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July 12, 1988
4410-88-L-0097/0400P

Dr. Michael T. Masnik
Senior Project Manager
OWFN 13D16
US Nuclear Regulatory Commission
Washington, DC 20555

Dear Dr. Masnik:

Three Mile Island Nuclear Station, Unit 2 (TMI-2)
Operating License No. DPR-73
Docket No. 50-320
Draft Programmatic Environmental Impact Statement, Supplement No. 3

This letter transmits comments concerning the draft Programmatic Environmental Impact Statement (PEIS), Supplement No. 3, which evaluates GPU Nuclear's proposed Post-Defueling Monitored Storage (PDMS) of Three Mile Island Unit 2 (TMI-2).

GPU Nuclear is pleased that the Staff has confirmed that the PDMS configuration is environmentally safe and that the benefits of long-term storage of TMI-2 outweigh any potential effects. Further, wc want to stress that the dominant issue inherent in a decision to pursue PDMS is reduced occupational radiation exposure to the TMI-2 workforce. Included in the attached comments are results of a recently completed GPU Nuclear study which estimated worker radiation exposure for the PDMS proposal and for the NRC identified alternative of additional decontamination activity. These estimates, which were not available when the Supplement No. 3 Draft was prepared, indicate a significantly larger benefit in reduced occupational radiation exposure than presented in the PEIS Draft.

Based on the PEIS Draft Supplement No. 3 and our attached comments, GPU Nuclear concludes that there is every reason to identify the PDMS proposal as the preferred alternative. All of the identified alternatives are safe and present no significant effect to the off-site public or the environment. The PDMS proposal, consistent with the basic NRC principle for radiation exposure of "as-low-as-is-reasonably-achievable" (ALARA), additionally offers a significant reduction in the radiation exposure to the TMI-2 workforce. GPU Nuclear believes this makes it clearly preferrable to the other alternatives.

If you have any further questions on these comments, we will be pleased to answer them.

Sincerely,

F. R. Standerfer
Director, TMI-2

EDS/emf

Attachment

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

GENERAL COMMENTS

General Comment No. 1 - Preparation for PDMS

The discussion of "Preparations for PDMS," Page 3.6, Section 3.2.1.2, should be revised to include the prerequisites that GPU Nuclear has established for PDMS. These prerequisites are described in the December 1986 plan. Further, it should be stated that after TMI-2 is initially placed in PDMS, some activities may continue until completed.

Activities which may be carried on subsequent to the implementation of PDMS include:

1. Water Processing - Due to the anticipated duration of the ongoing adjudicatory process on the disposal of Accident Generated Water (AGW), it is expected that AGW disposal will be ongoing into PDMS. Because certain systems and facilities (e.g., the Processed Water Storage Tanks) are needed to support this activity, they will not be placed in a final storage configuration until after initial implementation of PDMS.

2. Decontamination - During the initial stages of PDMS, removal or isolation of small sources of radioactivity or radioactive material may continue (e.g., actions needed to place AGW disposal support systems in a final PDMS condition).

3. Radioactive Waste - Completion of shipment of remaining wastes generated during the Cleanup Program will be accomplished. Thus, radioactive waste shipments will continue during PDMS until all packaged waste from TMI-2 cleanup activities has been shipped off-site.

4. SNM Accountability - Activities to complete the transfer records for the fuel debris which was shipped to the Department of Energy will continue.

In summary, TMI-2 will be prepared to enter PDMS upon completion of the ongoing Cleanup Program (see General Comment No. 2 below). While some activities may continue for a period following implementation of PDMS, these activities will not alter the NRC assessment of environmental impact.

General Comment No. 2 - Completion of the Cleanup Program

GPU Nuclear's TMI-2 "Cleanup Program" includes those actions necessary to recover from the accident and to place the plant in a safe and stable condition that poses no risk to the public health and safety. The key elements of this program will be accomplished as a prerequisite to implementing PDMS. The use by the NRC of the terms "immediate cleanup" and "delayed cleanup" do not make clear that extensive cleanup has been accomplished and that the planned "Cleanup Program," as defined in the various PDMS documents, will be completed prior to PDMS. More accurate terminology for NRC's two alternative cases would be "immediate additional decontamination" and "final decontamination as part of decommissioning."

Additional near-term activities, while further reducing remaining radioactive contamination at TMI-2, are not necessary to ensure the public health and safety and are not consistent with the ALARA principle. These activities are not part of the "Cleanup Program" but rather will be accomplished as an integral element of decommissioning. This distinction should be addressed in the PEIS since these additional activities, whenever accomplished, will require considerable occupational exposure with no measurable increase in the margin of safety afforded by PDMS.

General Comment No. 3 - Worker Radiation Exposure

The NRC has included estimates of the occupational radiation exposure for the PDMS proposal and the primary alternative action. GPU Nuclear has recently completed a task by task study of the occupational radiation exposure for these alternatives and these estimates are summarized in Table 1. These GPU Nuclear estimates indicate a significantly larger person-rem savings than is indicated in the Draft PEIS. Thus, there is a greater ALARA incentive to adopt the PDMS proposal over the primary alternative. Moreover, if, as GPU Nuclear has proposed, final disposition of TMI-2 occurs at the time of TMI-2 decommissioning, the person-rem savings could be even larger.

Consistent with the original PEIS TMI-2, NUREG-0683, 1981, GPU Nuclear views the occupational dose savings as the dominant consideration in evaluating the PDMS alternative. The PEIS should emphasize that the PDMS condition poses no risk to public health and safety; in fact, the potential releases from TMI-2 during this period are expected to be much less than those analyzed in NUREG-0112, "The Final Environmental Impact Statement Related to the Operation of Three Mile Island Nuclear Station, Unit 2." On balance, the significant reduction in occupational exposure as a result of PDMS more than offsets even the maximum hypothetical environmental effect. Thus, a clear advantage for PDMS is demonstrated.

TABLE 1

SUMMARY OF GPU NUCLEAR PERSON-REM ESTIMATES

ADDITIONAL DECONTAMINATION ACTIVITIES	IMMEDIATE (Person-Rem)	POST-PDMS (Person-Rem)
REACTOR BUILDING		
Preparations/Support Activities		
Characterization	30 - 60	10 - 30
Ventilation Control and Area Isol.	0 - 0	0 - 0
Health Physics Support	1110 - 2450	370 - 820
Engineering Support	60 - 130	30 - 60
Basement General Cleanup	1340 - 2940	530 - 1160
Basement Cubicle Cleanup	1290 - 2840	430 - 950
Basement Block Wall Removal	180 - 400	100 - 210
D-Ring Dose Reduction	710 - 1550	180 - 390
D-Ring Final Decon	740 - 1630	280 - 610
Dome and Polar Crane Decon	20 - 40	0 - 10
El. 347'-0" Decon/Dose Reduction	70 - 160	20 - 40
El. 347'-0" Final Cleanup	370 - 820	90 - 210
El. 305'-0" Decon/Dose Reduction	120 - 260	30 - 60
El. 305'-0" Final Cleanup	570 - 1260	140 - 310
System Decontamination		
Reactor Coolant System	10 - 20	0 - 10
Non-RCS Systems	60 - 130	30 - 70
Subtotal (Reactor Building)	6680 - 14690	2240 - 4940
AUXILIARY AND FUEL HANDLING BUILDINGS		
Preparations/Support Activities		
Characterization	10 - 10	0 - 0
Health Physics Support	20 - 50	0 - 10
Engineering Support	0 - 0	0 - 0
AFHB Decon/Dose Reduction	100 - 220	20 - 40
Subtotal (AFHB)	130 - 280	20 - 50
RADWASTE MANAGEMENT	360 - 550	180 - 280
PDMS TASKS	0 - 0	230 - 490
APPROXIMATE RANGE OF PERSON-REM EXPOSURE	7200 - 15500	2700 - 5800
APPROXIMATE SAVINGS INCURRED BY IMPLEMENTATION OF PDMS		4500 - 9800

General Comment No. 4 - Practicality of Continued Near-Term Work

As a practical matter, "immediate cleanup," while useful as a hypothetically bounding case for assessing the environmental impact of the PDMS proposal, is not a viable alternative. To continue cleanup activities in the special case of TMI-2, beyond those currently planned, would require a substantial planning and engineering effort as well as the development of new technology and tooling. It is likely that additional work would require the use of destructive decontamination techniques. Therefore, such an undertaking would constitute, in effect, a new program comparable to decommissioning and would result in generation of significant quantities of abnormal waste which would require disposal. The current low-level waste disposal capacity and system of allocations are not adequate to accept an influx of the large volume of normal and abnormal wastes which would require disposal. The GPU Nuclear proposal is to enter PDMS and subsequently undertake further decontamination as part of plant decommissioning. In the interim, it is likely that the total volume of future radwaste could be reduced because of efficiencies gained in packaging and volume reduction as a result of developing technologies. Thus, from a radwaste disposal perspective, there is a clear advantage to placing the plant in PDMS.

As stated, in our December 1986 plan, PDMS assures a continued safe and stable TMI-2 plant condition until the time of decommissioning of TMI-1, at which time both units could be decommissioned simultaneously. Two clear advantages result:

1. The possibility of decommissioning activities at TMI-2 affecting operations at TMI-1 is eliminated.

2. By performing a common function for both facilities, the workforce can be utilized more efficiently.

The NRC's new decommissiong rule, 10 CFR 50.82(b)(iii), specifically recognizes the presence of other nuclear facilities at the site to be a factor in determining the appropriate timeframe for completing a decommissioning safely.

Recognition of these issues and consideration of the associated advantages to be realized by placing TMI-2 in PDMS should be included in this PEIS.

General Comment No. 5 - PEIS Summary Table S-1

Table S.1, which summarizes and compares the impacts from NRC's "delayed cleanup" and "immediate cleanup" alternatives does not compare the two alternative cases on a common timeframe. As a result, GPU Nuclear believes it does not present an accurate comparison of these alternative cases.

GPU Nuclear has developed a suggested revision to Table S.1 which portrays a comparison of like activities. We use a common timeframe and the NRC data, except for the occupational exposure estimates where we use the GPU Nuclear estimates from Table 1.

The three major changes to Table S-1 are proposed by GPU Nuclear:

1. Compare the two alternatives over the same time period (24 years) so that time dependent factors (e.g., cost, off-site radiation exposure) can be compared on the same basis;

2. Compare radiological exposures due to these activities to natural background radiation exposure to highlight their relative insignificance; and

3. Divide Table S.1 into three separate parts so that similar impacts are more readily compared.

In addition, it is suggested that an appendix (or reference) addressing collective occupational person-rem estimates be provided to facilitate an understanding of the bases of the PEIS estimates. This appendix should be based on the GPU Nuclear study summarized in Table 1. The GPU Nuclear person-rem estimates are significantly higher than those presented in the PEIS. The principal contributors (i.e., 60%) are Reactor Building basement and D-Ring activities where personnel access currently is limited. Although PDMS envisions maximum use of advanced robotics, such application will be limited in some areas (e.g., D-Rings) and management of personnel exposure will be key. Therefore, the natural decay process during PDMS, which will result in a significant decrease in work area dose rates, will significantly decrease personnel exposure and, in some cases, the scope of work required. A detailed analysis of occupational person-rem costs, the results of which are summarized above, is in the process of publication and will be forwarded as Appendix 1A of the Post-Defueling Monitored Storage Safety Analysis Report.

The resultant suggested revisions to the Draft PEIS Table S-1 are attached as:

1. Revised Table S-1 - Radiation Dose Impacts

2. Revised Table S-2 - Potential Health Impacat

3. Revised Table S-3 - Other Impacts

REVISED TABLE S-1

Impacts	RADIATION DOSE IMPACTS[a] NRC Post-PDMS Cleanup Alternative (24 yr)	RADIATION DOSE IMPACTS[a] NRC Immediate Cleanup Alternative Plus 20-yr Storage (24 yr)	Natural[b] Background Radiation (24 yr)
Occupational Dose	2670-5760 person-rem	7170-15520 person-rem	N/A
Bone Dose to the Off-site Population			
Maximally Exposed Individual	0.001[d] to 0.03[c] rem	0.001[d] to 0.009[c] rem	4.08 rem
Total Population	9[d] to 20[c] person-rem	7[c] to 9[d] person-rem	9 million person-rem
Total Body Dose to the Off-site Population Within a 50-Mile Radius of TMI-2			
Maximally Exposed Individual	0.0005[d] to 0.004[c] rem	0.0005[d] to 0.001[c] rem	7.20 rem
Total Population	2[d] to 11[c] person-rem	2[d] to 3[c] person-rem	16 million person-rem

FOOTNOTES:

a Off-site doses include the contribution from the NRC's 4-year additional decontamination effort and the contribution from airborne releases only during a 20-year storage period.

b Natural background radiation doses are based on NCRP-93 and are calculated based on individual doses of 0.17 rem/yr bone dose and 0.30 rem/yr total body dose. A population of 2.2 million was used to calculate the person-rem.

c These doses were calculated by the NRC and represent bounding conditions. There is no significant difference in the alternatives based on environmental impact. All doses are well below 1% of natural background radiation.

d. These doses were calculated for the GPU Nuclear PDMS storage proposal as presented in the Environmental Evaluation for PDMS. They are adjusted for a 24-year time period to coincide with the NRC dose calculations. Doses were calculated using actual source terms. Based on actual experience and technical data for the period 1983-87, these data assume equivalent releases for periods of active decontamination and PDMS.

REVISED TABLE S-2

	POTENTIAL HEALTH IMPACT		
	NRC Post-PDMS Cleanup Alternative	NRC Immediate Cleanup Alternative Plus 20-yr Storage	Natural Incidence
Projected Total No. of Cancer Deaths for:			
Off-site Population	0.001[a]	0.0004	352,000[a]
Worker Population	0.4 to 0.8	1 to 2	160[b]
Projected No. of Genetic Disorders[c] (off-site population)	0.2 to 0.4	0.5 to 1	1,100,000
Individual Risks to Off-site Population			
Cancer	Less than 1/2,000,000,000[d]	Less than 1/5,000,000,000	1/6[c]
Genetic Disorder	Less than 1/27,000,000	Less than 1/11,000,000	1/10

Explanation of Health Risk:

a This value implies that there is approximately 1 chance in 1000 that a single fatal cancer may occur among the 2.2 million person off-site population. Moreover, the natural cancer mortality rate among 2.2 million persons is about 352,000 cases.

b The natural incidence of cancer deaths for the worker population is 16% of the estimated workforce of 1000 required for the cleanup phase of either NRC alternative.

c Genetic disorders are calculated for the equilibrium condition which includes 5 generations for the 2.2 million persons for a total of 11 million individuals. Worker exposure dose almost exclusively accounts for genetic disorder values and is incorporated into the off-site population since future generations of radiation workers are the members of the public.

d The average individual cancer risk due to PDMS and additional NRC-defined decontamination activities would be 1 chance in 2 billion. For the average individual, the natural risk of dying from cancer is approximately 1 chance in 6.

REVISED TABLE S-3

OTHER IMPACTS

	NRC Post-PDMS Cleanup Alternative (24 yr)	NRC Immediate Cleanup Alternative Plus 20-yr Storage (24 yr)
Cost ($ Million)	200-320	240-320[a]
Radioactive Waste Burial Ground Volume	33,000 to 74,000 ft^3 [b]	32,000 to 70,000 ft^3
Estimate Number of Traffic Accidents	0.5 to 1[c]	1 to 3
Estimated Number of Traffic Injuries	0.3 to 0.6[c]	1 to 3
Estimated Number of Traffic Fatalities	0.02 to 0.05[c]	0.1 to 0.2

a. The cost is based on the NRC estimate of $170 to $240 million to perform "immediate cleanup" plus the NRC estimate of $3.8 million per year for 20 years to maintain the plant in a stored condition. The cost estimates are used for purposes of comparing alternatives and do not reflect actual GPU Nuclear cost estimates. The initial GPU Nuclear estimate of the relative cost indicates the NRC's "immediate cleanup" alternative would be more costly.

b. Advances in waste reduction and packaging technology should result in a reduction in the overall waste volume for this alternative.

c. An assumed reduction in the distance travelled to the off-site burial site, coupled with anticipated waste volume reductions, should cause the degree to which the environmental assessment favors the NRC's "delayed cleanup" to increase.

General Comment No. 6 - Residual Fuel

The goal of the current defueling program is to remove greater than 99% of the fuel. The Reactor Vessel (RV) will be defueled to the extent that subcriticality can be ensured. We call to the Staff's attention the information contained in Technical Specification Change Request No. 53, submitted via GPU Nuclear letter 4410-87-L-0042 dated April 23, 1987, and approved by License Amendment No. 30 dated May 27, 1988, which noted that the quantity of residual fuel in the RV may exceed 70 kg. The final quantity of fuel remaining in the RV will be reported as part of the Defueling Completion Report in accordance with Technical Specification 1.3.

The source term available for environmental releases is relatively insensitive to the quantity of residual fuel in the Reactor Vessel as the fuel is contained and subcritical. Thus, the overall conclusions of the PEIS do not change because this fuel will be contained within the Reactor Vessel and cannot contribute to the Reactor Building atmospheric release source term. Bounding calculations for purposes of total environmental assessment need not await the Defueling Completion Report. They can be performed now based on an assumed residual fuel inventory of 1% of the original core inventory as indicated in the discussion of the comparison of NRC's cleanup alternatives in Section 3.0, page 3.1, of the PEIS.

SPECIFIC COMMENTS

Summary and Nomenclature

v/Footnote - See General Comment No. 6 concerning residual fuel in RV.

xxi/ALARA - Should use definition from 10 CFR 20.1

xxvi - Milliroentgen and mrem are not units of radioactivity. They are units for measuring radiation exposure either in air (roentgens) or in humans (rem).

xxviii/SDS - In addition to radioactive cesium, the Submerged Demineralizer System was designed to remove radioactive strontium and many other radioactive isotopes present in the radioactively contaminated water it processes.

Section 1

Introduction

Pages 1.1, 2.30, 2.31, 3.1 - GPU Nuclear currently estimates that at least 99% of the original fuel inventory will be removed prior to entry into PDMS. Thus, for purposes of this document, it should be assumed that 1% of the original fuel inventory remains at TMI-2. (See General Comment No. 6.) GPU Nuclear is unable to duplicate the estimated 0.16 percent value quoted on Pages 2.30 and 2.31 based on the estimated residual fuel values provided by GPU Nuclear on Page 11 of the December 1986 report.

Pages 1.1, 2.16 - The extent of Reactor Coolant System decontamination activity is limited to fuel removal and draining of the Reactor Coolant System to the extent practical.

Page 1.1 - Treatment of radioactive liquids may not be completed prior to entry into PDMS as it is likely that Accident-Generated Water processing and disposal will be underway. Treatment of Accident-Generated Water is analyzed separately in PEIS Supplement No. 2.

Section 2

Background Information Affecting Cleanup Alternatives

Page 2.4/Section 2.1.1 - (Second Paragraph) - At the end of 1987, the general area exposure rates at the 347' elevation were approximately 25 to 35 mR/hr, with less than 35 mR/hr for most well-travelled areas.

Page 2.9/Section 2.1.1 - (Second Paragraph) - The last sentence should read, "In addition, a layer of sludge was deposited on the basement floor."

Page 2.11/Section 2.1.1 - As stated in our General Comment No. 2, GPU Nuclear considers the "Cleanup Program" to be completed prior to entry into PDMS.

Page 2.11/Section 2.1.1 - Depending on the radioactivity levels of the Reactor Building basement water, processing may be through SDS and EPICOR II or only through EPICOR II. This distinction should be acknowledged.

Page 2.11/Section 2.1.1 - Work being performed in the Reactor Building basement prior to entry into PDMS is primarily being performed in Quadrants 1 and 2.

Page 2.12/Figure 2.7 - The data presented in this figure should be clarified. The radiation exposure rates are not general area exposure rates but rather are exposure rates obtained by use of a shielded directional probe. Most of the data is derived from contact readings. Even the general area readings are highly directional and do not give an accurate representation of actual general area exposure rates. Thus, the actual general area exposure rates, taken with a non-directional probe, would be lower than the contact exposures rates but higher than the general area exposure rates identified on this figure.

Page 2.13/Section 2.1.2 - The latter stages of defueling will require cutting through the lower grid plates and flow distributor forging in the lower core support assembly.

Page 2.13/Section 2.1.2 - The final storage location of the Reactor Vessel components has not been selected; however, they will be stored in suitable locations to minimize the potential for migration of fuel or activity to uncontained areas of the Reactor Building. Suggested rewording of this sentence would be: "After defueling, reactor internals may be returned to the vessel or stored in other suitable locations in the Reactor Building such as under shielding in the refueling canal."

Page 2.13/Section 2.1.2 - The statement that "Defueling will continue until all the fuel accessible, throughout the reactor vessel, has been removed," may not be accurate. GPU Nuclear will remove as much fuel from the reactor vessel as can be achieved, based on technology, criticality concerns, and ALARA considerations. Some fuel which is accessible (e.g., thin films on Reactor Vessel components) may not be practicable to remove.

Page 2.16/Table 2.1 - This table should be annotated to reflect that the estimated core material distribution in the Reactor Vessel is as of December 31, 1987, as stated in the text on Page 2.13.

Page 2.28/Section 2.2.2.3 - The estimate for "somewhat soluble fission products" was calculated based on the ratio of an estimated 21,000 curies of total cesium remaining to the original estimate of 660,000 curies; i.e., 3.2% of the original activity remaining in the Reactor Building. However, in deriving this estimate, approximately 15,000 curies of cesium remaining in the "D"-Rings were not considered; thus, the estimate of the remaining "somewhat soluble fission products" increases to 5.5% of the original value.

Page 2.29/Section 2.2.2.3 - The Cs-137:Sr-90 ratio for the 3000 psi concrete slab wall is approximately 2:1 vice 24:1.

Section 3

Proposed And Alternative Plans for Completion of TMI-2 Cleanup

Page 3.1/Section 3.0 - Based on current status of the adjudicatory process for Accident-Generated Water (AGW) disposal, there may be AGW in the Auxiliary and Fuel Handling Buildings when TMI-2 enters PDMS. Specifically, the Fuel Pools may not yet be drained.

Page 3.1/Section 3.0 - The scope of the GPU Nuclear proposal is limited to placing TMI-2 in a PDMS condition. Additional activity and the final disposition of the plant subsequent to PDMS has not been studied nor is it now proposed.

Page 3.2/Table 3.1 - The radiological goal of <35,000 mR/hr for the Reactor Building Basement general area exposure rate is based on the expected dose rates in the basement following the planned scope of work. The actual conditions in the Reactor Building Basement, following the completion of the current scope of the cleanup activities, are expected to range from 1 R/hr to greater than 100 R/hr based on the success of those activities in the various areas of the Reactor Building Basement. The limiting factors will be accessibility and ALARA conditions.

Page 3.4/Section 3.1.5 - The no action alternative should be evaluated on the basis that all preparation for PDMS has been completed and TMI-2 has been placed in a safe, stable, and secure condition that represents no risk to public health and safety.

Page 3.6/ Section 3.2.1.1 - Presently the only items identified to be preserved for future use following PDMS are the mechanical components of the Polar Crane.

Page 3.6/Section 3.2.1.1 - These sections imply that the current environmental
Page 3.9/Section 3.2.1.3 monitoring program at TMI will be maintained
Page 4.12/Section 4.1.4 unchanged throughout PDMS. However, both GPU Nuclear's December 1986 Report on PDMS and our March 1987 Environmental Evaluation state that the environmental monitoring program at TMI undergoes continuous review and modification in response to changing site and plant conditions. This process is expected to continue during PDMS. However, an adequate and appropriate site environmental monitoring program will be maintained throughout PDMS to provide coverage for TMI-1 and TMI-2.

Page 3.7/Section 3.2.1.3 - The current plan for monitoring effluents during
Page 3.13/Section 3.2.2.1 passive airflow conditions is to periodically (semi-annually) perform an assay of the HEPA filter. Based on a known filter efficiency, the total particulate release to the environment can be determined. Since filter deposition is cumulative, this method provides determinative monitoring of breather effluents on a continuous basis.

Page 3.8/Table 3.2 - Although not specifically defined in previous GPU Nuclear submittals, the continuous sump level monitoring referred to in Table 3.2 is via an alarm function. Remote level measuring devices are not planned.

Page 3.10/Section 3.2.1.4 - Principal post-PDMS activities required to restore the plant to a condition similar to a normal plant at end of life include decontamination of Reactor Coolant System and connecting systems and cleanup of the Reactor Building, especially the basement and inside the D-Rings. PDMS is a logical "hold point" prior to decommissioning. The next step (i.e., accomplishment of these post-PDMS activities) logically is a part of decommissioning of the plant.

Page 3.14/Section 3.2.2.1 - Radionuclides specifically associated with the fuel debris are located in the Reactor Coolant System and connected piping systems.

Page 3.16/Section 3.2.2.1 - An assumption that 10% of activation products become airborne appears to be overly conservative since this activity is interstitially bound to the material it is contaminating.

Page 3.21/Section 3.2.2.2 - These accident analyses assume failure of both
Page 3.36/Section 3.3.2.2 stages of a double-stage HEPA-filter at the "most critical time". This double failure event should be characterized as a very low probability event.

Page 3.23/Section 3.2.2.2 - GPU Nuclear plans to deactivate the SDS system upon completion of AGW disposal; thus, SDS would not be available for post-PDMS activities. A more appropriate assumption is that contaminated liquids would be processed by EPICOR II prior to storage in an outside storage tank pending subsequent disposal.

Page 3.26/Section 3.2.4 - Preparation for PDMS could generate some Class B waste due to the relatively high Sr-90 concentration in contamination at TMI-2. Based on present experience, the estimated ratio of Class A to Class B waste would be approximately 20:1.

Page 3.26/Section 3.2.4 - Radioactive waste would not necessarily be shipped off-site as it is generated. Normal procedures call for waste to be staged on-site until a sufficient volume is generated to make up a full shipment.

Page 3.26/Table 3.14 - The amount of waste listed under "Preparations for PDMS" appear low. GPU Nuclear currently estimates that 38,000 cubic feet of waste will be generated in 1988 with another 9000-18,000 cubic feet estimated for 1989. Of this volume, approximately 4000-5000 cubic feet would be Class A waste directly related to preparation for PDMS.

Page 3.27/Section 3.2.4 - Most Class A waste does not require shipment in a
Page F.1/F.1 licensed shipping cask in order to comply with the NRC and DOT regulations. Most of this Class A waste is shipped in unshielded containers of 98.5 ft^3 or 1014 ft^3.

Page 3.27/Section 3.2.4 - The 142 ft^3 casks licensed for shipment of Class C waste are also licensed for shipment of Class B wastes.

Page 3.27/Section 3.2.4 - The assumption that the regional disposal facility will be 500 miles from the TMI site appears to be overly conservative since the low-level radioactive waste disposal site will be located in Pennsylvania.

Page 3.27/Section 3.2.4 - In discussing the unique arrangement between GPU
Page 3.40/Section 3.3.4 Nuclear and the U.S. Department of Energy (DOE) to dispose of waste classified as greater than Class C, it should be noted that the current GPU Nuclear contract with the DOE for this service expires December 31, 1989. Disposal of such waste after that time will require negotiation of a new contract.

Page 3.34/Section 3.3.2.1 - The Submerged Demineralizer System (SDS) should not be assumed to be operable for purposes of analysis of the "immediate decontamination" alternative. GPU Nuclear plans to deactivate the SDS system upon completion of AGW disposal.

Page 3.40/Table 3.23 - Table 3.23 should include the dose estimate for the 20-year storage period after the so-called "immediate cleanup" alternative to provide a more valid comparison to "delayed cleanup." Based on Table 3.13, values of 3-20 person rem for this period would be appropriate.

Section 5

Comparison of Environmental Impact of Delayed and Immediate Cleanup

Page 5.3/Section 5.1 - This discussion refers to an assumed average background dose rate of 87 mrem/yr. The recently revised value of 300 mrem/yr, as defined in NCRP Report No. 93, should be incorporated.

Appendix F

Waste Volume Estimates and Waste Transportation Impacts

Page F.3/Table F.3 - The radionuclides Tc-99 (0.3 Ci/m^3) and H-3 (700 Ci/m^3) should be added to the list of isotopes present at TMI-2 in order to ensure the accuracy of Footnote (a).

Page F.16/Section F.2.4 - GPU Nuclear experience indicates that shipping container leases for type B casks typically average $2000/day.