

DISTRIBUTION
TMIPO HQ r/f
TMI SITE r/f
CENTRAL FILE
NRC PDR
LOCAL PDR
Site Operations File

March 1, 1982
NRC/TMI-82-011

FD-320

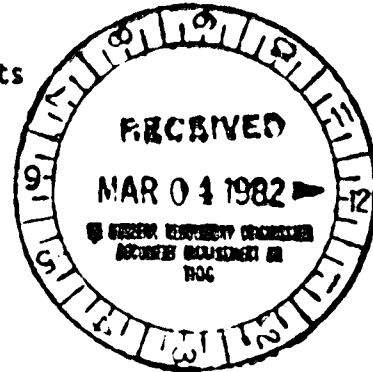
MEMORANDUM FOR: Harold R. Denton, Director
Office of Nuclear Reactor Regulation
Bernard J. Snyder, Program Director
TMI Program Office

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 February 21, 1982 to February 27, 1982. Major items included in this report are:

- Liquid Effluent Releases
- NRC and EPA Environmental Data
- Radioactive Material and Radwaste Shipments
- TMI Occupational Exposure
- Submerged Demineralizer System Status
- EPICOR II
- Ground Water Samples
- Reactor Building Entries
- Apparent Oxygen Deficiency and Combustible Gas Indications in Reactor Building
- Public Meetings



Original signed by
Lake H. Barrett

Lake H. Barrett
Deputy Program Director
TMI Program Office

Enclosure: As stated

OFFICE					
SURNAME	B203120124	B20301			
DATE	PDR ADOCK	05000320			
	R	PDR			

Harold R. Denton
Bernard J. Snyder

-2-

March 1, 1982

cc w/encl:

EDO

OGC

Office Directors

Commissioner's Technical Assistants

ERR Division Directors

NRR A/D's

Regional Directors

IE Division Directors

TAS

EIS

TMPO Program Office Staff (15)

PHS

EPA

DOE

Projects Br. #2 Chief, DRPI, RI

DRPI Chief, RI

Public Affairs, RI

State Liaison, RI

NAME	TMPO	TMPO	TMPO	TMPO	TMPO	TMPO
NAME	GKaiman/Jes	RConite	MShanbaky	AFasano	RBellamy	LBarrett
DATE	3/ / 82	3/ / 82	3/ / 82	3/ / 82	3/ / 82	3/ / 82

NRC TMI PROGRAM OFFICE WEEKLY STATUS REPORT

February 21, 1982 - February 27, 1982

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 0620, February 26, 1982) (approximate values)

Average Incore Thermocouples: 103°F

Maximum Incore Thermocouple: 133°F

RCS Loop Temperatures:

	A	B
Hot Leg	96°F	99°F
Cold Leg (1)	83°F	80°F
(2)	90°F	83°F

RCS Pressure: 96 psig

Reactor Building: Temperature: 64°F
Water level: Elevation 283.5 ft. (1.0 ft. from floor)
Pressure: -0.17psig
Airborne Radionuclide Concentrations:
4.8 E-6 uCi/cc H³
(sample taken 2/24/82)
4.2 E-6 uCi/cc Kr⁸⁵
(sample taken 2/22/82)

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 February 19, 1982, through February 25, 1982, 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 one millionth (0.000001) of a curie of cesium was discharged. The effluent discharge for the week of February 5, 1982, through February 10, 1982, contained in addition to the cesium previously reported, less than two millionths (0.000002) of a curie of tritium.

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:

<u>Location</u>	<u>January 11 - February 5, 1982</u> <u>(pCi/m^3)</u>
Goldsboro	24
Observation Center	30
Middletown	28
Yorkhaven	23

- 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 February 17, 1982, through February 25, 1982.
- On February 26, 1982, the EPA published a preliminary status report on the ongoing tritium (H-3) study in the TMI area. The EPA is sampling for H-3 in air at three sampling locations near TMI (TMI Observation Center, Goldsboro and Middletown) and a control location at Wernersville, PA (35 miles northeast of Middletown). The environmental air H-3 is associated with the air moisture and is incorporated in water as part of the water molecule (HTO, T₂O, H₂O with "T" indicating the tritium nuclide). The EPA is using a sophisticated and sensitive analytical method to provide for adequate detection of slight increases in the de minimus (extremely low) levels of H-3 in the atmosphere with a lower limit of detection (LLD) of 0.5 pCi/ml of air moisture. This LLD of H-3 in moisture would equate to average values of about 6-8 pCi/m^3 of air.

All samples collected near TMI indicated H-3 air concentrations of values less than the lower limit for detection or values comparable to the control location at Wernersville.

During November and December 1981 and January 1982, a few samples at the Observation Center indicated an apparent slight increase in H-3 concentrations (see attached EPA Press Release). In comparison to the 10 CFR 20 limit of 200,000 pCi/m^3 these detected concentrations are at least 10,000 times lower than this limit. The EPA will continue to collect and analyze additional air samples.

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 (uCi/cc)</u>	<u>Cs-137 (uCi/cc)</u>
HP-308	February 18, 1982 - February 24, 1982	<2.9 E-14	<2.9 E-14

4. Licensee Radioactive Material and Radwaste Shipments.

- On Monday, February 22, 1982, six drums of compacted trash and six metal containers of noncompacted trash from Unit 1 were shipped to Chem-Nuclear Systems, Inc., Barnwell, South Carolina.
- On Monday, February 22, 1982, a 250 ml sample (Unit 1 decay heat "A") was mailed to the Radiation Management Corp. Laboratory, Philadelphia, Pennsylvania.
- On Wednesday, February 24, 1982, one drum containing 14 samples from Unit II SDS was shipped to the Oak Ridge National Laboratory, Oak Ridge, Tennessee.

5. TMI Occupational Exposure. Licensee TLD (Thermoluminescent Dosimeter) records indicate the following Unit II total occupational radiation exposure for January 1982: 17 man-rem. (This is a corrected number. The number reported in the Weekly Status Report dated February 22, 1982, was in error.)

Major Activities

1. Submerged Demineralizer System (SDS). Processing of batch 21 was completed on February 27, 1982, and its performance parameters are enclosed as Attachment 1. Transfer of batch 22 commenced on February 27, 1982, and was terminated on February 28, 1982, when the pump used to transfer water from the reactor building lost suction, as expected, with approximately six inches of water (36,000 gallons) remaining. Approximately 600,000 gallons of water have been removed from the reactor building.
2. EPICOR II. The EPICOR II system continued to process SDS effluents during the week. Performance parameters are included in Attachment 1.
3. Ground Water Samples. Tritium concentrations in the ground water have remained in essentially the same range as reported in previous Weekly Status Reports. Attachment 2 contains a sketch of the test boring locations with the latest tritium concentrations. Cesium 137 concentrations slightly above the lower limit of detection were reported in the Weekly Status Report last week. Water samples taken after February 11, 1982, indicate that cesium 137 and all isotopes except tritium are below the lower limit of detection.

4. Reactor Building Entries. Three reactor building (RB) entries were scheduled during the week of February 21, 1982. The first entry was cancelled when an air sample indicated that the tritium concentration in RB air was above the maximum permissible concentration (MPC). However, workers were able to complete most of the tasks scheduled for the week during entries on Thursday and Friday (February 25 and February 26, 1982). The installation of systems necessary for the gross decontamination experiment was completed and it is expected that the gross decontamination experiment will commence during the first week in March.

A low pressure flush of the floor surfaces of the 305 ft. elevation is scheduled for Tuesday, March 2, 1982. On a subsequent entry, the polar crane will be flushed with low pressure water. On the third entry of the gross decontamination experiment, also scheduled for next week, it is anticipated that the "D" ring surfaces and the refueling pool will be decontaminated.

5. Apparent Oxygen Deficiency And Combustible Gas Indications in the Reactor Building. Prior to the start of scheduled tasks inside the reactor building this week, a special entry was made on Wednesday, February 24, 1982, to verify that there was sufficient oxygen and no combustible gases inside the reactor building. The analysis of the reactor building air during the previous week indicated the presence of combustible gases and reduced oxygen concentrations. A subsequent investigation concluded that the combustible gas and depleted oxygen measurements were incorrect because of instrument interference, e.g. radio transmissions. The special entry on Wednesday confirmed, through portable air analyzer readings and laboratory analysis of air samples, that the reactor building air contained acceptable levels of approximately 20% oxygen and no combustible gases.

Past Meetings

On Monday, February 22, 1982, Lake Barrett met with a group of area mothers to discuss various TMI issues including, the Unusual Event of February 19, 1982, cleanup funding and Unit 1 steam generators. They expressed their opinion that Unit 1 should not be restarted prior to the completion of the Unit 2 cleanup.

Future Meetings

1. On Saturday, March 13, 1982, Lake Barrett will address the Society of Manufacturing Engineers in Williamsport, PA, on the cleanup of TMI and general aspects of nuclear power.
2. On Wednesday, April 14, 1982, Lake Barrett will be the keynote speaker for the Southern Pennsylvania Association of Occupational Health Nurses, to be held at the Holiday Inn in York.

ATTACHMENT 1

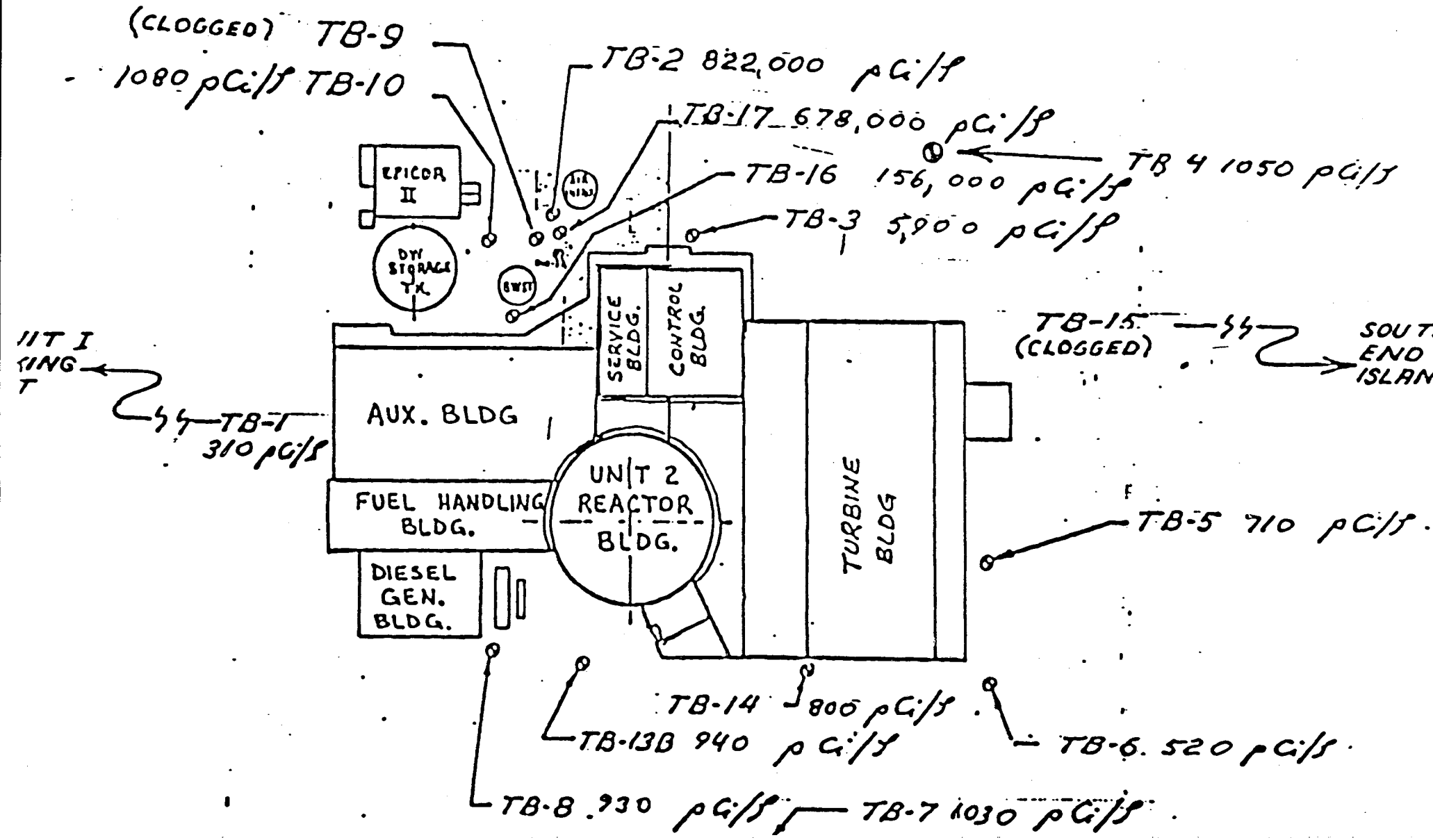
SDS Performance for Batch Number 21

<u>Radionuclide</u>	<u>Average Influent (uc/ml)</u>	<u>Average Effluent (uc/ml)</u>	<u>Average DF</u>
Cesium 137	1.1×10^2	6.7×10^{-4}	1.6×10^5
Strontium 90	4.4	6.0×10^{-3}	7.3×10^2

EPICOR II Performance
February 16, 1982 to February 22, 1982

<u>Radionuclide</u>	<u>Average Influent (uc/ml)</u>	<u>Average Effluent (uc/ml)</u>	<u>Average DF</u>
Cesium 137	7.9×10^{-4}	1.3×10^{-7}	6.1×10^3
Strontium 90	5.6×10^{-3}	$<1.3 \times 10^{-5}$	$>4.3 \times 10^2$
Antimony 125	1.0×10^{-2}	$<3.4 \times 10^{-7}$	$>2.9 \times 10^4$

TEST BORING TRITIUM CONCENTRATIONS



<u>Location</u>	<u>Date On</u>	<u>Date Off</u>	<u>Average (mrem/hr)</u>	<u>Range (mrem/hr)</u>	<u>Comments</u>
Londonderry Twp. Bldg.	02/17	02/19	0.011	0.008-0.015	Normal Background
	02/19	02/22	0.012	0.008-0.017	Normal Background
	02/22	02/24	0.013	0.008-0.019	Normal Background
Londonderry (Hershberger)	02/17	02/19	0.014	0.010-0.019	Normal Background
	02/19	02/22	0.015	0.010-0.020	Normal Background
	02/22	02/24	0.013	0.010-0.020	Normal Background
TMI Observation Center	02/17	02/19	0.012	0.007-0.017	Normal Background
	02/19	02/22	0.013	0.008-0.019	Normal Background
	02/22	02/24	0.013	0.007-0.020	Normal Background
York Haven	02/18	02/20	0.009	0.006-0.012	Normal Background
	02/20	02/23	0.009	0.006-0.013	Normal Background
	02/23	02/25	0.009	0.006-0.012	Normal Background

AIR MONITORING

Radioactivity in airborne particles is determined by passing air through a glass fiber filter and analyzing the filter. A charcoal cartridge that is highly efficient in its collection of radioiodine is also used following each filter and analyzed to assure that no radioiodine is present in the air. The results of the analyses for these samples collected at the same locations and indicated sampling periods as for the above recorders were all less than the minimum detectable concentration of EPA's analytical instruments, 0.2 picocurie per cubic meter of air.

INITIAL REPORT - TRITIUM IN ATMOSPHERIC MOISTURE PROGRAM

The Programmatic Environment Impact Statement (NUREG-0683) for the decontamination of Unit II identified tritium, as tritiated water vapor in air, as one of the dominant nuclides which may be released during the cleanup. Current releases result from purges of the reactor containment building and from evaporation from the spent fuel pool that contains and shields the SDS system. Accordingly, EPA located atmospheric moisture samplers at three locations near TMI (Observation Center, Goldsboro and Middletown) and a control sampler at Wernersville, PA. The samplers remove the water vapor from a measured volume of air for a selected period - usually one week. The collection vessel is then removed from the sampler and sent to the laboratory (presently in Las Vegas) where the collected water is analyzed for tritium content. The resulting concentration (in picocuries of tritium per milliliter of water) together with the original air sample volume and relative humidity is used to calculate the concentration of tritium in air (picocuries tritium per cubic meter of air).

Federal regulations limit the concentration of tritium in air to 5,000,000 pCi/m³ for occupational exposure and 200,000 pCi/m³ in the environment.

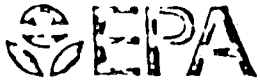
The results of tritium-in-atmospheric moisture monitoring from May 7, 1981 to January 7 and January 11, 1982 are given in Tables 1 and 2. Sample periods since November 13 have been lengthened because of a shortage in the custom-made glass collection vessels caused by breakage in shipment in October and November. New collectors have been received in Las Vegas and are now being placed in service so that the weekly collection period can be resumed.

The tritium in air concentrations obtained at these sampling locations for the period of the report were all less than 1/10,000 (0.01%).

Few studies of tritium in atmospheric moisture have been reported; but, the levels of tritium in the collected water are generally expected to be similar to those found in precipitation, surface water, and drinking water in the same area. Higher levels are found sporadically even in the absence of identifiable local sources of tritium. From the extensive precipitation, river water, and drinking water data, the "normal" range for the TMI area is estimated to be 0.1 - 0.6 pCi/ml. These levels have been decreasing since 1963 when tritium concentrations at various U.S. locations were in the 1.5 - 14 pCi/ml range because of fallout from nuclear weapons testing.

Most samples reported here are within the estimated range. Several samples from the TMI Observation Center and Goldsboro were a factor of 2 - 3 higher as would be expected based on low level releases from TMI.

(This report included in Environmental News release
EPA 147/02/26/82)



Environmental News

February 26, 1982

(KIRK)

(717) 782-3909

TMI RADIATION MONITORING

As a means of providing information to the public on the radiation monitoring activities around Three Mile Island (TMI), the Environmental Protection Agency (EPA) announces the following results obtained from its monitoring networks.

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 February 17, 1982 through February 25, 1982. Because of the "unusual event" at TMI Unit II on February 19 - 20, 1982, the prefilters and charcoal cartridges were collected from EPA's 13 air monitoring stations on the morning of February 20 and analyzed that day. All samples were negative for reactor-associated gamma radioactivity.

Only background levels of krypton-85 were measured in air samples collected at noble gas sampling stations located in Goldsboro, Middletown, York Haven and TMI Observation Center for the period January 11, 1982 through February 5, 1982.

A program for monitoring tritium in atmospheric moisture was announced in the March 20, 1981 Environmental News. The initial data report for this program, including all data collected for 1981, is enclosed. The amount of tritium per cubic meter of air sampled was less than 1/10,000 (0.01%) of Federal limits in all cases. Slight elevations in the concentration of tritium in the water collected from the air were noted in several samples from the TMI Observation Center and Goldsboro samplers. The levels found appear to be generally consistent with the low level releases associated with pre-entry purging of the containment building.

KRYPTON-85

Noble gas samplers are operated near TMI to monitor kr-85, which also exists in the atmosphere world-wide as a result of nuclear weapons testing, nuclear power generating, fuel reprocessing and in very small quantities from natural sources. Samples collected in the vicinity of TMI from April 1979, through June 28, 1980, showed background levels to be less than 40 picocuries per cubic meter (pCi/m³) of air. The analytic results for samples collected during the period from January 11 through February 5, 1982 are given below.

<u>Location</u>	<u>Kr-85 Concentration pCi/m³</u>
Goldsboro	24
Middletown	28
York Raven	23
TMI Observation Center	30

GAMMA RATE RECORDER DATA
TMI Environmental Monitoring

EPA 147/02/26/82

Gamma rate recorders are used to monitor for any increases in gamma radiation levels above the normal background caused by naturally occurring radioactivity. The following table summarizes the measurements made for each recorder location and indicated period. The measurements, reported in millirems per hour (mrem/hr), are all attributed to naturally occurring radioactivity.

<u>Location</u>	<u>Date On</u>	<u>Date Off</u>	<u>Average (mrem/hr)</u>	<u>Range (mrem/hr)</u>	<u>Comments</u>
Falmouth (Brooks)	02/17	02/19	0.010	0.008-0.013	Normal Background
	02/19	02/22	0.010	0.008-0.012	Normal Background
	02/22	02/24	0.010	0.008-0.013	Normal Background
Falmouth (Libhart)	02/17	02/19	0.017	0.010-0.024	Normal Background
	02/19	02/22	0.016	0.011-0.025	Normal Background
	02/22	02/24	0.018	0.011-0.025	Normal Background
Goldsboro (Miller)	02/18	02/20	0.015	0.010-0.020	Normal Background
	02/20	02/23	0.015	0.010-0.020	Normal Background
	02/23	02/25	0.015	0.010-0.020	Normal Background
Harrisburg Int'l Airport	02/18	02/20	0.015	0.010-0.020	Normal Background
	02/20	02/23	0.015	0.010-0.020	Normal Background
	02/23	02/25	0.015	0.010-0.020	Normal Background
Middletown	02/18	02/20	0.011	0.007-0.015	Normal Background
	02/20	02/23	0.012	0.008-0.016	Normal Background
	02/23	02/25	0.011	0.007-0.015	Normal Background
Newberrytown	02/18	02/20	0.016	0.013-0.020	Normal Background
	02/20	02/23	0.017	0.014-0.021	Normal Background
	02/23	02/25	0.017	0.013-0.021	Normal Background
Newville	02/17	02/19	0.010	0.007-0.013	Normal Background
	02/19	02/22	0.011	0.007-0.014	Normal Background
	02/22	02/24	0.011	0.008-0.014	Normal Background
Plainfield	02/18	02/20	EQUIPMENT MALFUNCTION		
	02/20	02/22	0.011	0.008-0.015	Normal Background
	02/23	02/25	0.012	0.008-0.017	Normal Background
Pleasant Grove	02/18	02/20	0.009	0.006-0.012	Normal Background
	02/20	02/23	0.010	0.006-0.014	Normal Background
	02/23	02/25	0.009	0.006-0.012	Normal Background

TABLE 1

TMI AREA STATIONS

Dates	TMI Observation		Middletown		Goldsboro	
	Conc. of Tritium in Collected Water pCi/ml ¹	Conc. of Tritium in Air pCi/m ³ 1,2	Conc. of Tritium in Collected Water pCi/ml ¹	Conc. of Tritium in Air pCi/m ³ 1	Conc. of Tritium in Collected Water pCi/ml ¹	Conc. of Tritium in Air pCi/m ³ 1
05/07-05/15	Not Operational		Not Operational		1.30 ± .33	9.9 ± 2.6
05/15-05/22	Not Operational		Not Operational		.62 ± .32	2.2 ± 1.1
05/22-05/29	Not Operational		Not Operational		< .49	< 6.5
05/29-06/05	< .45	< 5.1	< .45	< 6.2	< .45	< 5.4
06/05-06/12	< .45	< 4.6	.56 ± .28	8.9 ± 4.5	< .45	< 5.4
06/12-06/19	< .47	< 7.1	< .47	< 11	< .47	< 8
06/19-06/26	< .47	< 5.9	< .47	< 11	< .47	< 7.8
06/26-07/03	< .37	< 5.3	< .37	< 5.4	< .37	< 4.8
07/03-07/10	< .37	< 7.0	< .37	< 6.2	< .37	< 7.3
07/10-07/24	< .46	< 4.8	< .46	< 7.3	< .46	< 6.4
07/24-07/31	< .52	< 6.7	< .52	< 9.4	.66 ± .33	11 ± 5.7
07/31-08/07	< .49	< 5.5	< .49	< 7.2	< .49	< 5.8
08/07-08/14	< .42	< 7.3	< .42	< 9.9	< .42	< 7/1
08/14-08/21	< .50	< 6.5	< .50	< 8.7	< .50	< 4.9
08/21-08/28	.53 ± .28	4.3 ± 2.3	< .44	< 4.2	.54 ± .28	8 ± 4.2
08/28-09/04	< .41	< 6.1	< .41	< 6.8	< .41	< 5.7
09/04-09/18	< .41	< 5.5	< .41	< 6.2	< .41	< 3.3
09/18-09/25	.63 ± .27	7.3 ± 3.1	< .41	< 4.6	< .41	< 4.9
09/25-10/05	.54 ± .29	2.7 ± 1.6	.42 ± .25	4.7 ± 2.9	< .40	< 2.7
10/05-10/12	< .44	< 3.0	< .44	< 2.7	< .44	< 4.4
10/12-10/23	Broken in Shipment		< .30	< 2.0	< .30	< 1.4
10/23-10/30	Broken in Shipment		Broken in Shipment		< .38	< 3.3
10/30-11/06	.45 ± .25	4.0 ± 2.2	Broken in Shipment		< .38	< 3.0
11/06-11/13	.64 ± .27	5.4 ± 2.2	< .46	< 3.1	< .41	< 2.8
11/13-12/04	1.5 ± .29	8.7 ± 1.7	.38 ± .24	1.6 ± 1.0	< .38	< 1.3
12/04-12/21	1.4 ± .28	2.3 ± .5	< .41	< 1.2	< .41	< 1.8
12/21-01/11/82	1.1 ± .28	5 ± 3.3	< .43	< 1.5	< .43	< 1.1

1. Statistically significant values are given ± 2 standard deviations of the mean for the determination. The symbol "<" denotes the true value is less than the value given.
2. The volume of air sample used to calculate the concentration of tritium in air at the TMI Observation Center is estimated from sampling time and pre-operational calibrations of flow rate because the sampler dry gas meter was not functioning properly. The error from this source is of the order of ± 20%.

TABLE 2

Background Station -- Wernersville, PA

Dates	Conc. of Tritium in Collected water	Concentration of Tritium in Air
	<u>pCi/ml</u>	<u>pCi/m³</u>
09/10-09/17	< .41	<< 7.3
09/17-09/24	< .41	< 2.3
09/24-10/05	< .41	< 1.4
10/05-10/12	< .44	< 3.0
10/12-10/21	.36 ± .19	1.3 ± .7
10/21-10/29	Broken in Shipment	
10/29-11/05	.40 ± .24	1.3 ± .8
11/05-11/16	< .46	< 1.3
11/16-12/03	< .38	< 1.0
12/03-12/18	< .41	< 7.8
12/18-01/07/82	< .43	< 7.9