August 8, 1983
NRC/TMI-83-049

MEMORANDUM FOR: Harold R. Denton, Director
Office of Nuclear Reactor Regulation

Bernard J. Snyder, Program Director
TMI Program Office

FROM: Lake H. Barrett, Deputy Program Director
TMI Program Office

SUBJECT: NRC TMI PROGRAM OFFICE WEEKLY STATUS REPORT FOR
JULY 31 - AUGUST 6, 1983

Data from effluent and environmental monitoring systems indicated no plant releases in excess of regulatory limits. Waste shipments and water processing tasks continued on a routine basis. Plant parameters showed no significant changes. General clean-up and preparations for head lift continued. The reactor coolant system was depressurized to prepare for underhead inspections.

Major activities this week were "A" spent fuel pool refurbishment, procedure review, preparations for underhead characterization, and continued followup of polar crane issues. Decontamination of auxiliary and fuel handling building surfaces has been curtailed because of financial limitations. Three reactor building entries supported miscellaneous tasks. (For more details see appropriate paragraphs below.)

Significant items included in the enclosure are:

-- Reactor Building Activities
-- Spent Fuel Pool "A" Refurbishment
-- Auxiliary and Fuel Handling Activities
-- Waste Management Activities
-- Respirator Cartridge Testing
-- TMI Occupational Exposure
-- Groundwater Monitoring
-- NRC Environmental TLD Results
-- Public Meeting

Data summary sheets included in this report are:

-- Liquid Effluents
-- Environmental Data
-- Radioactive Material/Radwaste Shipment Data
-- Water Processing Data
-- Plant Status Data
-- Groundwater
-- Reactor Vessel Water Level

IOM-5 TMI

Original signed by
Lake H. Barrett

Lake H. Barrett
Deputy Program Director
TMI Program Office

Enclosure: As stated

OFFICE ▶						
SURNAME ▶						
DATE ▶						

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ENCLOSURE

REACTOR BUILDING ACTIVITIES:

Three reactor building entries were completed during the week of July 31, 1983. Preparations for the Underhead Characterization Study are proceeding on schedule. The reactor coolant system is depressurized and drained to the 324 ft. elevation (see figure, Appendix 7). The water level is approximately 12 ft above the core region. The center control rod drive mechanism (CRDM) will be removed from the reactor vessel head next week and underhead characterization, by way of the open CRDM nozzle, will commence on August 15, 1983. The underhead characterization is designed to gather data which will be used in the planning for reactor vessel head removal.

The CRDM removal task has been complicated by delays in the polar crane refurbishment program. The polar crane was to be used to remove the missile shields above the reactor vessel head, and subsequently to remove the CRDM. When allegations of unsafe refurbishment practices delayed use of the crane, the licensee devised a technique to remove the CRDM with a portable hoist supported on the missile shields. This revised CRDM removal procedure is more complex, and will involve greater potential for personnel exposures than the initial procedure which had incorporated use of the polar crane. The NRC TMIPO has reviewed and approved the revised CRDM removal technique.

SPENT FUEL POOL "A" REFURBISHMENT:

The new pipe and valving system between the reactor building sump and the RCS cleanup manifold have been hydrostatically tested and shielded. Equipment to allow complete transfer of the lower tank farm contents to the upper tanks is being installed and procedures for use of these devices for management of water batches during decontamination and flushing of the tanks are being reviewed.

The obsolete driers and charcoal filters connected to the tank farm vents before the SDS offgas purification system became operational have been disconnected. The licensee is assessing the radiological condition of the components as a basis for planning their removal. After the driers and filters are removed further preparations will be made for lifting the concrete shield slabs from above the tank farm.

Removal of concrete shielding blocks around the tank farm is planned to start next week. The blocks will be surveyed and decontaminated, if necessary, prior to onsite storage pending final disposition. The general area radiation level in the fuel pool area is not expected to increase beyond 2.5 mR/hr after that operation is completed.

The NRC has received and is reviewing the Fuel Pool "A" Refurbishment Safety Evaluation Report, which addresses various issues such as decontamination, heavy load drops, onsite personnel exposure and precautions taken to control effluents.

AUXILIARY AND FUEL HANDLING BUILDING ACTIVITIES:

Expansion of the decontamination facility has ceased due to budgetary constraints. In addition, activities to decontaminate surfaces in the auxiliary and fuel handling buildings has also been reduced because of budgetary constraints. Purification demineralizer characterization and removal planning continues.

WASTE MANAGEMENT ACTIVITIES:

1. SDS Liner Shipments. The eleventh SDS waste liner (D-20026) , in a group of nineteen, was shipped from TMI to the Rockwell Hanford facility (Richland, Washington) on August 2, 1983. This 10 cubic foot, stainless steel waste liner, which contained approximately 47,000 curies of radioactivity deposited on a zeolite ion-exchange bed, was shipped in a specially designed type B shipping cask (designed to withstand transportation accidents). As with previous SDS shipments, this waste liner was loaded with catalytic recombiner pellets to maintain non-combustible gas conditions during the handling and shipment period. Liner D-20022, with an estimated loading of 6,000 curies is scheduled to be the twelfth shipment with a tentative shipping date of August 16, 1983.

2. EPICOR Demineralizer Shipments. Planning continues for the shipment of the 31 low level EPICOR demineralizers stored onsite. No shipments are scheduled for the next week. Prior to shipping, liners will be re-dewatered and placed into shipping casks (for > type A quantities) for transport and disposal.

TESTING OF RESPIRATOR CARTRIDGES:

On July 29, 1983, GPU informed the NRC that some particulate filter cartridges for respiratory protection devices were not achieving their design specifications. The cartridges were new and were tested prior to use in the plant. In order to confirm the measurements, GPU took 20 cartridges to Air Techniques Incorporated (ATI) in Baltimore, Maryland, for testing. The ATI tests confirmed GPU results. The GPU tests included several types of cartridges from several manufacturers with several manufacturing periods. The deficiencies were only found in one type of cartridge from a single manufacturer in a batch produced in the 1981 time period. The number of deficiencies varied from box to box (of 36 cartridges).

The NRC sent a box (of 36 cartridges) and 10 of the 20 cartridges tested by ATI to Los Alamos National Laboratory (LANL) for testing. LANL completed testing on August 4, 1983; measurements on the 10 cartridges confirmed the results obtained by GPU and ATI. Of the 10 cartridges tested, 3 had filter efficiencies less than the 99.97% test criteria. Their efficiencies were 99.9%, 99.92% and 99.95%. A filter cartridge meeting the 99.97% design criteria provides a protection factor (reduction of particulate concentration) of 3333. The filter cartridge with the 99.9% efficiency had a protection factor of 1000. The cartridges are used in negative pressure full facepiece respirators at TMI. Due to other design parameters (principally face seal) of the respirator, a protection factor of only 50 is assigned for their use.

Although the cartridges would not limit the protection factor in this case, the 99.97% efficiency is a National Institute for Occupational Safety and Health (NIOSH) and Occupational Safety and Health Administration (OSHA) requirement.

GPU will continue to test and use only those cartridges which pass the 99.97% efficiency criteria. GPU has informed the manufacturer and the NRC had informed NIOSH of the test data.

TMI OCCUPATIONAL EXPOSURE:

During the period June 1 - June 30, 1983 licensee TLD (Thermoluminescent Dosimeter) records indicated the following station occupational radiation exposure ranges:

Unit 1 and Unit 2 Exposure Range

Category in Rem	Number of Station Personnel
No Measurable Exposure	1296
Exposure Less Than 0.1	317
0.1 to 0.25	96
0.25 to 0.5	25
0.5 to 0.75	12
0.75 to 1	9
1 to 2	16
2 to 3	2

Total Cumulative Plant Exposure (June 1983) - 77.7 Man-Rem

Unit 2 Occupational Radiation Exposures

June 1983	19.7 man-rem
Total 1983 (January - June)	220.6 man-rem

Unit 2 Reactor Building Entries (TLD Data) During June 1983

Number of Personnel:	153
Highest Whole Body TLD Reading (REM):	0.1536
Total Man-Rem	15.215

Man-rem is an expression for the summation of whole body doses to individuals in a group. Thus, if each member of a population group of 1,000 people were to receive a dose of 0.001 rem (1 millirem), or if two people were to receive a dose of 0.5 rem (500 millirem) each, the total man-rem dose in each case would be one man-rem.

GROUNDWATER MONITORING:

The TMI groundwater monitoring program was instituted to detect possible radioactive liquid leakage from the TMI-2 reactor building into the ground. Since the monitoring program commenced in January 1980, tritium has been the only radioisotope detected consistently in the groundwater. It was detected

adjacent to the TMI reactor containment building (within approximately 100 feet). Tritium concentrations in the groundwater have ranged from background (approximately 300 pCi/L) to 1.1 E6 pCi/L. In all cases the tritium concentrations have been below the maximum permissible concentrations for restricted areas. Periodically, trace concentrations of radioactive cesium and strontium have been detected in some of the monitoring locations. When detected, the cesium and strontium concentrations were very close to the laboratory lower limit of detection and typically, the radioactivity was not seen when the sample was re-analyzed or when a second sample was taken at a given monitoring location. The most recent samples taken from the groundwater monitoring locations indicate that tritium concentrations in the groundwater have remained in the same range as reported in previous Weekly Status Reports.

Appendix 6 is a sketch of six of the groundwater sampling locations in the immediate area of the BWST. The most recently recorded tritium concentration and the highest recorded tritium concentrations are noted in each location. Pre-accident TMI monitoring data indicate that surface water, drinking water and rain precipitation in the TMI area contains an average of 300 pCi/L of tritium with values as high as 600 pCi/L. The monitoring locations are in an area considered "restricted" for which the maximum permissible concentration (MPC) for tritium is 1 E8 pCi/L.

NRC TLD RESULTS:

The NRC TLD Environmental Direct Radiation Monitoring Network at TMI consists of 59 offsite locations. Two sets of TLDs are placed at each location. Each set contains two lithium borate and two calcium sulfate phosphors. Both sets are read on a quarterly basis.

During July through September 1982, the NRC site locations provided readings that indicated gamma radiation was between 0.12-0.23 mR/day. These dose rates are consistent with natural background radiation in the TMI area. These results of the NRC Direct Radiation Monitoring Network were reported in NUREG 0837, Volume 2, No. 3.

PUBLIC MEETING:

The Advisory Panel for the Decontamination of Three Mile Island Unit 2 will meet on August 17, 1983 from 7:00 PM to 10:00 PM in the Holiday Inn, 23 South Second Street, Harrisburg, Pennsylvania. The panel will conduct a work session in an attempt to reach a consensus on a number of cleanup related issues including the schedule for cleanup, the adequacy of funding and worker occupational exposure. The meeting will be open to the public.

APPENDIX 1

LIQUID EFFLUENT DATA

GPU Nuclear

Based on sampling and monitoring, liquid effluents from the TMI site released to the Susquehanna River were determined to be within regulatory limits and in accordance with NRC requirements and the City of Lancaster Agreement.

During the period July 29, 1983, through August 4, 1983, the effluents contained no detectable radioactivity at the discharge point. Individual effluent sources originating within Unit 2 contained minute amounts of radioactivity. Calculations indicate that less than 1.7 E-6 (0.0000017) of a curie of Cs-137 was discharged.

Environmental Protection Agency

Lancaster Water Samples:	7 samples
Period Covered:	July 10 - July 16, 1983
Results:	Gamma Scan Negative
TMI Water Samples:	7 samples
Period Covered:	July 15 - July 23, 1983
Results:	Gamma Scan Negative

APPENDIX 2

ENVIRONMENTAL DATA

EPA Environmental Data

The EPA measures Kr-85 concentrations at several environmental monitoring stations and reported the following results:

Location	July 8, 1983 - July 22, 1983 (pCi/m^3)
Goldsboro	25
Middletown	25
Yorkhaven	29
TMI Observation Center	26

-- The EPA Middletown Office has not received the environmental Kr-85 analytical results for the samples which were taken subsequent to July 22, 1983, from the EPA's Counting Laboratory at Las Vegas, Nevada. These results will be included in a subsequent report.

-- No radiation above normally occurring background levels was detected in any of the samples collected from the EPA's air and gamma rate networks during the period from July 26, 1983, through August 3, 1983.

NRC Environmental Data

Results from NRC monitoring of the environment around the TMI site were as follows:

-- The following are the NRC air sample analytical results for the onsite continuous air sampler:

Sample	Period	I-131 (uCi/cc)	Cs-137 (uCi/cc)
HP-378	July 27, 1983 - August 3, 1983	<6.3 E-14	<6.3 E-14

APPENDIX 3

SHIPMENTS

RADIOACTIVE MATERIALS/RADIOACTIVE WASTE

-- On August 1, 1983, one box containing two RCS letdown samples from Unit 1 was shipped to Battelle Memorial Institute Nuclear Facility, Columbus, Ohio.

-- On August 2, 1983, one CNSI I-13C-II (Type B) shipping cask containing Unit 2 SDS Liner No. 020026 was shipped to Rockwell Hanford Operations, Richland, Washington.

-- On August 4, 1983, 92 drums of contaminated laundry from Units 1 and 2 were shipped to Interstate Uniform Service, New Kensington, Pennsylvania.

-- On August 5, 1983, 19 steel boxes of non-compactible trash from Units 1 and 2 were shipped to U.S. Ecology, Hanford burial site, Richland, Washington.

APPENDIX 4

WATER PROCESSING DATA

Submerged Demineralizer System (SDS)

SDS was shutdown during the week for maintenance.

EPICOR II

EPICOR II was shutdown during the week.

APPENDIX 5

PLANT PARAMETERS

Core Cooling Mode: Heat transfer from the reactor coolant system (RCS) to Reactor Building ambient.

Available Core Cooling Mode: Mini Decay Heat Removal (MDHR) system.

RCS Pressure Control Mode: Standby Pressure Control System.

Major Parameters (as of 5:00 AM, August 5, 1983) (approximate values)

Average Incore Thermocouples*: 107°F**
Maximum Incore Thermocouple*: 119°F

RCS Loop Temperatures:

	A	B
Hot Leg	82°F	82°F
Cold Leg (1)	88°F	85°F
(2)	89°F	85°F

RCS Pressure: 0 psig

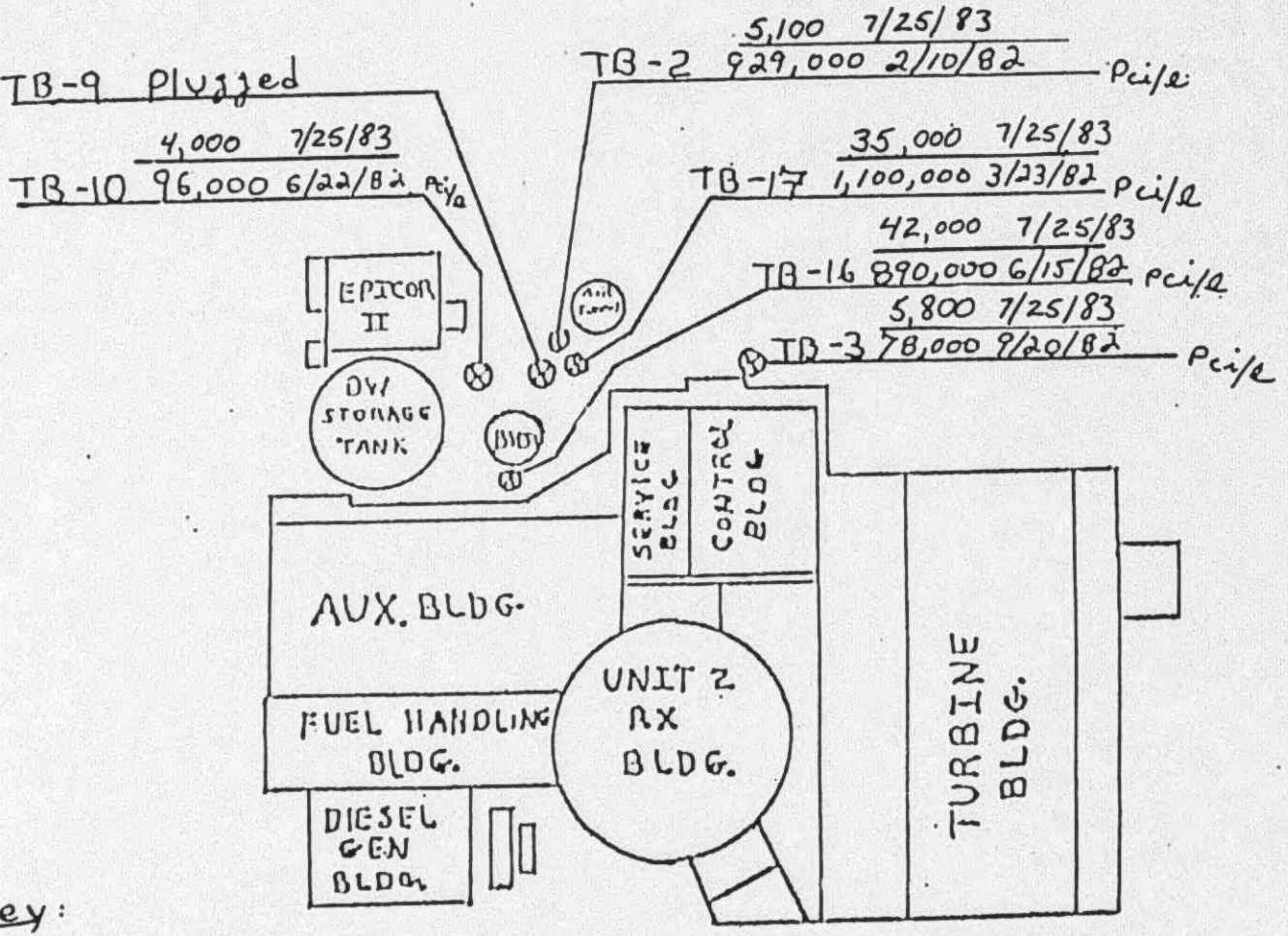
Reactor Building: Temperature: 83°F
Pressure: -0.15 psig
Airborne Radionuclide Concentrations:

2.4 E-7 uCi/cc H^3 (Tritium)
(sample taken 8/3/83)

1.2 E-9 uCi/cc particulates
(predominately Cs-137)
(sample taken 8/3/83)

*Uncertainties exist as to the exact location and accuracy of these readings.
**Due to a computer outage, the calculation was performed by hand and therefore includes an additional 5°F.

J-2 TEST BORING H-3 CONCENTRATIONS



Key:

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alysis of highest sample/date

NOTE:
Local Background - 300 - 600 pCi/Liter
MPC (restricted) - 1 E8 pCi/Liter

APPENDIX 6

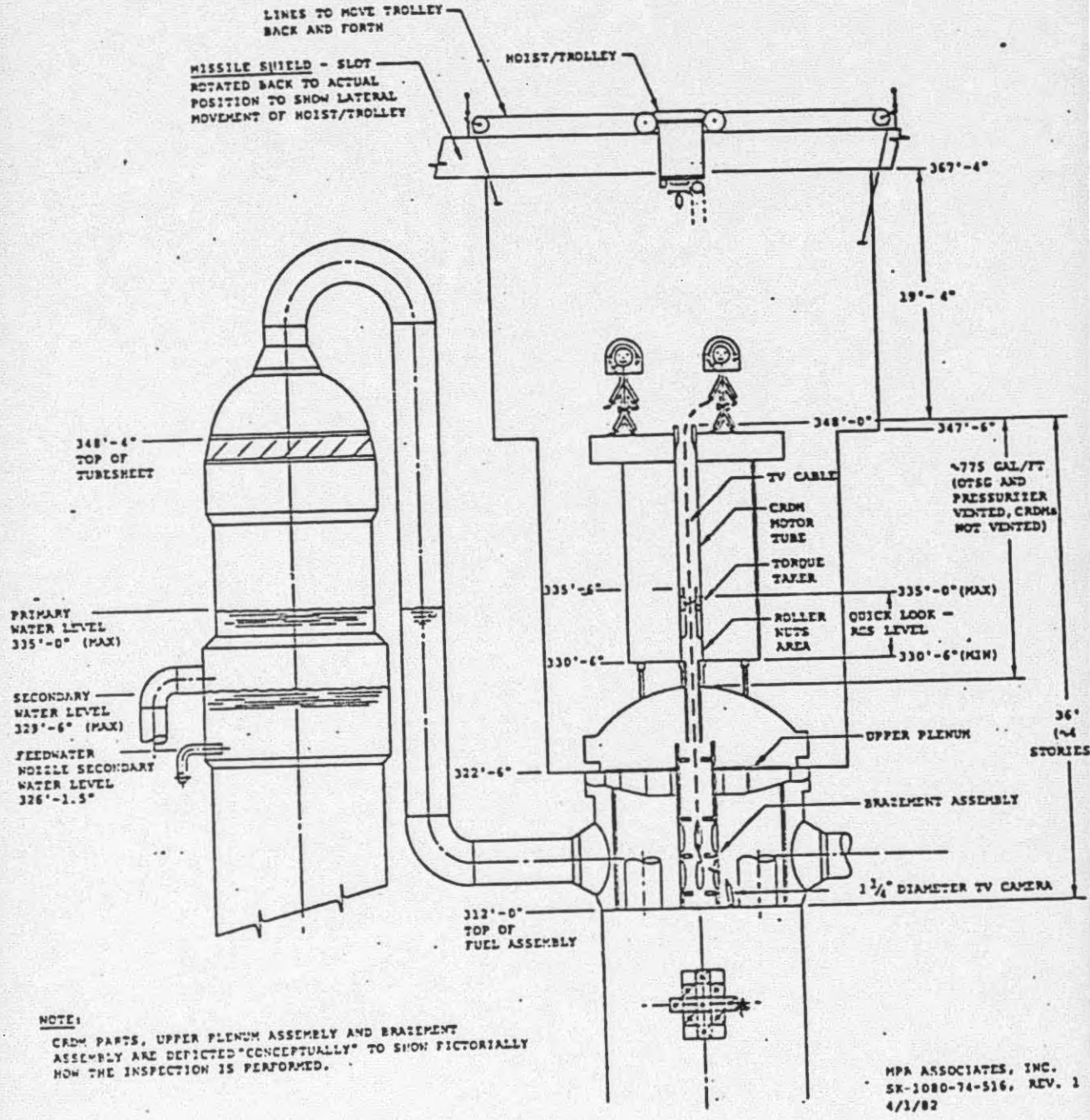

Figure 1

CONCEPTUAL ARRANGEMENT

FOR REACTOR VESSEL WATER LEVEL