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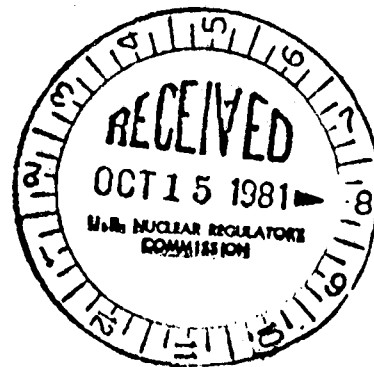
MEMORANDUM FOR: Harold R. Denton, Director  
Office of Nuclear Reactor Regulation  
  
Bernard J. Snyder, Program Director  
TMI Program Office

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

SUBJECT: NRC TMI PROGRAM OFFICE WEEKLY STATUS REPORT

Enclosed is the status report for the period of October 4-9, 1981.  
Major items included in this report are:

1. Liquid Effluent Releases
2. NRC and EPA Environmental Data
3. Radioactive Material and Radwaste Shipments
4. Submerged Demineralizer System Status
5. EPICOR II Status
6. Incore Thermocouple Temperatures
7. Radiological Protection Program Evaluation



*R. R. Bellamy*  
Lake H. Barrett  
Deputy Program Director  
TMI Program Office

Enclosure: As stated

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Harold R. Denton  
Bernard J. Snyder

-2-

October 9, 1981

cc w/encl:

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DATE ▶	10/ /81	10/ /81	10/ /81	10/ /81	10/9/81	10/9/81

# NRC TMI PROGRAM OFFICE WEEKLY STATUS REPORT

Week of October 4-9, 1981

## Plant Status

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

Available Core Cooling Modes: Decay heat removal systems. Long term cooling "B" (once through steam generator-B).

RCS Pressure Control Mode: Standby pressure control (SPC) system.

Backup Pressure Control Modes: Mini decay heat removal (MDHR) system.  
Decay heat removal (DHR) system.

Major Parameters (as of 0500, October 9, 1981) (approximate values)

Average Incore Thermocouples: 114°F

Maximum Incore Thermocouple: 145°F

RCS Loop Temperatures:

	A	B
Hot Leg	109°F	112°F
Cold Leg (1)	69°F	72°F
(2)	70°F	70°F

RCS Pressure: 90 psig

Reactor Building: Temperature: 62°F  
Water level: Elevation 289.5 ft. (7.0 ft. from floor)  
via penetration 401 manometer  
Pressure: -0.52 psig  
Concentration:  $4.3 \times 10^{-6}$  uCi/cc Kr-85 (Sample taken  
9/28/81. Weekly reactor building air  
sampling has been discontinued while  
the sampling system is modified for  
continuous sampling capability.)

## Effluent and Environmental (Radiological) Information

1. Liquid effluents from the TMI site released to the Susquehanna River after processing, were made within the regulatory limits and in accordance with NRC requirements and City of Lancaster Agreement dated February 27, 1980.

During the period October 2, 1981 through October 8, 1981, the effluents contained no detectable radioactivity at the discharge point although individual effluent sources which originated within Unit 2 contained minute amounts of radioactivity. Calculations indicate that less than 2 millionths (0.000002) of a curie of beta emitting radionuclides were discharged.

2. Environmental Protection Agency (EPA) Environmental Data. Results from EPA monitoring of the environment around the TMI site were as follows:

- The EPA measured Kr-85 concentrations ( $\text{pCi/m}^3$ ) at several environmental monitoring stations and reported the following results:

<u>Location</u>	<u>September 11 - September 25, 1981</u> ( $\text{pCi/m}^3$ )
Goldsboro	26
Observation Center	21
Middletown	27
Yorkhaven	Incomplete - will be reported when available

All of the above levels of Kr-85 are considered to be background levels.

- 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 October 1, 1981, through October 8, 1981.

3. 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:

<u>Sample</u>	<u>Period</u>	<u>I-131</u> ( $\text{uCi/cc}$ )	<u>Cs-137</u> ( $\text{uCi/cc}$ )
HP-288	September 30, 1981 - October 7, 1981	<8.0 E-14	<8.0 E-14

4. Licensee Radioactive Material and Radwaste Shipments.

- On Monday, October 5, 1981, a 40 ml Unit 2 reactor coolant sample was sent to Babcock and Wilcox (B&W), Lynchburg, Virginia.
- On Tuesday, October 6, 1981, 20 steel boxes containing Unit 1 noncompacted trash were shipped to U.S. Ecology, Richland, Washington.
- On Wednesday, October 7, 1981, an EPICOR II F-1 (pre-filter) dewatered resin liner was shipped to U.S. Ecology, Richland, Washington.

## Major Activities

1. Submerged Demineralizer System (SDS). Processing of batch number 6 was completed on October 4, 1981. Transferring batch number 7 from the reactor building sump commenced on October 4, 1981, and was completed on October 6, 1981. The transfer was interrupted for about one full day when a few drops of radioactive water were noted on a flush connection to the transfer piping. The leaky fitting was repaired and the transfer continued. The leak was limited to only a few drops and confined to a very small area of the fuel handling building. No offsite releases occurred. In the process of identifying the radioactive leak, one individual received minor skin contamination, which was successfully removed. As of 8:00 AM, on October 9, 1981, approximately 115,000 gallons had been transferred from the reactor building sump and a total of 65,000 gallons of reactor building sump water had been processed through the SDS. Attachment 1 shows the SDS processing status as of October 9, 1981.
2. EPICOR II. Further processing of the SDS effluent through EPICOR II continued this week. As of October 9, 1981, approximately 125,000 gallons of SDS effluent (65,000 gallons of RB sump water) has been decontaminated. A processing summary of the EPICOR II performance is provided in Attachment 2. Typically, EPICOR II is removing greater than 99% of the Cesium-137 and Strontium-90 from SDS effluent. To date, four of the first stage EPICOR II liners (F-1, 2, 4 and 5) and one of the third stage (K-2) liners have been removed from service due to resin bed exhaustion. Two of the above mentioned liners (F-1 and F-2) have been dewatered and shipped to Richland, Washington for disposal at a commercial burial facility.
3. Incore Thermocouple Temperatures. Approximately 115,000 gallons of water have been transferred from the reactor building (RB) basement to the SDS. This transfer of water lowered the water level in the RB basement by approximately 18 inches. Following the transfer of the first 65,000 gallons of water, it was noted that reactor incore thermocouple temperatures increased (see Weekly Status Report for week ending October 3, 1981). The hottest thermocouple (located in the center of the core) increased by 12°F and the average thermocouple temperature (average of 44 thermocouples) increased by 2°F. The temperature increase was attributed to a decrease in the heat transfer coefficient between the primary system and the RB environment. Prior to the transfer of the first 65,000 gallons of water, the lower dome of the reactor vessel was in contact with the sump water. As the water level in the basement was lowered below the reactor vessel, incore temperatures increased. The thermocouple temperatures appear to have stabilized at the new higher values and the transfer of the most recent 50,000 gallon batch of water from the basement has not affected thermocouple temperatures. Some primary system components (RCS cold legs) extend to approximately the 285 foot elevation in the RB. The licensee and the NRC staff will continue to monitor the incore temperatures closely to see whether additional water level changes in the basement influence the core temperatures.

4. Radiological Protection Program Evaluation. In November 1979 the NRC appointed a special technical group to examine and determine the effectiveness of the TMI-2 Radiological Protection Program. As a result of the special technical group (Blue Ribbon Panel) examination, several inadequacies were identified in the TMI-2 Radiological Protection Program. The findings of the Blue Ribbon Panel were published in NUREG-0640 which recommended that certain improvements in the licensee's Radiological Protection Program should be implemented prior to commencing major recovery activities.

The TMI Program Office Radiation Specialist staff conducted several inspections and evaluations of the licensee's Radiological Protection Program during 1980-1981. Based on these inspections and evaluations, the TMI Program Office concluded that the licensee has taken the necessary corrective actions to upgrade the Radiological Protection Program by implementing the recommendations of the NRC's Blue Ribbon Panel (NUREG-0640) to the extent that the program is now adequate to support major cleanup activities. This conclusion is contingent upon the licensee continuing to emphasize commitments to program implementation and expanding the radiological control and training staffs as the pace of the cleanup accelerates. An upgrading of the personnel dosimetry program is also required. The onsite TMI Program Office Radiation Specialist staff will continue to examine progress on these items and will continually assess the licensee's performance relative to the Radiological Protection Program.

#### Future Meetings

1. On Tuesday, October 13, 1981, Lake Barrett will address the Downtown Rotary Club to give an update on the cleanup efforts at TMI and discuss the functions of the NRC.
2. The NRC's Advisory Panel for the Decontamination of Three Mile Island Unit 2 will meet October 21, 1981, in York, Pennsylvania and November 16, 1981, in Lebanon, Pennsylvania. At both meetings, the panel plans to discuss the current status of cleanup activities at Three Mile Island.

The October 21 meeting will be held at 7:00 PM to 10:00 PM in the Hotel Yorktown, 48 East Market Street, York. The November 16 meeting will be held from 7:00 PM to 10:00 PM in the Municipal Building, 400 South 8th Street, Lebanon. Both meetings are open to the public.

3. On Saturday, November 14, 1981, at 8:00 PM, Lake Barrett will participate in a panel discussion at the Elizabethtown Public Library on the government's response to the TMI accident.

ATTACHMENT 1

SDS PROCESSING SUMMARY AS OF OCTOBER 9, 1981

Gallons Processed: 65,000 Gallons  
 Flow Rate: 5 GPM  
 Source: Reactor Building Sump Water  
 System Configuration: 1 Process Train  
 4 Zeolite Vessels in Path  
 Ion Exchange Media: Homogeneous Mixture  
 IONSIV IE 96: 4.8 ft<sup>3</sup> per vessel  
 LINDE A: 3.2 ft<sup>3</sup> per vessel  
 Performance: (Concentrations in uC/ml)

<u>RADIOISOTOPE</u>	<u>INFLUENT</u>	<u>EFFLUENT</u>	<u>PERCENT REMOVED</u>	<u>DECONTAMINATION FACTOR</u>
Cesium 134	10	$2.3 \times 10^{-4}$	99.999	$4.3 \times 10^4$
Cesium 137	100	$6.5 \times 10^{-4}$	99.999	$1.5 \times 10^5$
Strontium 90	3.4	$1.4 \times 10^{-2}$	99.59	$2.4 \times 10^2$
*Antimony 125	$<7.7 \times 10^{-1}$	$1.1 \times 10^{-2}$		
*Ruthenium 106	$<8.9 \times 10^{-1}$	$<3.9 \times 10^{-4}$		
*Cerium 144	$<5.6 \times 10^{-1}$	$<4.3 \times 10^{-4}$		
*Cobalt 60	$<3.4 \times 10^{-2}$	$<2.3 \times 10^{-5}$		

\*Not Expected to Change Appreciably

ATTACHMENT 2

EPICOR II PROCESSING SUMMARY THRU OCTOBER 9, 1981

Gallons Processed: 125,000  
 Flow Rate: 10 GPM  
 Source: SDS Effluent  
 System Configuration: 3 Resin Liners in Series  
 Ion Exchange Media: Organic Resins  
 1st 6x6 Liner: Cation (~120 ft<sup>3</sup>)  
 2nd 6x6 Liner: Cation/Anion (~120 ft<sup>3</sup>)  
 3rd 4x4 Liner: Mixed Bed (~40 ft<sup>3</sup>)  
 Performance: (Concentration in uCi/ml)

<u>RADIOISOTOPE</u>	<u>INFLUENT</u>	<u>EFFLUENT</u>	<u>PERCENT REMOVED</u>	<u>DECONTAMINATION FACTOR</u>
Cesium 134	2.3 x 10 <sup>-4</sup>	9.6 (-7)	99.6	240
Cesium 137	6.5 x 10 <sup>-4</sup>	5.0 (-6)	99.3	150
Strontium 90	1.4 x 10 <sup>-2</sup>	3.2 (-5)	99.8	440
Antimony 125	1.1 x 10 <sup>-2</sup>	2.0 (-6)	99.9	5500
Ruthenium 106	<3.9 x 10 <sup>-4</sup>	<6 (-7)		
Cerium 144	<4.3 x 10 <sup>-4</sup>	1.8 (-6)		
Cobalt 60	<2.3 x 10 <sup>-5</sup>	<3 (-7)		