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September 28, 1981
NRC/TMI-81-055

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

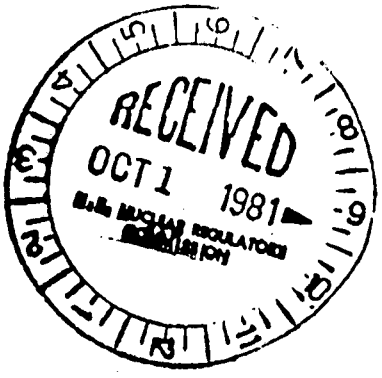
Bernard J. Snyder, Program Director
TMI Program Office

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 September 20 - 26, 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. Reactor Building Integrity Assessment Program
6. Reactor Building Entry
7. Reactor Building Penetration 401 Modification



signed by:
A.N. FASANO for/
Lake H. Barrett
Deputy Program Director
TMI Program Office

Enclosure: As stated

cc w/encl:
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NRC TMI PROGRAM OFFICE WEEKLY STATUS REPORT

Week of September 20 - 26, 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, September 25, 1981) (approximate values)
Average Incore Thermocouples: 114°F
Maximum Incore Thermocouple: 135°F

RCS Loop Temperatures:

	A	B
Hot Leg	113°F	116°F
Cold Leg (1)	72°F	73°F
(2)	73°F	73°F

RCS Pressure: 100 psig

Reactor Building: Temperature: 72°F
Water level: Elevation 290.84 ft. (8.34 ft. from floor) via penetration 401 manometer
Pressure: -0.3 psig
Concentration: 5.1×10^{-5} uCi/cc Kr-85 (Sample taken 9/23/81)

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 September 18, 1981 through September 24, 1981, the effluents contained no detectable radioactivity at the discharge point and individual effluent sources which originated within Unit 2 contained no detectable radioactivity.

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 (pCi/m^3) at several environmental monitoring stations and reported the following results:

Location	August 28 - September 11, 1981 (pCi/m^3)
Goldsboro	29
Observation Center	31
Middletown	33
Yorkhaven	21

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 September 16, 1981, through September 24, 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:

Sample	Period	I-131 (uCi/cc)	Cs-137 (uCi/cc)
HP-286	September 17, 1981-September 24, 1981	<9.7 E-14	<9.7 E-14

4. Licensee Radioactive Material and Radwaste Shipments.

-- On Monday, September 21, 1981, a 40 ml Unit 2 reactor coolant sample was sent to Babcock and Wilcox (B&W), Lynchburg, Virginia.

-- On Thursday, September 24, 1981, 50 drums of contaminated laundry were shipped to Tri-State Industrial Laundry, Utica, New York.

Major Activities

1. Submerged Demineralizer System (SDS). At approximately 6:00 PM on September 22, 1981, the licensee commenced tranferring water from the Unit 2 Reactor Building Sump into the SDS Feed Tanks located in fuel pool "A" of the Unit 2 Fuel Handling Building. The transfer of this water was in preparation for processing approximately 15,000 gallons as a trial batch to evaluate SDS performance before processing reactor building sump water. Water transfer was completed at approximately 2:00 AM on September 23, 1981. The system which transfers the reactor building sump water through two underwater filters to the feed tanks operated as expected without problems. Local radiation levels near system components and piping increased slightly (less than 1 mR/hr general area) as expected and returned to normal background following system flushes with demineralized water when the transfer was completed. Samples taken during the transfer indicated that the Cs-137 (the primary gamma radiation emitter) radioactivity was approximately 100 uCi/ml to 110 uCi/ml.

At approximately 6:00 PM on September 23, 1981, the licensee commensed processing the reactor building sump water from the SDS Feed Tanks through the SDS zeolite ion exchangers to the Unit 2 Reactor Coolant Bleed Tanks (RCBT). The SDS processing train consists of four, eight cubic feet zeolite beds in series followed by a post filter designed to remove zeolite fines larger than 3 microns (there are approximately 25,400 microns in one inch). Initial samples, after about 2,100 gallons had been processed, indicated that the Cs-137 radioactivity concentration going into the processing train was approximately 90 uCi/ml to 100 uCi/ml and the Sr-90 radioactivity concentration going into the processing train was 3.8 uCi/ml to 3.9 uCi/ml. The radioactivity exiting the last zeolite bed was 0.00057 uCi/ml to 0.0007 uC/ml for Cs-137 and 0.012 uCi/ml to 0.017 uCi/ml for Sr-90. The samples indicate a removal efficiency of greater than 99.9% for Cs-137 and approximately 99.6% for Sr-90. Processing of the 15,000 gallon batch was completed at approximately 11:30 PM on September 25, 1981.

Radiation levels during processing of the water increased as expected. General area radiation levels in the fuel pool areas continue to be less than 1 mR/hr. In isolated areas in contact with shielding some radiation levels rose to approximately 40 mR/hr but since personnel access is not necessary in these areas the radiation levels are not considered excessive. Radiation levels on the SDS component ventilation system roughing filter increased to approximately 2 mR/hr measured 18 inches from the filter. The two high efficiency particulate air (HEPA) filters and charcoal filters downstream of the roughing filter did not indicate any increase in radiation level. The radiation levels may be the result of sampling operations. Downstream filters in the SDS ventilation system and the fuel handling building filters process this air to ensure that there is no radioactive release to the environment. No increase in effluent levels has been detected by the SDS ventilation monitor nor the plant effluent monitor.

On September 26, 1981, at approximately 3:30 AM, the licensee commenced transferring 50,000 gallons of water from the reactor building sump to the SDS Feed Tanks. This transfer was completed on September 27, 1981, at approximately 12:30 PM. Processing of the 50,000 gallons commenced at approximately 6:00 PM on the same day and is expected to be completed in approximately one week.

2. Reactor Building Integrity Assessment Program. The licensee has established an ongoing program to monitor all potential leakage paths from the Unit 2 Reactor Building (RB) sump. The leakage monitoring points include the 15 test borings (ground water monitoring wells), storm drainage areas, cork seals (concrete joint seals) in structures surrounding the RB, and the tendon access gallery (a passageway surrounding the RB below the basement, approximately 20 feet below the water surface in the RB). Following a licensee engineering evaluation, the areas mentioned above were identified as the most likely places where the leaks from the RB would be detected. Water samples from the monitoring points were initially collected and analyzed weekly. After a data base was established, the licensee reduced the sampling frequency to monthly.

   There has been no significant change in the water radioactivity concentration. The latest analyses (samples taken on June 10, 1981) indicate that tritium concentrations in most test borings remain slightly above background. The highest tritium concentration was approximately 10 times above background.

3. Reactor Building Entry. The sixteenth entry into the Unit 2 Reactor Building (RB) was completed on Thursday, September 24, 1981. Ten persons entered the RB. The tasks inside the building included the following.

   -- Inventory of defueling tools,

   -- Photographs to support future operations,

   -- Radiological surveys to characterize the RB,

   -- Sump sample under Reactor Coolant System (RCS) Drain Tank rupture disk,

   -- RB air cooler bearing temperature readings, and

   -- Sump water transfer hose survey (following transfer of 15,000 gallons from the sump to the SDS).

   There was no significant change in the radiological conditions inside the RB after the first 15,000 gallons of sump water were pumped to the SDS. The sump water level was lowered by approximately

2 1/2 inches by the water transfer. The only detectable radiological change was an increase of approximately 100 mR/hr on contact with a hose coupling on the sump water transfer hose. The transfer hose was flushed prior to the entry.

The 100 ml sample from the RB sump was murky and had radiation levels similiar to water samples taken previously, i.e., approximately 1 R/hr on contact. The sample device was designed to collect water and particulate matter from the floor on the 282 ft level of the RB. The sample was taken in the area under the discharge of the RCS Drain Tank rupture disk where particulate matter was expected.

Work on the RB air coolers was limited by high radiation levels to a total of seven minutes. Two men climbed to the top of the coolers and measured three fan bearing RTD's (bearing temperatures) before being directed to exit the RB. The exit criteria for the cooler task was 700 mR total body exposure.

The next RB entry is scheduled for the third week in October.

4. Modification of Reactor Building Penetration. Penetration No. 401 is a 12 inch diameter penetration through the reactor building (RB) wall at the 292 foot elevation. This is approximately 9 feet above the RB basement floor. The penetration was modified after the accident to allow the licensee to obtain samples of the contaminated water in the RB basement. It was closed by a 12-inch diameter gate valve and cover assembly. The penetration was modified a second time to allow the licensee to insert a flexible tube into the RB for measurements of the height of water in the RB basement.

   The latest modification upgrades the penetration closure, replacing the gate valve and cover with a 12-inch circular assembly that is welded in place.

   The licensee started the modification on September 24, 1981, worked around the clock, and completed the task on September 26, 1981.

Meeting Attended

On Tuesday, September 22, 1981, Lake Barrett met with area mothers to discuss the September 11, 1981, Reactor Coolant System leak, reactor vessel embrittlement, NRC investigation of Unit 1 operator examinations, SDS operations, and general Unit 2 cleanup. The mothers expressed the opinion that Unit 1 should not be restarted prior to the completion of Unit 2 cleanup.

Future Meeting

On Tuesday, October 13, 1981, Lake Barrett will address the Downingtown Rotary Club to give an update on the cleanup efforts at TMI and discuss the functions of the NRC.