

August 22, 1984

Docket No. 50-289

Mr. Henry D. Hukill, Vice President
and Director - TMI-1
GPU Nuclear Corporation
P. O. Box 480
Middletown, Pennsylvania 17057

Dear Mr. Hukill:

Enclosed is a copy of our safety evaluation related to the "Control Room Habitability" (NUREG-0737 Item III D.3.4) for Three Mile Island Nuclear Station Unit No. 1. Also enclosed is a report from our consultant (Battelle Pacific Northwest Laboratories). Our consultant's report was previously provided to you by our letter dated December 28, 1983 and is included herein for your convenience. Our safety evaluation is based on your responses by letters dated October 23 and November 9, 1981 and supplemented by letters dated March 4 and June 16, 1982 and March 2 and April 30, 1984.

Our evaluation indicated that the control room operators at TMI-1 will be adequately protected in accordance with the requirements of NUREG-0737 Item III D.3.4 and the General Design Criterion 19. The adequacy of the TMI-1 control room habitability is predicated upon GPU completing the modifications described in our safety evaluation and providing acceptable responses to the following open issues:

1. Submittal of detailed analyses demonstrating that the control room operators will be adequately protected against all single failures related to the control room ventilation system (analysis due by November 1984).
2. Demonstration that the probability of release of offsite toxic gases or the concentration of the release toxic gases at the control room air intake is sufficiently low that such events need not be considered as design bases for control room habitability systems. The licensee's submittal dated August 8, 1984 of additional analyses on the toxic gas hazards has been received and is being reviewed by the staff.

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In accordance with the schedules given in your letter dated February 27, 1984 and table 2 of NUREG 1066, you have stated that the installation and testing of the modifications will be completed by February 1986, which is contingent upon the first plant outage after restart and dependent on plant availability. We have concluded that your proposed schedules are acceptable.

Sincerely,

/s/

John F. Stolz, Chief
Operating Reactors Branch No. 4
Division of Licensing

Enclosures:
As stated

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**See previous white for concurrences

NUREG 1066. This schedule commits you to complete the installation and testing by February 1986, which is contingent upon the first plant outage after restart and dependent on plant availability.

Sincerely,

John F. Stolz, Chief
Operating Reactors Branch No. 4
Division of Licensing

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Mr. R. J. Toole
O&M Director, TMI-1
GPU Nuclear Corporation
P. O. Box 480
Middletown, Pennsylvania 17057

Board of Directors
P. A. N. E.
P. O. Box 268
Middletown, Pennsylvania 17057

Docketing and Service Section
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Chauncey Kepford
Judith H. Johnsrud
Environmental Coalition on Nuclear Power
433 Orlando Avenue
State College, Pennsylvania 16801

Judge Reginald L. Gotchy
Atomic Safety & Licensing Appeal Board
U.S. Nuclear Regulatory Commission
Washington, DC 20555

J. B. Lieberman, Esq.
Berlock, Israel & Lieberman
26 Broadway
New York, New York 10004

Mr. Thomas E. Murley, Regional Administrator
U. S. N. R. C., Region I
631 Park Avenue
King of Prussia, Pennsylvania 19406

ANGRY/TMI PIRC
1037 Maclay Street
Harrisburg, Pennsylvania 17103

John Levin, Esq.
Pennsylvania Public Utilities
Commission
Box 3265
Harrisburg, Pennsylvania 17120

Jordan D. Cunningham, Esq.
Fox, Farr and Cunningham
2320 North 2nd Street
Harrisburg, Pennsylvania 17110

Ms. Louise Bradford
TMIA
1011 Green Street
Harrisburg, Pennsylvania 17102

Ms. Marjorie M. Aamodt
R. D. #5
Coatesville, Pennsylvania 19320

Earl B. Hoffman
Dauphin County Commissioner
Dauphin County Courthouse
Front and Market Streets
Harrisburg, Pennsylvania 17101

Ellyn R. Weiss
Harmon, Weiss & Jordan
20001 S Street
Suite 430
Washington, D.C. 20009

Mr. Steven C. Sholly
Union of Concerned Scientists
1346 Connecticut Avenue, N. W.
Dupont Circle Building, Suite 1101
Washington, D. C. 20036

Ivan W. Smith, Esq., Chairman
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Gary J. Edles, Chairman
Atomic Safety & Licensing Appeal
Board
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dr. John H. Buck
Atomic Safety & Licensing Appeal
Board
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Mr. Thomas M. Gerusky, Director
Bureau of Radiation Protection
Pennsylvania Department of
Environmental Resources
P. O. Box 2063
Harrisburg, Pennsylvania 17120

Marvin I. Lewis
6504 Bradford Terrace
Philadelphia, Pennsylvania 19149

G. F. Trowbridge, Esq.
Shaw, Pittman, Potts & Trowbridge
1800 M Street, N.W.
Washington, D. C. 20036

J. S. Wetmore
Manager, PWR Licensing
GPU Nuclear Corporation
100 Interpace Parkway
Parsippany, New Jersey 07054

Ms. Virginia Southard, Chairman
Citizens for a Safe Environment
264 Walton Street
Lemoyne, Pennsylvania 17043

Dr. David Hetrick
Professor of Nuclear Energy
University of Arizona
Tucson, Arizona 85721

Mr. David D. Maxwell, Chairman
Board of Supervisors
Londonderry Township
RFD#1 - Geyers Church Road
Middletown, Pennsylvania 17057

Regional Radiation Representative
EPA Region III
Curtis Building (Sixth Floor)
6th and Walnut Streets
Philadelphia, Pennsylvania 19106

Mr. Richard Conte
Senior Resident Inspector (TMI-1)
U.S.N.R.C.
P. O. Box 311
Middletown, Pennsylvania 17057

General Counsel
Federal Emergency Management Agency
ATTN: Docket Clerk
1725 I Street, NW
Washington, DC 20472

Karin W. Carter, Esq.
505 Executive House
P. O. Box 2057
Harrisburg, Pennsylvania 17120

Dr. James Lamb
313 Woodhaven Road
Chapel Hill, North Carolina 27514

Dauphin County Office Emergency
Preparedness
Court House, Room 7
Front & Market Streets
Harrisburg, Pennsylvania 17101

Christine N. Kohl, Esq.
Atomic Safety & Licensing Appeal
Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Ms. Lennie Prough
U. S. N. R. C. - TMI Site
P. O. Box 311
Middletown, Pennsylvania 17057

Mr. Robert B. Borsum
Babcock & Wilcox
Nuclear Power Generation Division
Suite 220, 7910 Woodmont Avenue
Bethesda, Maryland 20814

Mr. Gustave A. Linenberger, Jr.
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Mr. C. W. Smyth
TMI-1 Licensing Manager
GPU Nuclear Corporation
P. O. Box 480
Middletown, Pennsylvania 17057

Governor's Office of State Planning
and Development
ATTN: Coordinator, Pennsylvania
State Clearinghouse
P. O. Box 1323
Harrisburg, Pennsylvania 17120

Sheldon J. Wolfe, Esq., Chairman
Atomic Safety & Licensing Board
Washington, D.C. 20555

Jane Lee
183 Valley Road
Etters, Pennsylvania 17319

Bruce Molholt
Haverford College
Haverford, Pennsylvania 19041

Norman Ainodt
R. D. #5, Box 428
Coatesville, Pennsylvania 19320

Michael McBride, Esq.
LeBoeuf, Lamb, Leiby & McRae
Suite 1100
1333 New Hampshire Avenue, N.W.
Washington, D.C. 20036

SAFETY EVALUATION REPORT
THREE MILE ISLAND NUCLEAR POWER PLANT UNIT 1
DOCKET NO. 50-289
NUREG-0737 ITEM III.D.3.4, "CONTROL ROOM HABITABILITY"

III.D.3.4 CONTROL ROOM HABITABILITY REQUIREMENTS (NUREG-0737)

Position

In accordance with Task Action Plan Item III.D.3.4, "Control Room Habitability," licensees shall assure that control room operators will be adequately protected against the effects of accidental releases of toxic and radioactive gases, and that the nuclear power plant can be safely operated or shut down under design basis accident conditions (Criterion 19, "Control Room," of Appendix A, "General Design Criteria for Nuclear Power Plants," to 10 CFR Part 50).

Staff Evaluation

In response to the requirements of the Task Action Plan as promulgated in NUREG-0737, the licensee made two submittals (dated October 23, 1981 and November 9, 1981) in response to item III.D.3.4. Pacific Northwest Laboratories (PNL), under contract to the staff (FIN #B2323), evaluated the licensee submittals using the guidance and criteria of Standard Review Plan Sections 2.2.1, 2.2.2, 2.2.3 and 6.4 and Regulatory Guides 1.78 and 1.95. The PNL review is appended. In its submittals, the licensee committed to modifications, and these are identified in the attached PNL letter report.

In clarifying the control room habitability system modifications, the licensee submitted additional information on March 4, 1982, June 16, 1982, March 2, 1984, and April 30, 1984. The staff's review of this information indicated that there are two areas which need further

clarification. One area is with respect to the ability of the control room habitability system to function assuming a single active failure. During a plant site meeting between the staff and the licensee on April 18, 1984, GPU and the staff discussed a number of postulated failures that could occur in the system and GPU presented technical arguments as to why its system would protect the control room operators. Because the full range of possible failures has not been identified, GPU by letter dated April 30, 1984, agreed to undertake a detailed analyses of all the failures in the system and, as a confirmatory item, provide a report by November 1984 containing analyses demonstrating that the control room operators will be adequately protected.

The other area concerns the protection of the control room operators against the effects of offsite shipments of toxic chemicals. In the April 30, 1984 letter, the licensee stated that the staff had accepted the licensee's previous evaluations of offsite toxic gas hazards. This issue was reviewed and found acceptable at the time of licensing of TMI-1 about 10 years ago and again for TMI-2 about 5 years ago. However, additional analyses are needed to confirm that the current offsite toxic hazards do not compromise control room habitability, i.e., that the earlier conclusions remain valid. The licensee has committed to provide the analyses by August 8, 1984.

The licensee has committed to the following modifications to the plant and procedures:

1. The ventilation system will be upgraded during Cycle 7 Refueling

Outage, as described in letters of November 9, 1981, and July 16, 1982.

2. One additional self-contained breathing apparatus will be provided in the control room for every three required, i.e., 6 units will be provided (March 2, 1984 letter).
3. The Control Room Emergency Zone will be tested for leak-tightness during the Cycle 7 Refueling Outage and upgraded if necessary (July 16, 1982 letter).
4. The ammonia tank at Unit 2 will be drained and at Unit 1 will be surrounded by a two-foot high berm enclosing 550 sq. ft., to be completed in January 1985 (April 30, 1984 letter).
5. Redundant chlorine detectors will be installed, by March 1985 (depending on plant availability) at the river water pump house and air intake structure (April 20, 1984 letter).
6. Administrative procedures will be adopted to assure that ammonia and chlorine delivery trucks remain as far away as possible from the air intake structure (April 30, 1984 letter).

The staff finds the licensee's schedules in letter dated February 27, 1984, and Table 2 of NUREG-1066, "Comparison of Implementation of Selected TMI Action Plan Requirements on Operating Plants Designed by Babcock & Wilcox," dated May 1984 acceptable. This schedule commits to complete installation and testing by February 1986. This schedule requires an outage with a schedule dependant on plant availability. The staff concludes that TMI-1 can be safely operated in the interim because the probability of an accidental release and incapacitation of the plant operators is low.

Based on the foregoing discussion, the staff concludes that the control room operators at TMI-1 will be adequately protected in accordance with the requirements of NUREG-0737, item III.D.3.4, and General Design Criterion 19.