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February 8, 1982
NRC/TMI-82-007

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 January 31, 1982 to February 6, 1982. Major items included in this report are:

- Liquid Effluent Releases
- NRC and EPA Environmental Data
- Radioactive Material and Radwaste Shipments
- Submerged Demineralizer System Status
- EPICOR II
- Reactor Building Entries
- TMI Unit 1 Developments
- Public Meetings



- 5 -
Lake H. Barrett
Deputy Program Director
TMI Program Office

Enclosure: As stated

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Harold R. Denton
Bernard J. Snyder

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February 8, 1982

cc w/encl:

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DRPI Chief, RI

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OFFICE	TMIPD	TMIPD	TMIPD	TMIPD	TMIPD	TMIPD
SURNAME	GKalman/jes	RConite	MShanbaky	AFasano	RBeilamy	LBarnett
DATE	2/ /82	2/8/82	2/8/82	2/8/82	2/8/82	2/8/82

NRC TMI PROGRAM OFFICE WEEKLY STATUS REPORT

January 31, 1982 - February 6, 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 0500, February 5, 1982) (approximate values)

Average Incore Thermocouples: 103°F

Maximum Incore Thermocouple: 135°F

RCS Loop Temperatures:

	A	B
Hot Leg	96°F	98°F
Cold Leg (1)	81°F	78°F
(2)	89°F	83°F

RCS Pressure: 97 psig

Reactor Building: Temperature: 60°F
Water level: Elevation 284.6 ft. (2.1 ft. from floor)
Pressure: -0.27 psig
Airborne Radionuclide Concentrations:
2.7 x 10⁻⁷ uCi/cc H³
(sample taken 2/4/82)
1.5 x 10⁻⁶ uCi/cc Kr⁸⁵
(sample taken 2/1/82)

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 January 29, 1982, through February 4, 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 three millionths (0.000003) of a curie of cesium was discharged.

2. Environmental Protection Agency (EPA) Environmental Data.

- The EPA Middletown Office has not received the analytical results for Kr-85 measurements around the TMI site from the EPA's Counting Laboratory at Las Vegas, Nevada. When these results become available, they will be included in a subsequent report.
- The EPA is currently collecting environmental air samples for tritium (H-3) analysis from three sampling stations near the site and one control station near Reading. EPA has informed the NRC that the air tritium samples are being analyzed and the collected data is being reviewed and evaluated prior to publishing a report on the H-3 sampling around TMI. The NRC will report H-3 analytical results once they become available to EPA.
- No radiation above normally occurring background levels was detected in any of the samples collected from EPA's air and gamma rate networks during the period from January 27, 1982 through February 4, 1982.

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> <u>(uCi/cc)</u>	<u>Cs-137</u> <u>(uCi/cc)</u>
HP-305	January 28, 1982 - February 3, 1982	<8.1 E-14	<8.1 E-14

4. Licensee Radioactive Material and Radwaste Shipments.

- On Thursday, February 4, 1982, two drums, each containing seven SDS (Submerged Demineralizer System) samples from Unit 2, were shipped to Oak Ridge National Laboratory, Oak Ridge, Tennessee.
- On Thursday, February 4, 1982, a Unit 1 one liter composite sample (waste evaporator condensate storage) was shipped to Radiation Management Corporation, Philadelphia, Pennsylvania.
- On Friday, February 5, 1982, 127 drums of Unit 1 and Unit 2 compacted LSA trash were shipped to U.S. Ecology Inc., Richland, Washington.

Major Activities

1. Submerged Demineralizer System (SDS). Processing of batch 18 commenced on January 31, 1982, and completed on February 6, 1982. SDS performance parameters for batch 18 are enclosed.

The radioactivity in the spent fuel pool water is now approximately 5.9×10^{-3} uc/ml (gross β - γ activity). The supplemental spent fuel pool cleanup system, designed to remove the radioactive materials leaked through a faulty "O"-ring at a connection to an SDS vessel on January 20, 1982, became operational on February 2, 1982. The DF for this cleanup system averaged 2.6×10^3 during the report period.

Five SDS zeolite vessels are currently stored under 23 feet of water in spent fuel pool "B". Four of these 10 ft³ stainless steel vessels contain from 25,000 to 56,000 curies, predominately as cesium-137, 134, and strontium-90. One additional vessel, which was generated from processing RC bleed tank water, contains approximately 4,800 curies of radioactive materials. DOE has agreed to accept the 10-20 highly loaded SDS zeolite vessels for R&D disposal demonstration.

The licensee's program for handling and shipping the anticipated 10 to 20 SDS vessels is being finalized. As expected, measurable amounts of hydrogen and oxygen gas have been detected in the spent SDS vessels as a result of radiolysis of residual water. These zeolite vessels, which have been physically dewatered, are normally vented to an off-gas system to eliminate hazardous gas mixtures. Radioactive containment requirements during shipment preclude continuous vessel venting during transit. Currently GPU, with technical assistance from DOE's contractors at the Idaho National Engineering Laboratory and Rockwell Hanford, is pursuing engineering designs to either minimize the radiolysis of water or to recombine the hydrogen and oxygen in compliance with applicable Federal Regulations. The potential engineering designs which include a vacuum drying concept and in-vessel recombiner, are being fabricated. This work is estimated to be completed over the next four to six months.

2. EPICOR II. The EPICOR II system continued to process SDS effluents during the report period. Performance parameters are enclosed.
3. Reactor Building Entries. Two entries were made into the Unit 2 reactor building (RB) during the first week in February. Tasks completed during the entries included a load test of the polar crane mounted supports for a power lift, assembly of the power lift platform on the 347 ft. elevation of the RB, and work commenced to replace fire hoses on RB fire stations. An NRC, TMPO Radiation Specialist entered the RB for an independent radiation survey and inspection of accessible areas. No RB entries are scheduled for the week of February 7, 1982.

TMI Unit 1 Developments

1. On February 4 and 5, 1982, the NRC sponsored a workshop in McLean, Virginia, on psychological stress in the TMI area. The participants for the workshop were 11 professional psychiatrists, psychologists and research experts with 4 additional expert witnesses and a professional facilitator to lead the discussion. A list of the initial participants and agenda for the meeting is included as Attachment 2.

A verbatim transcript of the workshop was kept and will be available for reading in the TMIPO Middletown Office. The Mitre Corporation is under contract to the NRC to prepare a summary report of the results of the workshop. This report should be completed in early March and will also be available in the Middletown office.

2. The NRC has received a draft report entitled, "Chronic and Acute Stress Associated with the Three Mile Island Accident and Decontamination: Preliminary Findings of a Longitudinal Study", from its contractor, Dr. Andrew Baum, a medical psychology professor at the Uniform Services University. The draft report concluded that residents in the TMI area experienced low but measurable levels of stress when compared to control groups in other areas. The draft report is available for reading in the Middletown office.

Future Meetings

1. On Friday, February 26, 1982, Lake Barrett will be speaking for the dinner meeting being held by the Engineers Week Joint Planning Council to honor Lehigh Valley's Engineer of the Year and Young Engineer of the Year.
2. 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.

ATTACHMENT 1

SDS Performance for Batch Number 18

<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	6.2×10^{-4}	1.8×10^5
Strontium 90	4.2	8.1×10^{-3}	5.2×10^2

EPICOR II Performance
January 29, 1982 to February 1, 1982

<u>Radionuclide</u>	<u>Average Influent (uc/ml)</u>	<u>Average Effluent (uc/ml)</u>	<u>Average DF</u>
Cesium 137	1.1×10^{-3}	2.3×10^{-7}	4.8×10^3
Strontium 90	1.2×10^{-2}	3.2×10^{-6}	3.8×10^3
Antimony 125	1.1×10^{-2}	$<3.6 \times 10^{-7}$	$>3.1 \times 10^4$

ATTACHMENT 2

WORKSHOP OBJECTIVE

The purpose of this workshop is to obtain answers from the expert community to the following questions:

- o Can we infer or extrapolate, from existing concepts and retrospective or longitudinal studies, the range of stress responses that will be exhibited among the population in the vicinity of TMI to a restart of TMI-1?
- o What is the scientific basis for prediction of the types and ranges of these responses to the psychological stress associated with a restart of TMI-1?
- o What, if any, gaps must be filled in order to increase your confidence, as an expert, in these predictions? How might these be filled?

Workshop on
Psychological Stress

Agenda

Thursday, 4 February 1982

9:00 - 9:30

Opening Remarks

- NRC
- MITRE

9:30 - 10:30

Psychological Effects of Nuclear Power

- nature and causes of stress associated with nuclear power
- distinction from stress associated with other causes
- observed stress responses associated with nuclear power

10:30 - 10:45

Break

10:45 - 12:00

Studies of Psychological Stress in the Vicinity of TMI

- objectives
- sample
- methods
- findings
- conclusions

12:00 - 1:00

Lunch

1:00 - 2:45

Concepts, Causes and Consequences of Stress
Which May Be Applicable to TMI-1 Restart

- general definitions of stress which may be related to the TMI-1 restart
- specification and clarification of differences in terminology and concepts
- identification of stimulus conditions from non-TMI studies which may be applicable to the TMI-1 restart context. What studies?
- identification of consequences of stress from non-TMI situations which may be applicable to the TMI-1 restart context. What studies?
- moderating or intervening factors

2:45 - 3:00

Break

3:00 - 3:45

Evaluation of Methods Used in Identification
and Measurement of Stress and Stress Responses

- techniques for measurement (surveys, interviews, medical records, etc.) of stressors, intervening variables and outcomes
- validity, reliability and relevance of methods used

3:45 - 4:30

Ability to Extrapolate from Existing Studies to
TMI-1 Restart

- similarities/dissimilarities in stressor events, populations, etc.
- other confounding factors to be considered

4:30 - 5:00

Focus for Tomorrow's Session

Friday, 5 February 1982

9:00 - 10:30	<u>Continue and Conclude Discussion of Issues Identified at Close of Thursday Session</u>
10:30 - 10:45	<u>Break</u>
10:45 - 12:15	<u>Technical Considerations for Predicting Psychological Stress Associated with a Restart of TMI-1</u>
12:15 - 1:15	<u>Lunch</u>
1:15 - 2:00	<u>Identification of Additional Near Term Efforts Needed to Fill Gaps in Existing Concepts and Studies</u>
	- benefit gained in terms of increased confidence in predictions
2:00 - 3:00	<u>Summation of Workshop in Terms of Objectives</u>

NRC WORKSHOP PARTICIPANTS

Andrew Baum, Ph.D.	Associate Professor Uniformed Services University Bethesda, Maryland
Evelyn Bromet, Ph.D.	Associate Professor of Psychiatry and Epidemiology University of Pittsburg Pittsburg, Pennsylvania
Robert Dupont, M.D.	President Institute for Behavior and Health Rockville, Maryland
Kai T. Erikson, Ph.D.	Professor of Sociology and American Studies Yale University New Haven, Connecticut
Peter Houts, Ph.D.	Associate Professor of Behavioral Science Milton S. Hershey Medical Center Hershey, Pennsylvania
Stanislaw Kasl, Ph.D.	Professor Epidemiology Yale University School of Medicine New Haven, Connecticut
Ronald Perry, Ph.D.	Research Scientist Battelle Human Affairs Research Centers Seattle, Washington
Captain Richard Rahe, M.D.	Director of Clinical Services Naval Regional Medical Center Long Beach, California
Jon Rolf, Ph.D.	Director of Prevention Research Center for Studies of Prevention Clinical Research Branch National Insititute of Mental Health Rockville, Maryland

Paul Slovic, Ph.D.

Research Associate
Decision Research
Eugene, Oregon

George Warheit, Ph.D.

Professor of Sociology and Psychiatry
University of Florida
Gainesville, Florida