

October 12, 1995

Mr. James Knubel, Vice President
and Director, TMI
GPU Nuclear Corporation
P.O. Box 480
Middletown, PA 17057-0480

SUBJECT: THREE MILE ISLAND NUCLEAR STATION, UNIT 1 (TMI-1) - EXEMPTION FROM
10 CFR 50.46, APPENDIX K TO 10 CFR PART 50, AND 10 CFR 50.44 FOR
DEMONSTRATION FUEL ASSEMBLIES (TAC NO. M92441)

Dear Mr. Knubel:

The enclosed exemption responds to your request of June 1, 1995, for an exemption from 10 CFR 50.44, 10 CFR 50.46, and Appendix K to 10 CFR Part 50, to enable the use of demonstration fuel assemblies using advanced clad materials during Cycles 11, 12, and 13 at TMI-1. Our letter transmitting License Amendment No. 194, dated July 24, 1995, stated that an exemption was not required for use of these materials. Upon review of that decision, we have determined that, consistent with our past practice, an exemption is appropriate.

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

Sincerely,

Original signed by:

Ronald W. Hernan, Senior Project Manager
Project Directorate I-3
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket No. 50-289

Enclosure: As stated

cc w/encl: See next page

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UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

October 12, 1995

Mr. James Knubel, Vice President
and Director, TMI
GPU Nuclear Corporation
P.O. Box 480
Middletown, PA 17057-0480

SUBJECT: THREE MILE ISLAND NUCLEAR STATION, UNIT 1 (TMI-1) - EXEMPTION FROM
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Sincerely,

A handwritten signature in cursive script that reads "Ronald W. Hernan".

Ronald W. Hernan, Senior Project Manager
Project Directorate I-3
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket No. 50-289

Enclosure: As stated

cc w/encl: See next page

J. Knubel
GPU Nuclear Corporation

Three Mile Island Nuclear Station,
Unit No. 1

cc:

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King of Prussia, PA 19406

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of)	
)	
GPU NUCLEAR CORPORATION, ET AL.)	Docket No. 50-289
)	
Three Mile Island Nuclear)	
Station, Unit No. 1)	

EXEMPTION

I.

GPU Nuclear Corporation (the licensee) is the holder of Facility Operating License No. DPR-50, which authorizes operation of Three Mile Island Nuclear Station, Unit No. 1 (TMI-1). The license provides, among other things, that the licensee be subject to all rules, regulations, and Orders of the Nuclear Regulatory Commission (the Commission) now or hereafter in effect.

The facility consists of a pressurized water reactor at the licensee's site located in Dauphin County, Pennsylvania.

II.

By letter dated June 1, 1995, the licensee requested an exemption to 10 CFR 50.44, 10 CFR 50.46, and Appendix K to 10 CFR Part 50 that would enable the use of two demonstration assemblies during TMI-1 Cycles 11, 12, and 13. These regulations refer to pressurized water reactors fueled with uranium oxide pellets within cylindrical zircaloy or ZIRLO cladding. The two demonstration assemblies to be used during these fuel cycles contain fuel rods with zirconium-based claddings that are not chemically identical to zircaloy or ZIRLO.

Since 10 CFR 50.46 and Appendix K to 10 CFR Part 50 identify requirements for calculating emergency core cooling system (ECCS) performance for reactors containing fuel with zircaloy or ZIRLO cladding, and 10 CFR 50.44 relates to the generation of hydrogen gas from a metal-water reactor with reactor fuel having zircaloy or ZIRLO cladding, an exemption is required to place the two demonstration assemblies containing fuel rods with advanced zirconium based cladding in the core.

III.

Title 10 of the Code of Federal Regulations at 50.12(a)(2)(ii) enables the Commission to grant an exemption from the requirements of Part 50 when special circumstances are present such that application of the regulation in the particular circumstances would not serve the underlying purpose of the rule, or is not necessary to achieve the underlying purpose of the rule. The underlying purpose of 10 CFR 50.46 and 10 CFR Part 50, Appendix K is to establish requirements for the calculation of ECCS performance. The licensee has performed a calculation demonstrating adequate ECCS performance for TMI-1 and has shown that the two demonstration assemblies do not have a significant impact on that previous calculation. As such, the licensee has achieved the underlying purpose of 10 CFR 50.46 and 10 CFR Part 50, Appendix K. The underlying purpose of 10 CFR 50.44 is to ensure that means are provided for the control of hydrogen gas that may be generated following a postulated loss-of-coolant accident. The licensee has provided means for controlling hydrogen gas and has previously considered the potential for hydrogen gas generation stemming from a metal-water reaction. The small number of fuel rods in the two demonstration assemblies containing advanced zirconium-based

claddings in conjunction with the chemical similarity of the advanced claddings to zircaloy and ZIRLO ensures that previous calculations of hydrogen production resulting from a metal-water reactor would not be significantly changed. As such, the licensee has achieved the underlying purpose of 10 CFR 50.44.

The two demonstration assemblies that will be placed in the TMI-1 reactor during Cycles 11, 12, and 13 meet the same design bases as the fuel in the reactor during previous cycles. No safety limits or setpoints have been altered as result of the use of the two demonstration assemblies. The demonstration assemblies will be placed in core locations that will not experience limiting power peaking during Cycles 11, 12, or 13. The advanced claddings have been tested for corrosion resistance, tensile and burst strength, and creep characteristics. The results indicate that the advanced claddings are safe for reactor service.

IV.

For the foregoing reasons, the NRC staff has concluded that the use of the two demonstration assemblies in the TMI-1 reactor during Cycles 11, 12, and 13 will not present an undue risk to public health and safety and is consistent with the common defense and security. The NRC staff has determined that there are special circumstances present as specified in 10 CFR 50.12(a)(2)(ii) such that application of 10 CFR 50.46, 10 CFR Part 50, Appendix K, and 10 CFR 50.44 to explicitly consider the advanced clad fuel rods present within the two demonstration assemblies is not necessary in order to achieve the underlying purpose of these regulations.

Accordingly, the Commission has determined that pursuant to 10 CFR 50.12, an exemption is authorized by law and will not endanger life or property or common defense and security and is otherwise in the public interest, and hereby grants GPU Nuclear Corporation an exemption from the requirements of 10 CFR 50.44, 10 CFR 50.46, and Appendix K to 10 CFR Part 50 in that explicit consideration of the advanced zirconium-based clad fuel present within the two demonstration assemblies is not required in order to be in compliance with these regulations. This exemption applies only to the two demonstration assemblies for the time period (Cycles 11, 12, and 13) for which these assemblies will be in the TMI-1 reactor core.

Pursuant to 10 CFR 51.32, the Commission has determined that the granting of this exemption will have no significant impact on the quality of the human environment (60 FR 34559).

This exemption is effective upon issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Original signed by:

Steven A. Varga, Director
 Division of Reactor Projects - I/II
 Office of Nuclear Reactor Regulation

Dated at Rockville, Maryland
 this day of October 1995.

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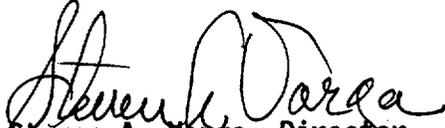
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Accordingly, the Commission has determined that pursuant to 10 CFR 50.12, an exemption is authorized by law and will not endanger life or property or common defense and security and is otherwise in the public interest, and hereby grants GPU Nuclear Corporation an exemption from the requirements of 10 CFR 50.44, 10 CFR 50.46, and Appendix K to 10 CFR Part 50 in that explicit consideration of the advanced zirconium-based clad fuel present within the two demonstration assemblies is not required in order to be in compliance with these regulations. This exemption applies only to the two demonstration assemblies for the time period (Cycles 11, 12, and 13) for which these assemblies will be in the TMI-1 reactor core.

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This exemption is effective upon issuance.

FOR THE NUCLEAR REGULATORY COMMISSION


Steven A. Varga, Director
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Dated at Rockville, Maryland
this 12th day of October 1995.