelines that would facilitate the development of recovery procedures by utility companies in the event of other nuclear reactor accidents. The preparation of the guidelines should be initially based on the lessons learned and experience gained from the TMI-2 cleanup and recovery efforts at other nuclear installations. Because a number of years may pass before another comparable accident occurs, NRC should periodically assess the adequacy of its guidelines and standards and evaluate the state-of-the-art technology for decontaminating air and water effluent produced by a nuclear accident to ensure that it can quickly respond to

the needs of the regulated utility and adequately protect the public health and safety.

AGENCY COMMENTS AND OUR EVALUATION

NRC agreed that there is a need to monitor the efforts of the insurance and utility industries to increase the insurance coverage to acceptable levels and that a recommendation to this effect would be useful. NRC pointed out that on July 23, 1981, it approved the publication of a proposed rule for public comment that, if approved as a final rule, would required power reactor licensees to provide the maximum amount of property insurance available. NRC staff wlll also keep abreast of the current proposals to increase coverage.

NRC did not comment, however, on our suggestion that it determine the acceptable level of insurance coverage needed and measure industry progress based on that determination. We believe a requirement that licensees obtain the maximum coverage available is inadequate if that level of coverage is not enough to fully cover accident recovery costs. We would, therefore, expect NRC to make such a determination and use it as a benchmark in its evaluation of industry progress in increasing insurance coverage.

NRC stated that it was unclear as to what guidelines were needed for future accident recovery efforts and that each accident has unique characteristics that make it difficult to establish a general prescription for cleanup activities. We agree that each accident may have certain unique characteristics. We believe, however, that general guidelines for use in formulating accident recovery procedures that meet the needs of a specific accident situation can be developed and would be useful to those responsible for formulating such procedures. Accordingly, we have expanded our discussion of the need for guidelines on pages 96 and 97 to include some suggested areas that these guidelines could encompass. This expanded discussion also responds to DOE's comments concerning the need for new guidelines and regulations governing cleanup activities from future accidents.

NRC also stated that our report implies disagreement with the course of action outlined in its Statement of Policy of November 21, 1979. In commenting on the NRC decision to require a PEIS prior to approving a cleanup procedure, we did not take a position on the need for a PEIS. DOE and GPU officials and NRC staff, however, did question the need for NRC to wait for the results of the PEIS before allowing GPU to proceed with certain cleanup activities and attributed cleanup delays to the NRC decision.

APPENDIX I

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

AUG 7 1981

Mr. J. Dexter Peach
Director, Energy and Minerals Division
U.S. General Accounting Office
441 G Street, N.W.
Washington, D.C. 20548

Dear Mr. Peach:

We appreciate the opportunity to comment on the draft GAO report entitled "Greater Commitment Needed to Solve Continuing Problems at Three Mile Island." The report makes essentially two recommendations to the Nuclear Regulatory Commission. The first recommendation addresses the current efforts of the insurance and utility industries to increase insurance coverage to acceptable levels and we find this recommendation to be useful to the agency. The second recommendation, which addresses the need to develop a set of guidelines to facilitate future post-accident recovery efforts, is somewhat unclear and it would be more helpful to NRC if the report and the recommendation were supplemented to set forth a greater degree of clarification.

NRC staff comments on the report are provided below.

COMMENTS ON RECOVERY AND RESTART PROCESS

The report implies that NRC has been a cause of lengthy delays in GPU's TMI-2 recovery process and in returning TMI-1 to commercial operation. In regard to the recovery process at TMI-2, the report is critical of NRC's reactive role. We have been functioning under the provisions of NEPA and the Atomic Energy Act and, therefore, it is the licensee's responsibility to propose, initiate, and fund cleanup activities. If GAO believes the NRC should depart from this arrangement, as implied on page ivx, then we would appreciate more details.

Further, the pace of the cleanup has largely been determined by the timeliness and quality of GPU proposals to the NRC, the licensee's ability to meet construction schedules, and the general level of expenditures by GPU on TMI-2 cleanup. NRC actions have not been the sole determining factors in the cleanup.

The report also indicates that NRC made no decision on cleaning up the more contaminated water in the containment building for 27 months after the accident (page ivx). This is a factually true but incomplete statement that sets the tone of the report. The licensee did not submit their proposal, describing a modified system for processing this water until almost 24 months after the accident. Within approximately 3 months after receipt of this proposal, and following numerous NRC/licensee meetings, NRC granted approval to the licensee to process containment building water. The licensee was simply not capable of processing containment building water until July of this year because system construction, preoperational testing, and processing methodology were not completed.

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With regard to delays in TMI-1 restart, the Commission decided in July 1979 that it lacked the requisite reasonable assurance that Unit 1 could be operated without endangering the health and safety of the public and that it was in the public interest to conduct a public hearing prior to the restart of TMI-1. In addition to the applicable technical fixes identified as a result of the accident at Unit 2, some unique concerns at TMI-1 that need resolution before restart are: (1) potential interaction between Unit 1 and the damaged Unit 2, (2) the management capabilities and technical resources of Metropolitan Edison, including the impact of the Unit 2 accident on these, (3) the potential effect of operations necessary to decontaminate the Unit 2 facility on Unit 1, and (4) recognized deficiencies in existing emergency plans and station operating procedures. The hearings that were initiated have taken longer than originally expected and, in that sense, the hearing process is a cause of some delay.

COMMENTS ON THE FIRST RECOMMENDATION

The first recommendation addresses the availability and level of insurance coverage of utilities. You should be aware that on Thursday, July 23, 1981, the Nuclear Regulatory Commission approved publication of a proposed rule for public comment that, if approved as a final rule, would require power reactor licensees to provide the maximum amount of property insurance available. The NRC staff will evaluate the comments and will keep abreast of the two current proposals outlined in the GAO report to increase the levels of property insurance being offered.

You should also be aware of the July 9, 1981 proposal from Pennsylvania Governor Thornburgh to move forward with funding the cleanup. The proposal includes (1) establishment of a private, non-profit institute as a conduit for financial and technological cleanup support, and (2) asking utilities, manufacturers, and suppliers of the nuclear industry, the Federal government, States of Pennsylvania and New Jersey, and GPU for specified contributions to the cleanup. The Governor also is supporting the restart of Unit 1, contingent upon safety assurances, as a basis for raising additional funds to devote to the cleanup.

Finally, the property insurance payout at TMI of $180 million is several months out of date. The report should be updated in regard to these three issues. Given these subordinate points, the recommendation appears reasonable.

COMMENTS ON THE SECOND RECOMMENDATION

The report's second recommendation to the Chairman, Nuclear Regulatory Commission, recommends that in order to mitigate future regulatory constraints on nuclear accident cleanup activities, the NRC should develop a set of guidelines that would facilitate the development of recovery procedures by utility companies in the event of other nuclear reactor accidents.

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The recommendation is unclear and not fully clarified by appropriate detail in the body of the report. Each accident has had and will have unique characteristics which make it difficult to establish a general prescription for cleanup activities. For example, a decision on when and how to process and dispose of accident generated water will be a function of considerations such as the nature and type of accident, the general plant status, site characteristics, and State and local views.

The GAO report implies disagreement with the course of action (outlined in the Commission's Statement of Policy of November 21, 1979) to implement its responsibilities under the Atomic Energy Act and NEPA, but it is unclear if the GAO disagreement is with the Commission's interpretation of its responsibilities under the laws or with the requirements of the laws themselves. The report would be more helpful if it elaborated on the basic elements of the recommended guidelines.

Sincerely,

William J. Dircks
Executive Director for Operations

APPENDIX II

Department of Energy
Washington, D.C. 20585

AUG 7 1981

Mr. J. Dexter Peach
Energy and Minerals Division
U.S. General Accounting Office
Washington, D.C. 20548

Dear Mr. Peach:

The Department of Energy appreciates the opportunity to review and comment on the General Accounting Office draft report entitled "Greater Commitment Needed to Solve Continuing Problems at Three Mile Island." The Department of Energy believes the draft report is comprehensive and treats the subject objectively.

The Department of Energy agrees with the report's observation that the General Public Utilities Company, its stockholders and customers, the States of Pennsylvania and New Jersey and their utility regulatory commissions, the Federal Government, and the U.S. utility industry all have a role to play in assuring a rapid and safe cleanup. Thus, the job of implementing the cleanup must be a cooperative effort among all the parties.

The Department of Energy believes the final report should reflect that the Governor of Pennsylvania has recently taken a leadership role to secure a cooperative approach among all the parties in consonance with the General Accounting Office's principal conclusion. The Department believes the Governor's recommendation represents an excellent step toward resolving the funding issue.

The Department is moving forward with a Three Mile Island research and development program to provide valuable data related to nuclear safety and cleanup technology. This program will also provide technical support to the General Public Utilities Company for prompt, safe, and efficient fuel removal and waste handling operations. The Department currently projects expenditures of about $75 million over 3 years (beginning this October) for research and development in the fuel and waste processing area, and about $10 million per year to acquire data on radioactivity distribution, electrical equipment performance, and other areas related to nuclear safety.

The Department believes that a research and development program of this basic scope and size will be of substantial value to the entire nuclear community and has informed the other parties involved in the cleanup of our plans. All Department of Energy research and development programs are normally subject to an annual review process and Congressional authorization and appropriations are secured on an annual basis. This review process will be useful

in assuring the Three Mile Island research and development program remains consistent with the Department's objectives and the needs of the Three Mile Island cleanup program. Therefore, the Department does not believe it necessary to seek multiyear funding as proposed by the General Accounting Office. The Department does believe, however, that the current plans for the multiyear program described above offer sufficient bases for General Public Utilities and the other parties to proceed expeditiously with actions to fund and complete the cleanup effort.

The Department agrees with the report's conclusion that there are too many uncertainties in a utility bankruptcy to make a strong case for a bankruptcy action for General Public Utilities. If anything, the report has underestimated the potential adverse effects that a bankruptcy action for a General Public Utilities Company would have on the parties involved, including the company, its ratepayers, its creditors, and the electric utility industry as a whole. It is possible that a bankruptcy action could begin even before 1983, the point at which the report's introduction suggests the threat might arise again. The Department also agrees with the report's observation that any advantages that might accrue as a result of bankruptcy can be accomplished without such action at less cost and with greater efficiency. In short, bankruptcy is an option to be avoided.

The Department agrees that it would be advisable for nuclear utilities to increase the levels of their property insurance coverage so that more funds would be readily available in the unlikely event of a future accident resulting in cleanup costs in excess of present insurance. The Department also agrees with the report's conclusion that the private sector has the resources to provide it without Government intervention and should be given a reasonable amount of time to increase coverage to acceptable levels. The Department will continue to monitor developments in this regard.

The Department does not believe that new regulations and guidelines governing cleanup activities from future accidents should be generated by the Nuclear Regulatory Commission. The Department's view is that standards which govern the allowable releases from nuclear plants to the environment are already adequately specified; delays occurring during the early phases of the TMI cleanup resulted from decisions to depart from these standards and to use more stringent requirements and new regulatory processes not applied to other nuclear powerplants. Rather than request the Nuclear Regulatory Commission to produce a new set of guidelines, the Department of Energy suggests a more appropriate action would be to assure that existing, proven standards are applied in the future.

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The Department of Energy appreciates the opportunity to comment on this draft report and trusts the General Accounting Office will consider the comments in preparing the final report. Comments related to the text of the report and an annotated copy of the draft report have been forwarded separately.

Sincerely,

William S. Heffelfinger
Assistant Secretary
Management and Administration

DEFINITION OF MOODY's RATING SYMBOLS

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B = Lack desirable investment characteristics; assurance of interest and principal payments over any long period of time may be small.	"b" = Lack desirable investment characteristics; assurance of dividend payments and maintenance of other terms over any long period of time may be small.
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C = Lowest rated bonds; extremely poor prospects of ever attaining real investment standing.	

These ratings may be modified by the addition of a plus or minus sign to show relative standing within the major rating categories.

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