August 5, 1993

Docket No. 50-320

Dr. Robert L. Long
Director Corporate Services/
Director, TMI-2
GPU Nuclear Corporation
Post Office Box 480
Middletown, Pennsylvania 17057

Dear Dr. Long:

SUBJECT: REVIEW OF THE MAY 28, 1993, REQUEST TO REVISE THE TMI-2 PDMS REQUIREMENTS AND COMMITMENTS

Amendment 17, dated May 28, 1993, to your Post Defueling Monitored Storage (PDMS) Safety Analysis Report (SAR) requested changes to your January 15, 1993, list of PDMS requirements and commitments. The January 15, 1993, list was approved by the NRC staff in a letter to you dated May 19, 1993.

The staff has completed its review of your proposed changes to the list. A copy of our evaluation is enclosed. Staff approval of your proposed deletion of items I.10 and J.7 is based on the commitment by your staff to update the PDMS SAR to reflect the commitment to operate the auxiliary and fuel handling building ventilation system to provide freeze protection for the fire main. We have concluded that the proposed changes do not constitute an unreviewed safety question and that the changes described fall within the bounds of Final Supplement 4 to the Programmatic Environmental Impact Statement issued by the staff in August 1989. A copy of the revised list of PDMS requirements and commitments is enclosed. The revised list is designated Revision 1. These changes are effective as of the date of this letter.

Sincerely,
Original signed by:
Michael T. Masnik, Senior Project Manager
Non-Power Reactors and Decommissioning
Project Directorate
Division of Operating Reactor Support
Office of Nuclear Reactor Regulation

Enclosures:
1. Safety Evaluation
2. Revised List

cc:
See next page

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

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Michael T. Masnik

Michael T. Masnik, Senior Project Manager
Non-Power Reactors and Decommissioning
Project Directorate
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Dr. R. L. Long
GPU Nuclear Corporation Unit No. 2

Three Mile Island Nuclear Station
Docket No. 50-320

cc:

Regional Administrator, Region I
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, Pennsylvania 19406

Dr. Judith H. Johnsrud
Environmental Coalition on Nuclear Power
433 Orlando Avenue
State College, Pennsylvania 16801

Ernest L. Blake, Jr., Esq.
Shaw, Pittman, Potts, and Trowbridge
2300 N Street, N.W.
Washington, D.C. 20037

Secretary
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Mr. Russell Schaeffer, Chairperson
Dauphin County Board of Commissioners
Dauphin County Courthouse
Front and Market Streets
Harrisburg, Pennsylvania 17120

William Dornsife, Acting Director
Bureau of Radiation Protection
Department of Environmental Resources
P. O. Box 2063
Harrisburg, Pennsylvania 17120

Mr. Ad Crable
Lancaster New Era
8 West King Street
Lancaster, Pennsylvania 17601

Ms. Michele G. Evans
Senior Resident Inspector (TMI-1)
U.S. Nuclear Regulatory Commission
P. O. Box 311
Middletown, Pennsylvania 17057

Mr. Frank F. Hooper
4155 Clark Road
Ann Arbor, Michigan 48104

Peter B. Bloch, Chairman
Atomic Safety and Licensing Board Panel
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Mr. Robert Rogan
GPU Nuclear Corporation
P. O. Box 480
Middletown, Pennsylvania 17057

Mr. David J. McGoff
Office of LWR Safety and Technology
NE-23
U.S. Department of Energy
Washington, D.C. 20545

Mr. Wythe Keever
The Patriot
812 Market Street
Harrisburg, Pennsylvania 17105

Mr. Robert B. Borsum
B & W Nuclear Technologies
Suite 525
1700 Rockville Pike
Rockville, Maryland 20852

Mr. Marvin I. Lewis
7801 Roosevelt Blvd. #62
Philadelphia, Pennsylvania 19152

Mr. Jane Lee
183 Valley Road
Etters, Pennsylvania 17319

Mr. Walter W. Cohen, Consumer Advocate
Department of Justice
Strawberry Square, 14th Floor
Harrisburg, Pennsylvania 17127

U.S. Environmental Prot. Agency
Region III Office
ATTN: EIS Coordinator
841 Chestnut Street
Philadelphia, Pennsylvania 19107

Mr. Charles N. Kelber
Atomic Safety and Licensing Board Panel
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO FACILITY OPERATING LICENSE NO. DPR-73

GPU NUCLEAR CORPORATION

THREE MILE ISLAND NUCLEAR STATION, UNIT NO. 2

DOCKET NO. 50-320

1.0 INTRODUCTION

By letter dated May 28, 1993, GPU Nuclear Corporation (GPUN or the licensee) requested changes to the NRC approved list of remaining Post Defueling Monitored Storage (PDMS) requirements and commitments. These requirements and commitments were originally forwarded to the NRC in a letter dated January 15, 1993. The January 15, 1993 list was developed by the NRC staff and the licensee during a series of meetings at the TMI-2 site during the fall of 1992. The NRC staff reviewed the January 15, 1993 list and approved the list in a letter dated May 19, 1993. The approved list included a procedure to allow for changes to the list of requirements and commitments in recognition of the difficulties associated with readying the facility for long term storage and the changeable nature of the effort.

2.0 DISCUSSION AND EVALUATION

The May 28, 1993 submittal by the licensee requested changes to the approved list. The licensee requested to correct a number of typographical errors in the list and to delete several items. The staff evaluation of each of the proposed changes by the licensee to the PDMS list of requirements and commitments are as follows:

(1) Item A.6, change the disposition of the "B" spent fuel pool from "drain and shield" to "drain and cover."

Evaluation: The original list requires the licensee to drain and shield the "B" spent fuel pool. The licensee requested that this requirement be changed to "drain and cover." The licensee has determined that no shielding is necessary since the general area radiation levels emanating from the pool are below the level that requires shielding. The staff finds the change acceptable.

(2) Item A.7, change the citation of the requirement or commitment.

Evaluation: The January 15, 1993 list references the PDMS Safety Analysis Report (PDMS SAR) Supplement 4, Item 1. The licensee proposes changing the citation to the PDMS SAR Section 6.2.3.2. Amendment 17 to the PDMS SAR, dated May 28, 1993, deletes the commitment from Supplement 4, Item 1, and adds the commitment to the PDMS SAR Section 6.2.3.2. The staff finds this administrative change acceptable.

(3) Item C.5, change the reference to Supplement 3, Item B-3 to B.3.

Evaluation: This is an administrative change that corrects an incorrect reference to a response in Supplement 3 to the PDMS SAR. The staff finds this administrative change acceptable.

(4) Item D.2, change the reference to PDMS SAR 5.3.2.

Evaluation: The January 15, 1993 reference to PDMS SAR Section 5.4.3 for this item was in error. The correct reference is the PDMS SAR Section 5.3.2. The staff finds this administrative change acceptable.

(5) Item H.7, change the reference to PDMS SAR 7.2.5.2.2.

Evaluation: The January 15, 1993 reference to PDMS SAR Section 7.2.5.2.5 for this item should be changed to PDMS SAR Section 7.2.5.2.2. The staff finds this administrative change acceptable.

(6) Item H.9, delete this commitment.

Evaluation: The purpose of this requirement is to provide a backup power source to support onsite radiation monitoring at TMI-2 during a temporary loss of power. The licensee has requested that this requirement for a backup power source be deleted. During a temporary loss of power, all active ventilation at TMI-2 would cease. Monitoring of plant release pathways that normally have active ventilation is unnecessary when there is no active ventilation. The staff finds the change acceptable.

(7) Item I.1, change the reference to SAR 7.2.2.2.2k to SAR 7.2.2.2k.

Evaluation: This is an administrative change that corrects an incorrect reference to a section in the PDMS SAR. The staff finds this administrative change acceptable.

(8) Item I.2, delete the parenthetical reference to the auxiliary transformers.

Evaluation: The January 15, 1993 list of requirements and commitments states that areas and systems that contain significant amounts of combustibles and possible ignition sources should have a fire suppression system. The licensee provides as an example, in parenthesis, the auxiliary transformers. Since the submission of the January 15, 1993 list, the licensee has decided not to use the auxiliary transformers for powering TMI-2, therefore there is no need for a fire suppression system for the auxiliary transformers. The staff finds the change acceptable.

(9) Item I.6, change the reference to PDMS SAR 7.2.2.2d.

Evaluation: The January 15, 1993 reference to PDMS SAR Section 7.2.2.2d for this item was in error. The correct reference is the PDMS SAR Section 7.2.2.2d. The period was inadvertently omitted from the end of the reference citation. The staff finds this administrative change acceptable.

(10) Item I.10, delete this commitment.

Evaluation: The January 15, 1993 list requires that freeze protection be added to the applicable portions of the fire main. The assumption was made by the licensee that there would be no active heating or ventilation of the fire main. The licensee has determined that heating and ventilation systems that affect the fire main will remain operational during PDMS, therefore no supplemental freeze protection measures need to be taken provided that the licensee documents the commitment to maintain operation of the heating and ventilation in the next PDMS SAR amendment. The staff finds the change acceptable.

(11) Item I.13, delete reference to PDMS SAR Supplement 1, Item 14.

Evaluation: Item I.13 of the January 15, 1993 list references PDMS SAR Supplement 1, Item 14. The licensee's May 28, 1993 submittal included Amendment 17 to the PDMS SAR. Amendment 17 revised Supplement 1, Item 14 and it no longer addresses the issue of the operability of the river water pump house. The staff finds the change acceptable.

(12) Item I.14, change this requirement from turning over the fire pump house and fire pump 2/FS-P-1 to Unit 1 to deactivate the fire pump house.

Evaluation: Item I.14 of the January 15, 1993 list described the turnover of the fire pump house and fire pump 2/FS-P-1 to Unit 1. The May 28, 1993 revision to the list states that the fire pump house will be deactivated. TMI-1 has decided not to maintain the TMI-2 diesel fire pump 2/FS-P-1 as an additional emergency backup fire supply source. The site yard fire main, which provides fire supply source water for both TMI-1 and TMI-2, will continue to be supplied by the TMI-1 pump house and fire pumps. During PDMS, the TMI-2 facilities and the systems within these facilities serve no active or passive function and therefore no longer need to be maintained operational. The staff finds this change acceptable.

(13) Item I.16, delete the terms "steam generator feedwater pumps" and "reservoirs" and add the terms "feedwater pump turbines", "emergency feedwater pump turbine", and "condensate pumps."

Evaluation: Item I.16 of the January 15, 1993 submittal lists secondary components that shall be drained of oil to the extent reasonably achievable. The component "steam generator feedwater pumps" is redundant with the term "main feedwater pump" and is being deleted. The term "reservoirs" is being

deleted from the term "condensate booster pump reservoirs" since specifying only the reservoirs is more restrictive than specifying the entire component. Additionally, the licensee proposes to add to the list of components or systems that require draining the feedwater pump turbines, emergency feedwater pump turbine and the condensate pumps. The staff finds the changes acceptable.

(14) Item J.6, delete this requirement.

Evaluation: Item J.6 of the January 15, 1993 submittal requires that the licensee verify that freeze protection has been provided for portions of the Waste Disposal Liquid (WDL) system that are determined to be subject to freezing due to deactivation of the building ventilation systems. Originally, the Auxiliary and Fuel Handling Building ventilation systems were to be deactivated during PDMS. The licensee has decided to maintain operability of the building ventilation system. The staff finds the change acceptable, provided that the licensee documents the commitment to operate the heating and ventilation systems, as necessary, to provide freeze protection during PDMS.

(15) Item J.7, delete this requirement.

Evaluation: Item J.7 of the January 15, 1993 submittal requires that the licensee verify that alternate provisions have been provided for operating the air-operated valves required for the WDL system during PDMS. Originally the licensee planned to deactivate the instrument-air supply system during PDMS. However, the licensee has decided to maintain the instrument-air system. Therefore, until the licensee deactivates the instrument-air system, no alternate means of operating the WDL valves need to be considered. The staff finds the change acceptable.

(16) Item K.1, change the reference to Supplement 3, Item A-16 to A.16.

Evaluation: This is an administrative change that corrects an incorrect reference to a response in Supplement 3 to the PDMS SAR.

3.0 CONCLUSION

The proposed changes to the PDMS requirements and commitments list of January 15, 1993 that were submitted to the staff in Amendment 17 to the PDMS SAR will not adversely affect the health and safety of the public. These changes do not constitute an unreviewed safety question, nor do they involve a significant hazard or an environmental impact. The changes described fall within the bounds of Final Supplement 4 to the Programmatic Environmental Impact Statement issued by the staff in August 1989.

Principal Contributor: Michael T. Masnik

Date: August 5, 1993

ENCLOSURE

LIST OF PDMS

REQUIREMENTS AND COMMITMENTS

REVISION 1

Additional Requirements/Licensee Commitments

A. Removal of Water from Reactor Coolant System and Fuel Transfer Canal

1. Remove water to the extent reasonably achievable.

   - Reactor Vessel; drained to less than 10 gallons (38 liters) of water. (SAR 6.2.27.2; TER 5-9)

   - Reactor Building Fuel Transfer Canal. (TER 5-9)

2. Isolate the fuel transfer tubes. (SAR 1.1.2.1).

3. Drill holes in canal seal plate to prevent refueling canal from filling. (TER 5-9)

4. Cover the Reactor Vessel to minimize water entry. (SAR 6.2.27.2)

5. Drain the Submerged Demineralizer System to the extent reasonably achievable. (SAR 6.2.36.2)

6. Drain and cover the "B" spent fuel pool to the extent reasonably achievable. (SAR 6.2.36.2)

7. Drain and cover the "A" spent fuel pool to the extent reasonably achievable. (SAR 6.2.3.2)

B. Radiation Safety & Reduction of Potential for Releases

1. Ship offsite or package and stage for shipment remaining radioactive waste from the major TMI-2 decontamination activities. (SAR 1.1.2.1; TER xiv)

2. Reduce radiation levels within the facility, to the extent reasonably achievable and consistent with ALARA, to allow plant monitoring, maintenance, and inspection. (SAR 1.1.2.1; TER xiv)

3. Apply shielding in critical locations after reactor vessel draindown to reduce dose rates. (TER 5-23)

4. Define and establish an overall surveillance program plan for PDMS environmental protection systems to ensure public health and safety. (TER xiv)

C. Ventilation

1. Verify that a surveillance program exists to ensure AFHB ventilation and filtration operability, maintenance and testing. (SAR 7.1.2 and 7.1.3; TER 6-26)

2. Verify that the licensee has procedures in place to continue to operate the AFHB ventilation system until the Accident Generated Water is no longer being processed or transferred in the AFHB. (TER 6-28)

3. Ensure that penetration R-626 has been upgraded to 5 psi. (SAR Supp. 3, Item B.2; TER 6-17)

4. Ensure that the reactor building breather system is the predominant pathway for effluent and influent to the building during those times that the reactor building ventilation system is not being operated; and that the effluent is filtered and monitored. (SAR 7.2.1.2; TER 6-25).

5. DOP test the HEPA filter in breather prior to entry into PDMS. (SAR 7.2.1.2.2 and Supp. 3, Item B.3; TER 6-25)

6. Ensure installation, actuation setting, and routine surveillance testing of the isolation valve between containment and HEPA filter in the reactor building breather (to automatically close upon receipt of a containment pressure increase of 0.25 psi). (SAR 7.2.1.2; TER 5-10, 5-11, and 6-24)

7. Develop and implement a reactor building entry procedure that requires an evaluation of the reactor building atmospheric conditions prior to personnel entry. (SAR 7.2.1.3)

8. Develop and implement procedures for maintaining HEPA filter banks for the Reactor Building Purge System.(SAR 7.2.1.3)

9. Develop and implement procedures for monitoring the Reactor Building vent during reactor building purge. (SAR 7.2.1.3)

D. Plant Contamination Survey

1. Licensee will meet established contamination level goals for entrance into PDMS for each area of the AFHB. If the decontamination goals cannot be met because of the unique situation at TMI-2 or ALARA considerations, the licensee will provide an evaluation of the specific situation to the NRC. (SAR 5.3.1 and Supp. 3, Item A.11; TER p. 4-2)

2. Update information in the following tables from the SAR as final decontamination results become available. (SAR 5.3.2)

   - Table 5.3-2 (SAR) "PDMS Radiological Conditions - AFHB"

   - Table 5.3-4 "Surface Contamination - Reactor Building"

   - Table 5.3-5 "Surface Contamination - AFHB"

   - Table 5.3-6 "Surface Contamination - Other Buildings"

3. Perform survey of the service building, elevation 305 ft.; the turbine building, elevation 281 ft. and the containment air control envelope building and provide information in the PDMS SAR before entry into PDMS in order to establish a radiological baseline for the facility. (SAR 5.3.2; TER 4-2)

4. Ensure that a program exists for periodic measurement of radiation and contamination levels to verify radiological conditions. (SAR 7.2.4.1 and 7.2.4.2; TER 6-42 and 6-43).

E. Physical Maintenance in Reactor Building and Vessel

1. Have the capability of inserting a video camera into the reactor vessel to verify fuel location if it is determined at a later time that such an examination is required. (TER 6-3)

2. Create a program plan to perform monthly entries into the reactor building for at least 6 months after placing it into its PDMS condition. (PDMS SAR 7.2.4; TER 5-23)

F. Physical Maintenance in AFHB

1. Create a program plan to perform monthly entries into the AFHB for at least 6 months after placing it into its PDMS condition. (SAR 7.2.4; TER 5-23)

2. Ensure that both fuel pool structures remain intact (SAR 7.1.3.2)

G. Physical Maintenance in other Buildings

1. Ensure that the Control Room Ventilation Systems (i.e., Control Room HVAC and Cable Room HVAC) and the Service Building Ventilation System are maintained in an operational condition and will be operated as required. (SAR 7.2.6.8,9,10)

2. Maintain the capability to process potentially contaminated liquids. (SAR 7.2.3.1; TER 5-14)

H. Electrical Related

1. In reactor containment, reactor building electric power circuits will be deenergized except those necessary for PDMS monitoring, inspection, and surveillance equipment and other PDMS support requirements. (SAR 7.1.1.4; Supp. 1, Item 17; TER 6-34 and 6-38)

2. In the auxiliary building, the power to lighting, fire detectors, and sump level indication circuits will be energized and will remain operational. The auxiliary sump, auxiliary sump tank and associated level indication will also remain operational. (SAR 7.1.2.2; TER 6-37)

3. In the fuel-handling building, low voltage circuits to lighting and fire detection will be energized. (SAR 7.1.3.2; TER 6-37)

4. In the Control and Service Buildings, verify that the electrical distribution will remain configured to power low voltage lighting loads and fire detectors. (SAR 7.1.7.2)

5. Portions of the TMI-2 electrical distribution system will be operational and energized to provide power for the PDMS support systems and their associated controls and instrumentation. Power will be available for area lighting, receptacles, heating, and ventilation to support PDMS activities. (SAR 7.2.5.1.1; TER 6-37)

6. Emergency lighting (8-hr portable emergency lights) is staged with emergency response crew equipment. (SAR 7.2.5.2.1; TER 6-37)

7. Verify that exit signs are powered from the normal lighting system and from a locally mounted battery during emergency conditions. (SAR 7.2.5.2.2)

8. DC power during PDMS will be available. Loads have been consolidated where practicable to reduce the number of energized circuits. (SAR 7.2.5.1.3; TER 6-38)

9. Deleted

I. Fire Protection

1. Have procedures in place to ensure that the fire mains within the reactor building will be closed with valves drained to the extent reasonably achievable within 30 days following entry into PDMS to minimize the potential for introduction of water into the reactor vessel. (SAR 7.2.2.2k.; TER 6-2)

2. Ensure that automatic fire suppression is provided and maintained to areas of the facility and systems which contain significant amounts of combustibles and possible ignition sources. (SAR 7.2.2.1)

3. Ensure that either the TMI-2 control room or some other location is continuously manned with a fully qualified person or that remote monitoring capabilities are available in TMI-1 control room to identify the specific zone in which a fire in the TMI-2 facility is located. Ensure that procedural control exists to delineate the location of the monitoring activity. (TER 6-29; SAR 7.2.2.2b.)

4. Demonstrate that TMI-1 Operations has accepted responsibility for maintaining the fire service system in operable areas of the plant as required to support operations; in the waste-handling and packaging facility, the respirator cleaning facility and the administration building. (TER 6-29)

5. Deactivate deluge systems in the auxiliary building and the control building. (SAR 7.2.2.3; TER 6-29)

6. Ensure that all Halon systems have been deactivated by disconnecting the cylinders and either emptying or removing them. (SAR 7.2.2.2d.)

7. Verify that portable fire extinguishers are located in the areas specified in Figures 7.2-6 and 7.2-7 of the SAR. (SAR 7.2.2.2e.)

8. Verify that self-contained breathing apparatus are available for fire fighting purposes in the areas shown on Figures 7.2-6 and 7.2-7 of the SAR. (SAR 7.2.2.2f.)

9. Ensure that the fire detection system remains operational in the Air Intake Tunnel and the relay room. (SAR 7.2.2.2d.)

10. Deleted.

11. To the extent that fire protection is not required in work or storage areas, ensure isolation of the 12-inch fire service loop, which runs through the AFHB, the control building area and the turbine building (east and west). (SAR 7.2.2.2k.; TER 6-32)

12. Ensure that the fire system line is cut and blanked off at the fuel-handling building, where the fire system line runs from the diesel generator building. (SAR 7.2.2.2k.; TER 6-32)

13. Deactivate the river water pump house. (SAR 6.1.10; TER 6-33)

14. Deactivate the fire pump house. (SAR 6.1.10 and Supp. 1, Item 14; TER 6-33)

15. Ensure that transient combustibles have been removed from inside the containment and the AFHB to the extent practicable. (SAR 7.2.2.2g.; TER 6-33) This includes most plant items installed after the accident. Fire loading must be less than a 1-hour loading of 80,000 BTU/square foot. (SAR Supp. 1, Item 17)

16. Drain oil to the extent reasonably achievable from the main turbine, feedwater pump turbines, emergency feedwater pump turbine, main feedwater pumps, emergency feedwater pumps, condensate pumps, condensate booster pumps and hydrogen seal oil unit. (SAR 7.2.2.2h.; TER 6-34)

17. Taken as an aggregate, demonstrate that no more than 57 percent of the original total volume of reactor coolant pump lubricating oil remains in the upper and lower reservoirs of the four reactor coolant pump reservoirs. (SAR Supp. 1, Item 33; TER 6-34)

18. Charcoal filters have been removed from all HVAC systems in TMI-2. (SAR 7.2.2.2i.; TER 6-34)

19. Train and familiarize station fire brigade with the TMI-2 system configurations, plant layout and procedures for TMI-2. (SAR 7.2.2.2m.; TER 6-35)

20. Procedure in place for reactivation of the deactivated portions of the fire protection system if necessary. (SAR 7.2.2.2l.; TER 6-29)

21. Verify that the procedure for inspection of the fire loop drain valves during freezing weather is in place. (SAR 7.2.2.2k.; TER 6-32)

22. Verify that the procedures and system are in place for testing of the operable portion of the fire detection and alarm system. (SAR 7.2.2.2b.; TER 6-34)

23. Verify that procedures for manual suppression of fire by the fire brigade are provided as stated in the FPPE. (TER 6-35)

J. Flood Protection

1. Ensure that flood panels are provided for all entrances to the control building, and to the entrance of the auxiliary building. (TER 6-36) Doors and entrances to the Control Building Area that are not flood-protected are either watertight or are provided with flood panels. All openings that are potential leak paths (i.e., ducts, pipes, conduits, cable trays) are sealed. (SAR 7.1.4)

2. Verify that the containment basement and auxiliary building sumps level indications will be maintained. (SAR 7.2.3.1.2)

3. Verify that the auxiliary building sump pumps are maintained operational and placed in a manual control mode. (SAR 7.2.3.1.2)

4. Verify that the Miscellaneous Waste Holdup Tank and the Auxiliary Building Sump Tank (ABST) have been isolated from the Radwaste Disposal Gas System and vented via HEPA filters to protect against airborne releases from these tanks. (SAR 7.2.3.1.2)

5. Ensure that a flow path exists to drain down the reactor building basement floor. (SAR 7.2.3.1.2)

6. Deleted

7. Deleted

8. Ensure that the active sumps have a high level alarm that annunciates in the control room and the PDMS Alarm Monitoring System. (SAR 7.2.3.2.2)

K. Procedures and Programs

1. Include a surveillance program under which a limited number of rodent carcasses will be analyzed for gamma-emitting isotopes as part of the non-routine Radiological Environmental Monitoring Program. (SAR Supplement 3, A.16)

L. STANDARDS FOR SATISFYING REQUIREMENTS AND COMMITMENTS

The staff recognizes that many of the above requirements and commitments have been acted upon by the licensee. Once this list is finalized, the licensee will submit a letter that documents which of the listed requirements and commitments have been satisfied. The letter will reference primary documentation (UWIs, procedure numbers, drawings, etc.) that demonstrate that the work was completed or the requirement or commitment met. It will not be necessary to submit the primary reference documents but only have them accessible at the TMI-2 site. The staff will verify by reviewing the primary documentation and/or inspection of the actual modification. Once the staff has conducted its review and determined that the requirement or commitment has been satisfied, the staff will close out the item. As other items are completed, the licensee will continue to notify the staff in writing of the completed status and identify the appropriate primary references. The staff and licensee plan to agree prior to notification of completion of an item what constitutes the standard for demonstrating completion of the item.

M. PROCEDURES FOR CHANGING THE ABOVE REQUIREMENTS AND COMMITMENTS

During the remainder of the current cleanup effort, conditions may change resulting in a change in the licensee's ability to satisfy the above requirements and commitments. Licensee's request for deviations to the above list of requirements and conditions must be made in writing, as an amendment to the SAR, providing a description of the old requirement or commitment and a description of the change. The deviation request must include a safety analysis evaluating the proposed change. Requests for deviations to the above list must be timely and allow for staff review (typically 60 days). The NRC staff will either approve or disapprove the licensee's request in writing based on the results of the staff review. The licensee understands that PDMS was evaluated and received staff approval based on the requirements and commitments made by the licensee through SAR Amendment 15. Significant changes to the requirements and commitments may invalidate, or require a reevaluation of the staff's Safety Evaluation and Technical Evaluation Report.