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August 16, 1988  
4410-88-L-0068/0378P

US Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555

Dear Sirs:

Three Mile Island Nuclear Station, Unit 2 (TMI-2)  
Operating License No. DPR-73  
Docket No. 50-320  
Post-Defueling Monitored Storage Proposed License Amendment  
and Safety Analysis Report

GPU Nuclear requests that the Three Mile Island Unit 2 License No. DPR-73 be amended to authorize implementation of the proposed Post-Defueling Monitored Storage (PDMS) plant configuration as initially proposed in GPU Nuclear letter 4410-86-L-0201 dated December 2, 1986. Attached are the proposed amended facility license, proposed Technical Specifications, and the PDMS Safety Analysis Report (SAR).

The PDMS SAR demonstrates the long-term stability and safety of the PDMS configuration and provides the basis for approval of the proposed amended facility license. It reflects the anticipated facility conditions at the beginning of PDMS. Due to the evolutionary nature of the TMI-2 post-accident cleanup process, some portions of the PDMS SAR (e.g., quantification of residual fuel and characterization of plant radiological conditions) may require revision prior to implementation of PDMS. Similarly, incomplete or preliminary data will be revised to reflect the final facility conditions as data become available. Although revisions to the PDMS SAR are anticipated subsequent to this submittal, the conclusions of the safety analyses are not expected to change. The analyses and related assumptions are based on known or conservative projections of plant conditions at the time of PDMS and any revisions are expected to be bounded by this SAR.

The proposed amended facility license is a "possession only" license since the regulations governing an operating or fueled reactor will no longer be applicable. However, this does not represent a decision to decommission the plant and does not constitute the permanent cessation of operations.

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GPU Nuclear Corporation is a subsidiary of the General Public Utilities Corporation

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#011556


August 16, 1988  
4410-88-L-0068

GPU Nuclear requests timely review and approval of this proposal to permit implementation of the PDMS configuration in the Third Quarter of 1989, consistent with the current program schedule, bringing to an end the post-accident cleanup program.

Enclosed is one signed copy of the Certificate of Service for the proposed amended facility license, the proposed Technical Specifications, and the Post-Defueling Monitored Storage Safety Analysis Report.

Per the requirements of 10 CFR 170, an application fee of \$150.00 is enclosed.

Sincerely,



F. R. Standerfer  
Director, TMI-2

emf

- Enclosures:
1. Proposed Amended Facility License for Post-Defueling Monitored Storage
  2. No Significant Hazards Determination
  3. Post-Defueling Monitored Storage Safety Analysis Report
  4. Certificate of Service for the Proposed Amended Facility License, the Proposed Technical Specifications, and the Post-Defueling Monitored Storage Safety Analysis Report
  5. GPU Nuclear Corp. Check No. 011556

cc: Senior Resident Inspector, TMI - R. J. Conte  
Regional Administrator, Region 1 - W. T. Russell  
Director, Plant Directorate IV - J. F. Stolz  
Systems Engineer, TMI Site - L. H. Thonus

METROPOLITAN EDISON COMPANY  
JERSEY CENTRAL POWER AND LIGHT COMPANY  
PENNSYLVANIA ELECTRIC COMPANY  
GPU NUCLEAR  
THREE MILE ISLAND NUCLEAR STATION UNIT II

Operating License No. DPR-73  
Docket No. 50-320  
Proposed Amended Facility License,  
Proposed Technical Specifications, and  
Post-Defueling Monitored Storage Safety Analysis Report

The proposed amended facility license, the proposed Technical Specifications, and the Post-Defueling Monitored Storage Safety Analysis Report are submitted in support of Licensee's request to change Operating License No. DPR-73 for Three Mile Island Nuclear Station Unit 2.

GPU NUCLEAR

By

W. Standerfer  
Director, TMI-2

Sworn and subscribed to me this 16<sup>th</sup> day of August, 1988.

Constance H. Mengel  
Notary Public

CONSTANCE H. MENDEL, NOTARY PUBLIC  
BIDDELTOWN BORO. DAUPHIN COUNTY  
MY COMMISSION EXPIRES MARCH 20, 1990  
Member, Pennsylvania Association of Notaries



UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

IN THE MATTER OF

DOCKET NO. 50-320  
LICENSE NO. DPR-73

GPU NUCLEAR

This is to certify that a copy of the proposed amended facility license, the proposed Technical Specifications, and the Post-Defueling Monitored Storage Safety Analysis Report for Three Mile Island Nuclear Station Unit 2 have been filed with the U.S. Nuclear Regulatory Commission and served to the chief executives of 1) Londonderry Township, Dauphin County, Pennsylvania; 2) Dauphin County, Pennsylvania; and 3) the designated official of the Commonwealth of Pennsylvania by deposit in the United States mail, addressed as follows:

Mr. Jay H. Kopp, Chairman  
Board of Supervisors of  
Londonderry Township  
R. D. #1, Geyers Church Road  
Middletown, PA 17057

Ms. Sally Klein, Chairperson  
Board of County Commissioners  
of Dauphin County  
Dauphin County Court House  
Harrisburg, PA 17120

Mr. Thomas M. Gerusky, Director  
Bureau of Radiation Protection  
PA Dept. of Environmental Resources  
P.O. Box 2063  
Harrisburg, PA 17120

GPU NUCLEAR

By

*FR Harderfer*  
Director, TMI-2

*8/16/88*  
Date



METROPOLITAN EDISON COMPANY

JERSEY CENTRAL POWER AND LIGHT COMPANY

PENNSYLVANIA ELECTRIC COMPANY

GPU NUCLEAR CORPORATION

DOCKET NO. 50-320

THREE MILE ISLAND NUCLEAR STATION, UNIT NO. 2

FACILITY LICENSE

License No. DPR-73

1. The Nuclear Regulatory Commission (the Commission) having found that:
  - A. The application for the amended license filed by Metropolitan Edison Company, Jersey Central Power and Light Company, Pennsylvania Electric Company, and GPU Nuclear Corporation (the Licensees) complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I, and all required notifications to other agencies or bodies have been duly made;
  - B. The facility will be managed in conformity with the application, as amended, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance: (i) that the activities authorized by this facility license can be conducted without endangering the health and safety of the public; and (ii) that such activities will be conducted in compliance with the rules and regulations of the Commission;
  - D. GPU Nuclear Corporation is technically qualified to engage in the activities authorized by this facility license in accordance with the rules and regulations of the Commission;
  - E. The Licensees are financially qualified to engage in the activities authorized by this facility license in accordance with the rules and regulations of the Commission;
  - F. The Licensees have satisfied the applicable provisions 10 CFR Part 140, "Financial Protection Requirements and Indemnity Agreements," of the Commission's regulations;
  - G. The issuance of this amended facility license will not be inimical to the common defense and security or to the health and safety of the public;

- H. After weighing the environmental, economic, technical, and other benefits of the facility against environmental, and other costs and considering available alternatives, the issuance of amended facility license No. DPR-73 subject to the conditions for protection of the environment set forth herein is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied; and
  - I. The possession of byproduct and special nuclear material and receipt, possession, and use of source material as authorized by the license will be in accordance with the Commission's regulations in 10 CFR Parts 30, 40, and 70, including 10 CFR Sections 30.33, 40.32, 70.23, and 70.31.
2. Amended facility license No. DPR-73 dated \_\_\_\_\_, is hereby issued to Metropolitan Edison Company, Jersey Central Power and Light Company, Pennsylvania Electric Company, and GPU Nuclear Corporation to read as follows:
- A. This license applies to the Three Mile Island Nuclear Station Unit 2, (the facility), owned by the Metropolitan Edison Company, Jersey Central Power and Light Company, and Pennsylvania Electric Company, and managed by the GPU Nuclear Corporation. The facility is located on Three Mile Island in the Susquehanna River, in Londonderry Township, Dauphin County, Pennsylvania, about ten miles southeast of Harrisburg, and is described in the "Post-Defueling Monitored Storage Safety Analysis Report" as supplemented and amended and the Environmental Report as supplemented and amended.
  - B. Subject to the conditions and requirements incorporated herein, the Commission hereby licenses:
    - (1) GPU Nuclear Corporation, pursuant to Section 103 of the Act and 10 CFR Part 50, "Licensing of Production and Utilization Facilities," to possess but not operate the facility;
    - (2) GPU Nuclear Corporation, Metropolitan Edison Company, Jersey Central Power and Light, and Pennsylvania Electric Company to possess the facility at the designated location in Dauphin County, Pennsylvania, in accordance with the procedures and limitations set forth in this license;
    - (3) GPU Nuclear Corporation, pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use at any time any sealed sources for radiation monitoring equipment calibration;
    - (4) GPU Nuclear Corporation, pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use in amounts as required any byproduct, source, or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components; and

(5) GPU Nuclear Corporation, pursuant to the Act and 10 CFR Parts 30, 40, and 70, to possess, but not separate, such byproduct and special nuclear materials which remain at the facility subsequent to the cleanup following the March 28, 1979, accident.

- C. This license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations in 10 CFR Chapter I, except as exemptions have been granted by NRC Order: Part 20, Section 30.34 of Part 30, Section 40.41 of Part 40, sections 50.54 and 50.59 of Part 50, and Section 70.32 of Part 70; and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) Technical Specifications

The Technical Specifications contained in Appendix A are hereby incorporated in the license. The Licensee shall manage the facility in accordance with the Technical Specifications and all Commission Orders issued subsequent to the date of this amended facility license.

- D. This license is effective as of the date of issuance and shall expire at midnight, November 4, 2009.



NO SIGNIFICANT HAZARDS DETERMINATION AND  
SUMMARY OF FACILITY CONFIGURATION FOR  
POST-DEFUELING MONITORED STORAGE

INTRODUCTION

GPU Nuclear Corporation (GPU Nuclear) as agent for Metropolitan Edison Company (Met-Ed), Jersey Central Power & Light Company (JCP&L), and Pennsylvania Electric Company (Penelec) proposes a revision to the existing Class 103 facility license and accompanying Technical Specifications to delineate the non-operating and defueled status of the nuclear electric generating station designated as Three Mile Island Nuclear Station Unit 2 (TMI-2). GPU Nuclear has termed the status Post-Defueling Monitored Storage (PDMS).

The TMI-2 operating license was issued on February 8, 1978, and commercial operation was declared on December 30, 1978. On March 28, 1979, the unit experienced an accident which resulted in severe damage to the reactor core. TMI-2 has been in a non-operating status since that time.

During the more than 9 years since the accident, GPU Nuclear has conducted a substantial cleanup program to defuel the Reactor Vessel and decontaminate the facility. This cleanup program is characterized by achievement of a series of milestones, each of which resulted in an improvement in plant conditions and a concomitant reduction in overall potential risk to the public.

As the cleanup program progressed and each major milestone was achieved, the controls needed to ensure public health and safety, as reflected by Technical Specification Requirements, were modified to be consistent with the changing plant conditions. Many of the requirements normally associated with an operating nuclear facility (e.g., operable diesel generators) were eliminated. Other requirements were modified to account for the reduction in risk associated with the TMI-2 facility (e.g., reactor vessel makeup requirements). As a result, when the Cleanup Program is completed, relief will have been granted for numerous regulatory requirements which are no longer applicable, the control and operation of the facility will differ substantially from that of a typical operating nuclear facility and the administration of the facility will be markedly changed.

These changes are recorded in a wide range of documentation; included are NRC Orders, NRC approved procedures, Technical Specification changes, and regulatory exemptions. The Safety Analysis Report (SAR) which accompanies this proposed license change for PDMS describes the facility as it will be during PDMS and reflects all of the changes in the facility that have been effected since the accident. The PDMS SAR describes a non-operating and defueled facility in contrast to the facility described in the TMI-2 FSAR.

The facility, as described in the TMI-2 FSAR, has controls and requirements which reflect the risk associated with a normal operating nuclear power plant with a full complement of nuclear fuel. In contrast, the PDMS SAR describes the facility as it has evolved since the accident and reflects the changes as well as the overall reduction in risk that results from the defueled and non-operating status of TMI-2 (i.e., resulting from the removal and shipment of essentially all [>99%] of the original TMI-2 reactor core and the substantial decontamination of the TMI-2 facility which has been accomplished). A summary of the facility configuration for PDMS is provided in Appendix A.

## NO SIGNIFICANT HAZARDS DETERMINATION

The cleanup activities at TMI-2 during the post-accident period have progressively improved the overall safety of TMI-2. In addition, the short-lived fission products which make up the preponderance of the source term for a typical operating reactor have decayed to negligible levels. This proposed license amendment "to possess," supported by the accompanying PDMS SAR and Technical Specifications, manifests the overall elimination of the risk to public health and safety achieved by the removal and shipment off-site of essentially all (>99%) of the original core material, the decay of short-lived fission products, and the completion of the "Cleanup Program." This license amendment reflects the requirements of the applicable regulations and limits application of the Technical Specifications to those areas necessary for safe management of the facility during PDMS. It recognizes the non-operating and defueled status of the facility during PDMS and deletes those requirements normally associated with the operation of a nuclear facility with a fueled reactor.

The Commission has provided standards (10 CFR 50.92) for determining whether a significant hazards consideration exists for a proposed license amendment. 10 CFR 50.92(c) states that an amendment to a facility license involves No Significant Hazards Consideration if operation of the facility in accordance with the proposed amendment would not:

1. Involve a significant increase in the probability or consequences of an accident previously evaluated; or
2. Create the possibility of a new or different kind of accident from any accident previously evaluated; or
3. Involve a significant reduction in a margin of safety.

The removal and shipment off-site of greater than 99% of the original reactor core inventory results in a decrease in the probability and consequences of accidents previously evaluated. The non-operating and defueled condition of TMI-2 eliminates all possible accidents associated with the reactor core (e.g., loss-of-coolant accidents, inadvertent criticality). Also, accidents indirectly associated with the continuous generation of fission products through operation of the reactor (e.g., Waste Gas Decay Tank failure) have been eliminated. Therefore, the removal and shipment off-site of the reactor core yields a significant decrease in the probability and consequences as well as the number of accidents to be considered and, thus, represents an overall significant reduction in risk to the public.

The fact that essentially all of the reactor core has been removed from the Reactor Vessel and shipped off-site eliminates the potential for many types of accidents previously analyzed. Further, it does not create the possibility of new or different kinds of accidents from those previously evaluated. The non-operating and defueled condition of TMI-2 eliminates the possibility of any accident directly or indirectly associated with the reactor core. Since no new nuclear capabilities or operational modes have been added, the potential for a new or different type of accident from any accident previously evaluated has not been created.

Since margins of safety are typically determined based on systems and equipment which provide the capability to protect the reactor core, the removal and shipment of essentially all of the original reactor core results in a significant increase in the overall margin of safety. The consequences of a range of events have been evaluated for TMI-2 based on the plant condition subsequent to the removal and shipment of the reactor core (see PDMS SAR Chapter 8). The consequences of the worst case event are less than the guidelines established by 10 CFR 50 Appendix I which have been recognized as being of no significant threat to public health and safety. In addition, Technical Specifications have been provided to ensure that the facility will be operated within the conditions described in the PDMS SAR. Therefore, the removal and shipment of the reactor core and establishment of PDMS results in an overall increase in the margin of safety to the public.

A No Significant Hazards Consideration determination also can be based on the non-operating and defueled plant condition during PDMS, which is essentially the same as the plant condition defined for Facility Mode 3 of the current TMI-2 Technical Specifications. Mode 3 is the facility condition which exists when the Reactor Vessel and Reactor Coolant System are defueled to the extent reasonably achievable, the possibility of criticality in the Reactor Building is precluded, and no canisters containing core material are stored on the TMI-2 site. Technical Specification Change Request No. 53, which incorporates Mode 3, was approved by the NRC Staff as Amendment No. 30 on May 27, 1988, and was accompanied by a No Significant Hazards Consideration determination for the proposed license amendment which was published in the Federal Register on February 24, 1988 (53 FR 5491).

Finally, the potential events analyzed for TMI-2 during PDMS (PDMS SAR Chapter 8) are bounded in scope and severity by the range of accidents analyzed in the original facility FSAR.

Based on the above review and the fact that a prior No Significant Hazards Consideration determination has been made for essentially the same plant condition as PDMS, it is concluded that the changes proposed by this license amendment for Post-Defueling Monitored Storage involve a No Significant Hazards Consideration.



## APPENDIX A

### SUMMARY OF FACILITY CONFIGURATION FOR POST-DEFUELING MONITORED STORAGE

Post-Defueling Monitored Storage (PDMS) has been proposed based on three principal considerations:

1. The Reactor Vessel and the Reactor Coolant System have been defueled and the core material has been shipped off-site.
2. Decontamination has been completed to the extent that further major decontamination programs are not justified on the basis of worker dose.
3. A condition of stability and safety has been established such that there is no risk to public health and safety.

### TRANSITION TO POST-DEFUELING MONITORED STORAGE

The formal transition from the current post-accident condition to the PDMS configuration requires NRC approval and implementation of a license revision proposed by GPU Nuclear. Not all activities leading to the final PDMS configuration must be completed prior to the implementation of PDMS. However, during the transition period, all of the prerequisites to PDMS will be satisfied. The following sections outline those conditions which must be established prior to the implementation of PDMS and those activities which may continue into PDMS.

#### Prerequisites for PDMS

The following prerequisites must be satisfied prior to the implementation of PDMS.

1. It must be demonstrated that there is no credible possibility of nuclear criticality. This condition will be assured by the removal of substantially all (>99%) of the fuel and elimination of all potentially critical configurations. The elimination of any credible possibility of nuclear criticality will be demonstrated as a requirement for transition to the pre-PDMS Facility Mode 2 in accordance with the TMI-2 Recovery Technical Specifications. A report supporting this condition will be submitted to the NRC.
2. All fuel and core debris which will be removed from the Reactor Vessel and associated systems will be shipped off-site.
3. Any potential for a significant release of radioactive material will be eliminated. Radioactive material will be removed and other sources of radioactivity will be isolated so that any potential radioactive release will be within 10 CFR 50 Appendix I guidelines for off-site dose consequences.
4. As a precondition to implementing PDMS, water will be removed to the maximum extent practical from the Reactor Coolant System and the Fuel Transfer Canal, and the fuel transfer tubes will be isolated. To the

extent that the Spent Fuel Pools are needed to support Accident Generated Water disposal activities, water may remain in these pools subsequent to the implementation of PDMS.

5. All radioactive waste from the major cleanup activities will be shipped off-site or packaged and staged for shipment off-site.
6. Radiation within the facility will be reduced, as necessary, consistent with ALARA principles, to levels which will allow necessary plant monitoring activities, the performance of required maintenance, and any necessary inspections.

#### Other Transition Activities

Some final plant conditions for PDMS are not essential to the implementation of PDMS and may be achieved subsequent to the implementation of PDMS. A general description of related activities follows:

1. SNM Accountability - Final accounting of the SNM remaining at the facility may be ongoing subsequent to the implementation of PDMS.
2. Water Processing - Disposal of Accident Generated Water may be ongoing during the initial stages of PDMS. Because certain systems and facilities (e.g., the Processed Water Storage Tank) are needed to support this activity, they will not be placed in their final PDMS configuration prior to implementation of PDMS.
3. Decontamination - During the initial stages of PDMS, removal or isolation of small sources of radioactivity or radioactive material may be ongoing (e.g., actions needed to place Accident Generated Water disposal support systems in their final PDMS condition).
4. Radioactive Waste - Small quantities of radioactive waste will continue to be generated, accumulated, and packaged during PDMS. Thus, radioactive waste shipments will continue during PDMS until all packaged waste from TMI-2 cleanup activities has been shipped off-site.

TMI-2 will be maintained in a safe, stable, and monitored condition throughout the transition to PDMS even though some transition activities are ongoing.

#### APPLICABLE REGULATIONS

GPU Nuclear has requested an amended facility license for TMI-2 in accordance with the provisions of Title 10 to the Code of Federal Regulations, Part 50 (10 CFR 50). The provisions of 10 CFR 50, as established, were intended to be applicable to an operable nuclear power plant. For this reason, many of the requirements originally imposed on TMI-2 no longer apply or can be substantially reduced in scope because of the status of TMI-2 during PDMS. Because nuclear criticality has been precluded with removal of substantially all of the fuel from TMI-2, and because radiation hazards have been substantially reduced due to the immobilization of essentially all of the radioactivity remaining in the plant, many systems, structures, and components



are no longer required and the regulations governing these systems, structures, and components have a significantly reduced scope of applicability at TMI-2.

#### DEVELOPMENT OF ACCEPTABLE OFF-SITE DOSE CRITERIA

Various regulations establish permissible limits for off-site radiation exposures resulting from the operation of licensed nuclear reactors and other nuclear fuel cycle activities. These regulations include 10 CFR 20, 10 CFR 50 Appendix I, 10 CFR 100, 40 CFR 190, and the EPA Protective Action Guidelines. The licensing basis for off-site dose criteria for PDMS has been derived from these existing regulations and applicable precedents. Specifically, 10 CFR 50 Appendix I, which is recognized as demonstrably safe with respect to radiological implications, has been established as the PDMS standard. A small fraction (i.e., less than 10%) of the Appendix I off-site dose guidelines is expected to be maintained for normal conditions prevailing during PDMS. The potential off-site radiological doses resulting from postulated off-normal conditions will be within the 10 CFR 50 Appendix I guidelines.

#### SAFETY-RELATED STRUCTURES, SYSTEMS, AND COMPONENTS

There will be no structures, systems, or components classified as nuclear safety-related (NSR) at TMI-2 during PDMS. GPU Nuclear procedures define NSR structures, systems, and components as those which are necessary to ensure:

- a. The integrity of the reactor coolant pressure boundary,
- b. The capability to shutdown the reactor and to maintain it in a safe shutdown condition, or
- c. The capability to prevent or mitigate the consequences of accidents which could result in potential off-site exposures comparable to the guideline exposures of 10 CFR Part 100.

Since the Reactor Vessel has been defueled, there is no reactor coolant or reactor coolant pressure boundary required. In the current defueled state, there are no structures, systems, or components required to maintain a safe shutdown condition. Analyses demonstrate that there are no postulated events that result in releases and associated exposures comparable to 10 CFR Part 100 guidelines. Therefore, due to the non-operating and defueled status of TMI-2 during PDMS, there are no structures, systems, or components which are required to meet the NSR criteria.

#### RESIDUAL FUEL

As a result of TMI-2 defueling and decontamination activities, greater than 99% of the original core inventory will be removed from the TMI-2 Facility and transferred to the Department of Energy. A criticality analysis based on the quantity and location of the residual fuel will demonstrate that a criticality event cannot occur at TMI-2 during PDMS. A report documenting the subcriticality of the residual fuel will be submitted in accordance with TMI-2 Technical Specification Section 1.3 in support of the transition to Facility



Mode 2. Finally, a comprehensive post-defueling survey of the TMI-2 Facility will assess the quantity of fuel remaining in the plant in order to satisfy final fuel accountability requirements and transfer of accountability to the DOE for all fuel shipped from TMI-2.

### RADIOLOGICAL CONDITIONS

One consequence of the March 1979 accident was wide spread radioactive contamination of the Reactor, Auxiliary, and Fuel Handling Buildings. Reactor Coolant System water was released to the Reactor Building and overflowed to the Auxiliary and Fuel Handling Buildings substantially contaminating these areas. Extraordinary efforts were required to decontaminate these areas to levels suitable for cleanup activities. Contamination of areas outside the RB and AFHB were minor and limited and have been decontaminated and released for unrestricted use. Overall, the decontamination efforts have removed and/or stabilized residual contamination to prevent release to the environment and to minimize occupational exposure to workers conducting PDMS activities.

### GENERAL PLANT DESCRIPTION

More than 99% of the original reactor core inventory will be removed and shipped to the Idaho National Engineering Laboratory for analysis and long-term storage. In addition, the facility will be substantially decontaminated and in a stable and benign condition suitable for long-term management.

### CONTAINMENT SYSTEMS

The Containment and associated systems will provide an environmental barrier during PDMS to contain the residual contamination which remains inside the Containment structure. The Containment encloses the areas and systems which contain essentially all of the contamination which could potentially result in off-site exposures.

#### Containment Structure

The primary function of the Containment Structure during PDMS is as a contamination barrier. The Containment Structure will provide shielding of the environment from the radiation inside the Containment Structure and will provide the means to assure that any effluents from the Containment will be controlled, filtered, and monitored.

The Containment is a reinforced concrete structure composed of cylindrical walls with a flat foundation mat and a dome roof lined with carbon steel. The structure provides biological shielding for normal and unanticipated conditions. The steel liner encloses the equipment and systems which remain inside the Containment and ensures that the upper limit of potential leakage of radioactive material will not be exceeded under the worst unanticipated event.

### Containment Isolation Valves

The Containment isolation valves provide a barrier on the system lines which penetrate the Containment so that no event can result in loss of isolation or intolerable leakage. All valves used for containment isolation during PDMS will normally be closed and locked, closed and deactivated or closed and administratively maintained closed except for the breather isolation valve which will normally be open.

### Containment Atmospheric Breather

The Containment Atmospheric Breather will be added to the Containment to provide passive pressure control of the Containment relative to ambient atmospheric pressure and to establish a "most probable pathway" through which the Containment will "breathe". The breather will be a passive system consisting of a 6 inch diameter, HEPA filtered duct. Providing this filtered pathway will ensure insignificant radioactive effluent leakage through any uncontrolled pathway.

### Containment Ventilation

The Containment purge and purification subsystem will be maintained in an operational condition to support activities in the Containment during PDMS.

## FIRE PROTECTION, SERVICE, AND SUPPRESSION

Fire Protection will be provided during PDMS to minimize the potential of a release of radioactive material due to a fire in a contaminated area, to protect those systems which will be maintained operational during PDMS, and to minimize the liability and property risk from potential fires.

These objectives will be achieved through a combination of (1) minimizing the potential for a fire by minimizing combustible materials and ignition sources and (2) providing a system of detection and suppression suitable to deal with any potential fire. The zone detection system originally provided at TMI-2 will remain operational throughout operational areas of the plant although some of the redundancy and backup capability has been deleted.

## RADIOACTIVE WASTE MANAGEMENT

The generation of radioactive waste during PDMS will be minimal. A small amount of radioactive waste will be generated from the processing of water inleakage to contaminated areas, small decontamination tasks and surveillance and maintenance activities. Liquid radwaste will be collected in the various sumps and processed through the liquid radwaste disposal system. Other radwastes will be collected and disposed as appropriate.

## RADIATION MONITORING

Radiological effluent and in-plant monitoring programs will be established to respond to the principal radiological concerns during PDMS. These programs will assure the radiological conditions in the facility are monitored and any



significant change in conditions will be identified in a timely manner so that appropriate corrective action is taken. Also, both liquid and gaseous effluents will be monitored to assure all radioactive releases are within acceptable bounds. These monitoring programs, in conjunction with general radiological controls activities, will assure that the radiological aspects of PDMS are appropriately addressed.

### ELECTRICAL SYSTEMS

Since safety-related electrical power is not required during PDMS, only those portions of the TMI-2 AC and DC electrical systems necessary to provide reliable power to PDMS support systems, controls, and instrumentation will remain energized. Electrical equipment that is not required for PDMS support will be deactivated to enhance overall plant safety.

### OTHER PDMS SUPPORT SYSTEMS

Other systems necessary to support PDMS activities also will be provided. The ventilation systems for the Auxiliary and Fuel Handling Buildings will be maintained operational to provide ventilation capabilities in those areas. Compressed air, sewers, domestic water, and other systems will be provided for use, as necessary.

### FACILITIES AND SYSTEMS RELEASED FOR SITE USE

As a result of the accident, unique situations developed which could not be properly managed with the existing facilities or systems designed for normal operating power plant use. Facilities and systems were designed and fabricated to process the radioactive wastes resulting from recovery activities. Upon completion of cleanup activities, selected facilities and systems will be released from dedicated Unit 2 use to general site use. These systems and facilities include:

1. Auxiliary Building Emergency Liquid Cleanup (EPICOR II)
2. Waste Handling and Packaging Facility
3. Interim Solid Waste Storage Facility
4. Solid Waste Staging Facility.

### ADMINISTRATIVE FUNCTIONS

Although the TMI-2 Facility will be placed in a monitored storage condition, several administrative functions, as discussed below, will be maintained.

#### Quality Assurance

During PDMS, the plant will be in a non-operating and defueled status; thus, there will be no structures, systems, or components that perform a nuclear safety-related function. Therefore, the quality assurance requirements of 10 CFR 50 Appendix B do not specifically apply. However, a Quality Assurance Plan has been developed based on the intent of the guidance provided in 10 CFR 50 Appendix B which will provide TMI-2 with an appropriate, limited scope Quality Assurance Program during PDMS.



## Security

Due to the non-operating and defueled status of TMI-2 during PDMS, the security requirements applicable to the facility will be less than those applicable to an operating nuclear power plant. The specific security provisions applicable to TMI-2 during PDMS have been incorporated into the "TMI Modified Amended Physical Security Plan," Revision 26, which is awaiting approval by the NRC Staff.

## Emergency Planning

Due to the non-operating and defueled condition of TMI-2 during PDMS, there will be no potential for a significant off-site radioactive release. Emergency planning requirements for the site will be based on TMI-1 concerns. Therefore, the limited emergency planning necessary to accommodate the existence of TMI-2 will be incorporated in an integrated site emergency plan.

## Radiation Protection Plan

During PDMS, some areas of TMI-2 will need to be controlled from a radiological perspective. Therefore, the existing GPU Nuclear Radiation Protection Plan will continue to be applied to control activities at TMI-2 which are conducted in radiologically controlled areas.

## Organization

During PDMS, TMI-2 will be placed in a monitored storage condition with minimal activities ongoing. An organization will be established at TMI-2 to manage PDMS. This organization will be supported, as necessary, by the GPU Nuclear Corporate functional organizations.

## CONCLUSION

The planned Post-Defueling Monitored Storage configuration is a plant condition that assures protection of public health and safety for an extended period. The plant will be secured, monitored, and maintained. The absence of any significant quantity or configuration of nuclear fuel assures elimination of the potential for nuclear criticality. As a result of the Cleanup Program, off-site exposure from TMI-2 will be well below the normal NRC guidelines for operating plants (10 CFR 50 Appendix I). Thus, TMI-2 will not present a hazard to the public health and safety.

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