

November 7, 1991

Docket No. 50-289

DISTRIBUTION

Docket file  
NRC & L PDRs  
PDI-4 PLANT  
SVarga  
JCalvo  
SNorris  
RHernan  
OGC  
EJordan MNBB 3701  
ACRS (10)  
GPA/PA

CHehl, RI

Mr. T. Gary Broughton, Vice President  
and Director - TMI - 1  
GPU Nuclear Corporation  
Post Office Box 480  
Middletown, Pennsylvania 17057

Dear Mr. Broughton:

SUBJECT: ENVIRONMENTAL ASSESSMENT REGARDING EXEMPTION FROM 10 CFR 50.46(a)(1)(i)  
10 CFR 50.44(a), AND APPENDIX K TO 10 CFR PART 50 - THREE MILE ISLAND  
NUCLEAR GENERATING STATION, UNIT NO. 1 (TAC NO. 82019)

Enclosed for your information is a copy of an Environmental Assessment and  
Finding of No Significant Impact which supports the exemptions to 10 CFR 50.44,  
10 CFR 50.46, and Appendix K to 10 CFR Part 50 that are necessary in order to  
install lead test assemblies using Zirlo clad fuel.

A copy of the Environmental Assessment has been forwarded to the Office of the  
Federal Register for publication.

Sincerely,

Original signed by David H. Jaffe for

Ronald W. Hernan, Sr. Project Manager  
Project Directorate I-4  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Enclosure:  
Environmental Assessment

cc w/enclosure:  
See next page

\* See previous concurrence

OFC	:PDI-4:LA	:PDI-4:PM *	:OGC *	:PDI-4:D	:
NAME	:SNorris	:RHernan/Bah	:EReis	:JStolz	:
DATE	: 11/7/91	:11/6/91	:11/6/91	:	:

OFFICIAL RECORD COPY  
Document Name: EA 79289

*JFol*  
11

**NRC FILE CENTER COPY**

9111210312 911107  
PDR ADDCK 05000289  
P PDR

Mr. T. Gary Broughton  
GPU Nuclear Corporation

Three Mile Island Nuclear Station,  
Unit No. 1

cc:

Michael Ross  
O&M Director, TMI-1  
GPU Nuclear Corporation  
Post Office Box 480  
Middletown, Pennsylvania 17057

Francis I. Young  
Senior Resident Inspector (TMI-1)  
U.S. Nuclear Regulatory Commission  
Post Office Box 311  
Middletown, Pennsylvania 17057

Michael Laggart  
Manager, Licensing  
GPU Nuclear Corporation  
100 Interpace Parkway  
Parsippany, New Jersey 07054

Regional Administrator, Region I  
U.S. Nuclear Regulatory Commission  
475 Allendale Road  
King of Prussia, Pennsylvania 19406

Robert Knight (Acting)  
TMI-1 Licensing Manager  
GPU Nuclear Corporation  
Post Office Box 480  
Middletown, Pennsylvania 17057

Robert B. Borsum  
B&W Nuclear Technologies  
Suite 525  
1700 Rockville Pike  
Rockville, Maryland 20852

Ernest L. Blake, Jr., Esquire  
Shaw, Pittman, Potts & Trowbridge  
2300 N Street, NW.  
Washington, DC 20037

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

Sally S. Klein, Chairperson  
Dauphin County Commissioner  
Dauphin County Courthouse  
Front and Market Streets  
Harrisburg, Pennsylvania 17120

Thomas M. Gerusky, Director  
Bureau of Radiation Protection  
Pennsylvania Department of  
Environmental Resources  
Post Office Box 2063  
Harrisburg, Pennsylvania 17120

Kenneth E. Witmer, Chairman  
Board of Supervisors  
of Londonderry Township  
25 Roslyn Road  
Elizabethtown, Pennsylvania 17022

UNITED STATES NUCLEAR REGULATORY COMMISSIONGPU NUCLEAR CORPORATIONDOCKET NO. 50-289ENVIRONMENTAL ASSESSMENT AND FINDING OFNO SIGNIFICANT IMPACT

The U. S. Nuclear Regulatory Commission (the Commission) is considering issuance of exemptions from the provisions of: (1) 10 CFR 50.46, which requires the calculation of emergency core cooling system (ECCS) performance for reactors with Zircaloy clad fuel; (2) 10 CFR 50.44, which gives requirements to control the hydrogen generated by Zircaloy clad fuel after a postulated loss-of-coolant-accident (LOCA); and (3) Appendix K to 10 CFR Part 50, which presumes the use of Zircaloy fuel when doing calculations for energy release, cladding oxidation and hydrogen generation after a postulated LOCA, to GPU Nuclear Corporation, the licensee for Three Mile Island Nuclear Generating Station, Unit No. 1 (TMI-1), located in Dauphin County, Pennsylvania.

ENVIRONMENTAL ASSESSMENTIdentification of Proposed Action:

The proposed action would allow the licensee to use fuel assemblies whose cladding composition falls outside the definition of Zircaloy in the cited regulations. Two of these assemblies (lead test assemblies) would be loaded into the TMI-1 reactor core during the refueling outage in the fall of 1991.

The licensee informed the NRC of its intention to install these special assemblies during a meeting on January 18, 1991. The exemption is being undertaken on the Commission's own initiative.

The Need for the Proposed Action:

The exemption under consideration is needed because 10 CFR 50.46(a)(1)(i) and Appendix K to 10 CFR Part 50 require the demonstration of adequate ECCS performance for light-water reactors that contain fuel consisting of uranium oxide pellets enclosed in Zircaloy tubes; furthermore, 10 CFR 50.44(a) addresses requirements to control hydrogen generated by Zircaloy fuel after a postulated LOCA. Since some of the cladding the licensee proposed to use in these lead test assemblies falls outside the definition of Zircaloy, the Commission, on its own initiative, took into consideration exemptions from 10 CFR 50.44, 10 CFR 50.46, and Appendix K to 10 CFR Part 50. The Commission believes that special circumstances exist since application of the rule in this case would not achieve the underlying purpose of the rule for those test assemblies. The underlying purpose of 10 CFR 50.46 and Appendix K to 10 CFR Part 50 is to establish requirements for emergency core cooling systems. The underlying purpose of 10 CFR 50.44 is to control hydrogen generated by the metal/water reaction after a postulated LOCA, regardless of whether that metal is Zircaloy or Zirlo. The licensee has addressed the safety impact of installing these assemblies under the provisions of 10 CFR 50.59. The staff has evaluated use of Zirlo in its Safety Evaluations regarding Westinghouse Topical Report WCAP-12610 dated July 1, 1991, and October 9, 1991. These evaluations concluded that facilities can continue to comply with the purpose of the appropriate regulations with Zirlo clad fuel. Therefore, the underlying purpose of the rule has been fulfilled.

Environmental Impacts of the Proposed Action:

With regard to potential radiological impacts to the general public, the exemption under consideration involves features located entirely within the restricted area as defined in 10 CFR Part 20. It does not affect the potential for radiological accidents and does not affect radiological plant effluents. The test fuel assemblies meet the same design bases as the fuel that is currently in the reactor. No safety limits have been changed or setpoints altered as a result of the use of these assemblies. The FSAR analyses are bounding for the test assemblies, as well as for the rest of the core. The advanced zirconium-based alloys have been shown through testing to perform satisfactorily under conditions representative of a reactor environment and the material properties of Zirlo and Zircaloy are very similar. The exemption under consideration, therefore, does not affect the consequences of radiological accidents; consequently, the Commission concludes that there are no significant radiological impacts associated with the exemption.

With regard to the potential environmental impact associated with the transportation of the Zirlo clad fuel assemblies, the advanced cladding has no impact on previous assessments determined in accordance with 10 CFR 51.52.

With regard to non-radiological impacts, the exemption under consideration does not affect non-radiological plant effluents and has no other environmental impact. Therefore, the Commission concludes that there are no significant non-radiological environmental impacts associated with the exemption.

Alternative to the Proposed Action:

Since the Commission has concluded that there are no significant environmental effects that would result from the proposed action, any alternatives to this exemption will have either no significantly different environmental

impact or greater environmental impact. The principal alternative would be to not allow the licensee to install the lead test assemblies. This would not reduce environmental impacts as a result of plant operations and would have no regulatory technical basis.

Alternative use of Resources:

This action does not involve the use of resources not previously considered in the "Final Environmental Statement Related to the Operation of Three Mile Island Nuclear Station, Units 1 and 2," dated December 1972.

Agencies and Persons Consulted:

The staff reviewed the licensee's request and did not consult other agencies or persons.

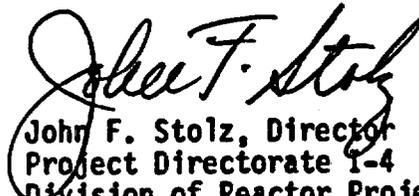
FINDING OF NO SIGNIFICANT IMPACT

The Commission has determined not to prepare an environmental impact statement for the exemption under consideration.

Based on the foregoing environmental assessment, the staff concludes that the proposed action will not have a significant effect on the quality of the human environment.

Dated at Rockville, Maryland this 7th day of November 1991.

FOR THE NUCLEAR REGULATORY COMMISSION

  
John F. Stolz, Director  
Project Directorate 1-4  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation