UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

February 9, 1987

87-038

Mr. F. R. Standerfer
Vice President/Director
Three Mile Island Unit 2
GPU Nuclear Corporation
P.O. Box 480
Middletown, Pennsylvania 17057

Dear Mr. Standerfer:

Subject: Three Mile Island Nuclear Station Unit 2
Operating License No. DPR-73
Docket No. 50-320
Approval of Exemption from 10 CFR 50, Appendix A
General Design Criteria 17 and 19

We have reviewed your request dated December 10, 1986, for exemption from the requirements of 10 CFR 50 Appendix A, General Design Criteria (GDC) 17 and 19, regarding provisions for onsite electric power systems and control rooms. As discussed in the enclosed Exemption, TMI-2 is in long-term cold shutdown and is precluded from power operation. In this mode and because of the current condition of the facility, no actions on the part of control room personnel are required to maintain the facility in a safe shutdown condition. Therefore, continuous manning of the control room is not necessary under accident conditions and continuous operability of the control room emergency air cleanup system need not be provided by an onsite backup emergency power source. Additionally, as the control room emergency air cleanup system represents the only remaining load on the emergency diesel generators that was formerly important to safety, the diesel generators are no longer needed as an onsite electric power source necessary for maintenance of TMI-2 in a safe shutdown condition. We conclude that your request for exemption from GDC 17 and 19 of 10 CFR 50, Appendix A is appropriate and acceptable, as stated in the enclosed Exemption. Please note that a partial exemption to GDC 19 has been granted, consistent with your request. This Exemption and the accompanying environmental assessment have been forwarded to the Office of the Federal Register for publication.

Sincerely,

William D. Travers

William D. Travers, Director
TMI-2 Cleanup Project Directorate
Office of Nuclear Reactor Regulation

Enclosures:
1. Exemption
2. Environmental Assessment and Notice of Finding of No Significant Environmental Impact

cc: See next page

cc: T. F. Demmitt
R. E. Rogan
S. Levin
J. E. Frew
J. J. Byrne
A. W. Miller
Service Distribution
List (See attached)

TMI-2 SERVICE-LIST

Dr. Thomas Murley
Regional Administrator
U.S. Nuclear Regulatory Commission
631 Park Avenue
King of Prussia, PA 19406

Sheldon J. Wolfe, Esq., Chairman
Administrative Judge
Atomic Safety and Licensing Board Panel
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dr. Oscar H. Paris
Administrative Judge
Atomic Safety and Licensing Board Panel
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dr. Frederick J. Shon
Administrative Judge
Atomic Safety and Licensing Board Panel
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dr. Judith H. Johnsrud
Environmental Coalition on Nuclear Power
433 Orlando Avenue
State College, PA 16801

Ernest L. Blake, Jr., Esq.
Shaw, Pittman, Potts, and Trowbridge
2300 N Street, N.W.
Washington, D.C. 20037

Atomic Safety and Licensing Board Panel
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Secretary
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Frederick S. Rice, Chairman
Dauphin County Board of Commissioners
Dauphin County Courthouse
Front and Market Streets
Harrisburg, PA 17101

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

Ad Crable
Lancaster New Era
8 West King Street
Lancaster, PA 17601

U.S. Department of Energy
P.O. Box 88
Middletown, PA 17057-0311

David J. McGoff
Office of LWR Safety and
Technology
NE-23
U.S. Department of Energy
Washington, D.C. 20545

William Lochstet
104 Davey Laboratory
Pennsylvania State University
University Park, PA 16802

Frank Lynch, Editorial
The Patriot
812 Market Street
Harrisburg, PA 17105

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

Michael Churchhill, Esq.
PILCOP
1315 Walnut Street, Suite 1632
Philadelphia, PA 19107

Marvin I. Lewis
7801 Roosevelt Blvd. #62
Philadelphia, PA 19152

Jane Lee
183 Valley Road
Etters, PA 17319

Walter W. Cohen, Consumer
Advocate
Department of Justice
Strawberry Square, 14th Floor
Harrisburg, PA 17127

Mr. Edwin Kintner
Executive Vice President
General Public Utilities
Nuclear Corporation
100 Interpace Parkway
Parsippany, NJ 07054

US Environmental Prot. Agency
Region III Office
ATTN: EIS Coordinator
Curtis Building (Sixth Floor)
6th and Walnut Streets
Philadelphia, PA 19106

UNITED STATES NUCLEAR REGULATORY COMMISSION

In the Matter of	)	
	)	
GENERAL PUBLIC UTILITIES NUCLEAR CORPORATION	)	Docket No. 50-320
	)	
(Three Mile Island Nuclear Station Unit 2)	)	
	)	

EXEMPTION

I.

GPU Nuclear Corporation, Metropolitan Edison Company, Jersey Central Power and Light Company and Pennsylvania Electric Company (collectively, the licensee) are the holders of Facility Operating Licensing No. DPR-73, which had authorized operation of the Three Mile Island Nuclear Station, Unit 2 (TMI-2) at power levels up to 2772 megawatts thermal. The facility, which is located in Londonderry Township, Dauphin County, Pennsylvania, is a pressurized water reactor previously used for the commercial generation of electricity.

By Order for Modification of License, dated July 20, 1979, the licensee's authority to operate the facility was suspended and the licensee's authority was limited to maintenance of the facility in the present shutdown cooling mode (44 Fed. Reg. 45271). By further Order of the Director, Office of Nuclear Reactor Regulation, dated February 11, 1980, a new set of formal license requirements was imposed to reflect the post-accident condition of the facility and to assure the continued maintenance of the current safe, stable, long-term cooling condition of the facility (45 Fed. Reg. 11292). The license provides, among other things, that it is subject to all rules, regulations and Orders of the Commission now or hereafter in effect.

II.

By letter dated December 10, 1986, the licensee requested exemptions from the requirements of 10 CFR 50, Appendix A, General Design Criteria (GDC) 17 and 19, concerning electric power systems and control room habitability. Specifically, GDC 17 requires that an onsite electric power system and an offsite electric power system shall be provided to permit functioning of structures, systems and components important to safety. GDC 17 further requires that the safety function for each system (assuming the other system is not functioning) should be to provide sufficient capacity and capability to assure that (1) specified acceptable fuel design limits and design conditions of the reactor coolant pressure boundary are not exceeded as a result of anticipated operational occurrences and (2) the core is cooled and containment integrity and other vital functions are maintained in the event of postulated accidents. Additionally, GDC 17 specifies that both onsite and offsite electric power systems should have sufficient independence and redundancy to perform their safety functions assuming a single failure. As relevant to the licensee's request, GDC 19 requires that a control room shall be provided from which actions can be taken to operate the nuclear power unit safely under normal conditions and to maintain it in a safe condition under accident conditions, including loss-of-coolant accidents. GDC 19 further requires that adequate radiation protection shall be provided to permit access and occupancy of the control room under accident conditions without personnel receiving radiation exposures in excess of 5 rem whole body, or its equivalent to any part of the body, for the duration of the accident. Under the TMI-2 operating license, control room

habitability during accident conditions has been assured through the operability of the control room emergency air cleanup system. In the unlikely event of an accident with concurrent loss of offsite power (LOOP), the diesel generators would provide onsite emergency backup power to assure the operability of the system.

III.

The licensee has requested exemption from the indicated General Design Criteria in conjunction with license amendment requests submitted by letters dated June 18, 1985 and July 31, 1985, as modified by letters dated February 26, 1986 and May 20, 1986 and in additional discussions with the staff. The staff has reviewed the safety evaluations submitted in support of the proposed license amendments, which also provide the bases for the licensee's exemption requests. Specifically, the licensee proposes to delete all license requirements for availability and operability of the Class 1E diesel generators. As a result of previous amendments to the facility license to reflect the unique post-accident status of the TMI-2 facility, the control room emergency air cleanup system is the only remaining system requiring power from the onsite diesel generators. Consequently, the licensee also proposes to delete the license requirement for onsite emergency backup power to this system.

TMI-2 is currently in a long-term cold shutdown for accident recovery and defueling. Short-lived fission products which make up the preponderance of the source term in operating reactors have decayed to negligible levels.

Decay heat is less than 10 kilowatts and forced cooling of the core has not been required or used since 1981. Core cooling and criticality control are provided by maintaining a sufficient volume of borated water in the RCS. Natural convective heat loss from the RCS directly to the reactor building atmosphere provides sufficient decay heat removal capability. In the unlikely event of the maximum credible TMI-2 loss of coolant accident, previously analyzed by the staff, sufficient borated water would be provided by passive, gravity feed from the borated water storage tank to keep the core covered for a minimum of 10 days. The standby reactor building sump recirculation system would be made operational during this time if needed to maintain core coverage for a longer period.

The types of accidents possible at TMI-2 during the cleanup phase (long-term cold shutdown) differ significantly from those possible in an operating reactor. The staff and the licensee have evaluated a broad spectrum of potential accident scenarios possible at TMI-2 during the cleanup phase. These included liquid spills, fires, canister drops, and loss of coolant accidents. The source terms from these accident scenarios are much smaller than those associated with postulated accidents at operating power reactors. Additionally, none of these accidents would be caused by a LOOP and thus are extremely unlikely to occur simultaneously with the unavailability of the control room emergency air cleanup system.

TMI-1, which is adjacent to TMI-2, is in a normal operating cycle for power reactors with periods of power operation periodically interrupted by variable

length shutdowns for refueling, maintenance and repairs. A severe accident at TMI-1 while it is at power could generate a source term which could affect TMI-2 control room habitability. It is very improbable that this type of accident would occur and even more unlikely that it would be coincident with a loss of offsite power to TMI-2. If there were no coincident TMI-2 LOOP, the TMI-2 control room emergency air cleanup system would function normally.

The licensee has committed to terminate all recovery activities and place systems in a safe, stable configuration at TMI-2 during an emergency event at TMI-1. These activities include core alterations, RCS water processing, transfer of fuel bearing canisters and casks, and movement of heavy loads. While an accident at TMI-1 could affect habitability in TMI-2, it would not cause equipment failures and additional accidents to occur at TMI-2. No active components are required to maintain the current safe shutdown of TMI-2. With recovery activities terminated, periodic monitoring of TMI-2 is all that is required. No effect on plant safety would occur due to temporary inaccessibility of the TMI-2 control room. The staff has previously determined that offsite AC power can be restored within five hours. With the restoration of offsite power, the TMI-2 control room emergency air cleanup system would again become operable and personnel could again monitor activities from the control room. Although not required, short-term access to the TMI-2 control room could be provided by use of self contained breathing apparatus.

The staff has evaluated the potential accident scenarios discussed above relative to the requirements for control room habitability specified in

GDC 19. We conclude that it is highly probable that in the event of an accident at TMI-1 or TMI-2, the TMI-2 control room emergency air cleanup system will be operable without relying on onsite backup emergency power sources, and thus habitability of the TMI-2 control room will be ensured in accordance with GDC 19. However, in the extremely unlikely event that a severe accident at Unit 1 occurs coincident with loss of offsite power to Unit 2, the Unit 2 control room could, if necessary, be evacuated without affecting the licensee's ability to maintain the TMI-2 facility safely shutdown. Accordingly, a partial exemption from GDC 19 during a LOOP is justified since no action of personnel in the TMI-2 control room would be required to maintain the plant in a safe shutdown condition for the period of time necessary to restore power. Except for such occurrences, the licensee will continue to comply with the provisions of GDC 19.

Since TMI-2 can be maintained in a safe shutdown condition without the requirement for continuous manning of the control room, onsite backup emergency power service for the control room emergency air cleanup system is no longer needed to ensure the safety of the facility in its present condition. Consequently, an exemption from GDC 17 is also justified. This is based on the fact that the control room emergency air cleanup system is the only remaining load on the emergency diesel generators still required by the facility license; the emergency diesel generators (the onsite electric power system) are not needed to assure core cooling, containment integrity or other safety functions at TMI-2 in the current post-accident, cold shutdown condition.

IV.

Accordingly, the Commission has determined that pursuant to 10 CFR 50.12, these exemptions are authorized by law, will not present an undue risk to the public health and safety, and are consistent with the common defense and security. The Commission further determines that special circumstances, as provided in 10 CFR 50.12(a)(2)(ii), are present justifying the exemptions, namely, that application of the regulations in this particular circumstance is not necessary to achieve the underlying purpose of the rules: to maintain the nuclear power unit in a safe shutdown condition in the event of an accident. Specifically, as noted above, neither continuous control room manning nor operation of an onsite emergency backup power source is necessary to maintain the damaged TMI-2 reactor in a safe shutdown condition. Accordingly, the Commission hereby grants exemption from the requirements of 10 CFR Part 50, Appendix A, General Design Criterion 17 and, in part, from the requirements of General Design Criterion 19.

It is further determined that the exemptions do not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. In light of this determination and as reflected in the Environmental Assessment and Notice of Finding of No Significant Environmental Impact prepared pursuant to 10 CFR 51.21 and 51.30 through 51.32 (February 9, 1987, 52 FR 4067), it is concluded that the instant action is insignificant from the standpoint of environmental impact and an environmental impact statement need not be prepared.

These exemptions are effective upon issuance of the corresponding changes to facility Technical Specifications, sections 3.7.4, 3.7.7, 3.7.10, 3.8.1, 3.8.2, 3.9.12.1, 3.9.12.2, 3/4.7.4, 3/4.7.7, 4.3, 4.7.4, 4.7.7, 4.8.1, 4.8.2, 4.9.12.1 and 4.9.12.2.

FOR THE NUCLEAR REGULATORY COMMISSION

Frank J. Miraglia

Frank J. Miraglia, Director
Division of PWR Licensing-B
Office of Nuclear Reactor Regulation

Dated at Bethesda, Maryland
this 9th day of February 1987

UNITED STATES NUCLEAR REGULATORY COMMISSION

GENERAL PUBLIC UTILITIES NUCLEAR CORPORATION

DOCKET NO. 50-320

ENVIRONMENTAL ASSESSMENT AND NOTICE OF FINDING

OF NO SIGNIFICANT ENVIRONMENTAL IMPACT

The U.S. Nuclear Regulatory Commission (the Commission) is planning to issue two Exemptions to the requirements of 10 CFR 50, Appendix A, General Design Criteria 17 and 19, relative to Facility Operating License No. DPR-73, issued to General Public Utilities Nuclear Corporation (the licensee), for operation of the Three Mile Island Nuclear Station Unit 2 (TMI-2), located in Londonderry Township, Dauphin County, Pennsylvania. By Order for Modification of License, dated July 20, 1979, the licensee's authority to operate the facility was suspended and the licensee's authority was limited to maintenance of the facility in the present shutdown cooling mode (44 Fed. Reg. 45271). By further Order of the Director, Office of Nuclear Reactor Regulation, dated February 11, 1980, a new set of formal license requirements was imposed to reflect the post-accident condition of the facility and to assure the continued maintenance of the current safe, stable, long-term cooling condition of the facility (45 Fed. Reg. 11292). The license provides, among other things, that it is subject to all rules, regulations and Orders of the Commission now or hereafter in effect.

ENVIRONMENTAL ASSESSMENT

Identification of Proposed Action: The actions being considered by the Commission are exemptions from 10 CFR 50, Appendix A, General Design Criteria (GDC) 17 and 19 relating to requirements for electric power systems and nuclear station control rooms. Specifically, GDC 17 requires that an onsite and offsite electric power system shall be provided to permit functioning of structures, systems, and components important to safety. As relevant to the licensee's request, GDC 19 requires that a control room shall be provided from which actions can be taken to operate the nuclear power unit safely under normal conditions and to maintain it in a safe condition under accident conditions. GDC 19 further requires that radiation protection shall be provided to permit access and occupancy of the control room under accident conditions, within specified exposure limits.

The Need for the Proposed Action: TMI-2 is currently in a post-accident, cold shutdown, long-term recovery mode, with sufficient decay heat removal assured by direct heat loss from the reactor coolant system (RCS) to the reactor building atmosphere. In case of a TMI-2 loss of coolant event, sufficient borated makeup water will be provided by a passive gravity feed system to maintain the level of the RCS above the damaged fuel for a minimum of 10 days. Dedicated equipment is available and procedures have been established to provide recirculation to assure long-term core coverage, if necessary, even in the unlikely event that the Unit 2 control room is temporarily uninhabitable. Consequently, the facility can be maintained for the short term in a safe,

stable shutdown condition without relying upon action from control room personnel and continuous manning of the TMI-2 control room is not necessary under worst-case accident conditions to achieve the underlying purpose of the requirement. For this reason, a partial exemption to the requirements of GDC 19 is justified.

Since continuous control room manning is no longer necessary for all postulated events, with TMI-2 in its current long-term cold shutdown mode, control room emergency air cleanup system operability does not have to be continuously maintained. Therefore, onsite emergency backup power provided by the diesel generators is not needed for the system. This removes the need for the last load on the diesel generators still required by the facility license, and safe shutdown of the plant is no longer dependent on the onsite backup emergency power source. Thus, the performance of maintenance and surveillance of the emergency diesel generators required by GDC 17 would impose an unnecessary burden and expense on the licensee with no concomitant benefit in terms of achieving the underlying purpose of the requirement.

Environmental Impact of the Proposed Action: The staff has evaluated the subject exemptions and concludes that in light of the current and future condition of the facility described above, there are no significant radiological or nonradiological impacts to the environment as a result of this action. The exemptions remove specific features of the Commission's requirements to provide an onsite electric power system and a control room to maintain the nuclear power unit in a safe condition following an accident.

Alternatives to the Proposed Action: Since the Commission has concluded that there is no significant environmental impact associated with the proposed exemptions, any alternatives to this action will have either no significant environmental impact or greater environmental impact. This would not reduce significant environmental impacts of plant operations and would result in the application of unnecessary regulatory requirements.

Agencies and Persons Consulted: The NRC staff reviewed the licensee's request and did not consult other agencies or persons.

Alternative Use of Resources: This action does not involve the use of resources not previously considered in connection with the Final Programmatic Environmental Impact Statement for TMI-2, dated March 1981.

FINDING OF NO SIGNIFICANT IMPACT

The Commission has determined not to prepare an environmental impact statement for the proposed exemptions. Based upon the foregoing environmental assessment, we conclude that this action will not have a significant effect on the quality of the human environment.

For further details with respect to this action see: (1) letter from F. R. Standerfer, GPUNC to W. D. Travers, USNRC, Exemption from 10 CFR 50 Appendix A, General Design Criteria 17 and 19, dated December 10, 1986. This document is available for inspection at the Commission's Local Public Document

Room, 1717 H Street, N.W., Washington, D.C., and at the Commission's Local Public Document Room at the State Library of Pennsylvania, Government Publications Section, Education Building, Commonwealth and Walnut Streets, Harrisburg, Pennsylvania 17126.

Dated at Bethesda, Maryland, this 3rd day of February 1987.

FOR THE NUCLEAR REGULATORY COMMISSION

Michael T. Masnik, Acting Director
TMI-2 Cleanup Project Directorate
Office of Nuclear Reactor Regulation