

METROPOLITAN EDISON COMPANY
JERSEY CENTRAL POWER & LIGHT COMPANY
AND
PENNSYLVANIA ELECTRIC COMPANY
THREE MILE ISLAND NUCLEAR STATION, UNIT 1

Operating License No. DPR-50
Docket No. 50-289
Technical Specification Change Request No. 135

This Technical Specification Change Request is submitted in support of Licensee's request to change Appendix A to Operating License No. DPR-50 for Three Mile Island Nuclear Station, Unit 1. As a part of this request, proposed replacement pages for Appendix A are also included.

GPU NUCLEAR CORPORATION

By *H. S. Hubbell*
Director, TMI-1

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PDR ADOCK 05000289
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Sworn and subscribed
to before me this 10th
day of June, 1984.

Darla Jean Berry
Notary Public

DARLA JEAN BERRY, NOTARY PUBLIC
WIDOLETOWN BORO, DAUPHIN COUNTY
MY COMMISSION EXPIRES JUNE 17, 1985
Member, Pennsylvania Association of Notaries

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

IN THE MATTER OF

DOCKET NO. 50-289
LICENSE NO. DPR-50

GPU NUCLEAR CORPORATION

This is to certify that a copy of Technical Specification Change Request No. 135 to Appendix A of the Operating License for Three Mile Island Nuclear Station Unit 1, has, on the date given below, been filed with the U. S. Nuclear Regulatory Commission and been served on the chief executives of Londonderry Township, Dauphin County, Pennsylvania; Dauphin County, Pennsylvania; and the Pennsylvania Department of Environmental Resources, Bureau of Radiation Protection, by deposit in the United States mail, addressed as follows:

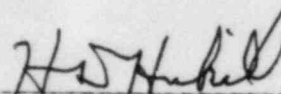
Mr. Jay H. Kopp, Chairman
Board of Supervisors of
Londonderry Township
R. D. #1, Geyers Church Road
Middletown, PA 17057

Mr. John E. Minnich, Chairman
Board of County Commissioners
of Dauphin County
Dauphin County Courthouse
Harrisburg, PA 17120

Mr. Thomas Gerusky, Director
Penna. Dept. of Environmental Resources
Bureau of Radiation Protection
P.O. Box 2063
Harrisburg, PA 17120

GPU NUCLEAR CORPORATION

BY


Director, TMI-1

DATED: June 1, 1984

TECHNICAL SPECIFICATION CHANGE REQUEST NO. 135

The Licensee requests the attached pages replace 3-101, 3-105, 3-105a, 3-116, and 4-91 of the existing Technical Specifications.

REASON FOR CHANGE REQUEST

This Tech Spec Change Request specifies appropriate limits of hydrogen and oxygen in the Waste Gas Holdup System (WGHS) for expected plant conditions and evolutions. During times of maintenance and inspection, high oxygen levels are expected due to opening the system to atmosphere, with insufficient hydrogen present for flame propagation. (See License Event Reports 82-08, 83-05, 83-08). During other evolutions, such as normal cooldown degassing, temporary high hydrogen levels are expected with insufficient oxygen present for flame propagation.

SAFETY EVALUATION JUSTIFYING CHANGE

NRC IE Information Notice 81-27 states: "Flammable concentration of gas mixtures can be prevented by limiting either the hydrogen or the oxygen concentration to less than 3 percent". Experimental data* on the flammability of hydrogen in oxygen provides, under ideal conditions, a lower limit of 5% oxygen by volume. Therefore, if the concentration of oxygen in a nitrogen/hydrogen/oxygen gas mixture is kept below a concentration of 5% by volume whenever the hydrogen concentration is greater than or equal to 5% by volume, any gas mixture within these bounds will be below the flammability limit. With concentrations procedurally limited to less than or equal to 2% oxygen by volume more than sufficient margin exists to preclude flame propagation regardless of hydrogen concentration. This proposed specification provides that the oxygen concentrations in the waste gas system will be limited to less than or equal to 2% by volume whenever the hydrogen concentration is greater than 4% by volume.

If the oxygen concentration in the waste gas system ever exceeds 2% by volume when the hydrogen concentration is greater than or equal to 4% by volume, the oxygen concentration will be reduced without delay to below 2% by volume. In addition, if the oxygen concentration in the waste gas system ever exceeds 4% by volume when the hydrogen concentration is greater than or equal to 4% by volume, the addition of waste gas to the waste gas system will be immediately suspended and the oxygen concentration will be reduced without delay to below 2% by volume. These 2% oxygen and 4% hydrogen limits provide a conservative margin of safety in view of the 5% oxygen and 5% hydrogen ideal flammability limits.

As specified in Standard Review Plan (SRP) 11.3, Rev. 2 -July, 1981, (Page 11.3-5) of NUREG-0800, for systems designed to operate below set limits for both hydrogen and oxygen may be analyzed for either hydrogen or oxygen. This Tech Spec change by specifying monitoring of both, oxygen and hydrogen is providing a second conservative margin of safety. In addition, flammability limits are specified for ideal conditions of hydrogen and oxygen only. The potential for adverse concentrations of hydrogen and oxygen in the WG System is very low because a nitrogen overpressure is maintained on the system.

*Bulletin 503, Bureau of Mines; Limits of Flammability of Gases and Vapors.

Based on the factor of 20 times the operating absolute pressure criteria given in NUREG 0800 SRP 11.3, Part II.B.6.a, the major components in the WGHS are capable of withstanding the 330 psig explosion pressure pulse (16.5 psia x 20 = 330 psig). Since the specification requires dual gas analysers (1 hydrogen, 1 oxygen) provide continuous independent measurements verifying hydrogen or oxygen is not present in potentially explosive concentrations, SRP 11.3 Part II.B.6 guidelines are exceeded. The explosion resistance capability of the major components of the WGHS thus supports the Standard Technical Specifications guideline for one(1) channel operation. The proposed specification provides that a single monitor be required operable for each variable, thus providing independent monitoring. The system loop seals and compressors operation insure adequate provisions to minimize leakage after a postulated explosion.

Prevention of a combustible mixture is necessary to prevent an event that would release significant quantity and concentration of radioactive material. Waste Gas Tank Rupture has been previously analyzed in TMI-1 FSAR Update Section 14.2.2.6.

With the limits as stated in the specification, adequate protection is afforded against hydrogen-oxygen combustion and assurance is provided that the release of radioactive materials will be suitably controlled in conformance with General Design Criteria 60 of Appendix A to 10 CFR Part 50.

SIGNIFICANT HAZARDS CONSIDERATION EVALUATION

The proposed specification is provided to ensure that the concentrations of potentially combustible gas mixture contained in the waste gas holdup system is maintained below flammability limits. This can be achieved by limiting concentrations of either hydrogen or oxygen below their lower limits of flammability. The conditions of specification 3.22.2.5 limits hydrogen and oxygen with sufficient margin to preclude flame propagation. Specification 3.22.2.5 provides a margin of 3% oxygen concentration outside the flammability limits. Therefore, operation of TMI-1 in accordance with this Tech. Spec. Change Request does not:

- a) increase the probability of occurrence or the consequences of accidents previously analyzed as the Waste Gas Tank Rupture (FSAR Update Section 14.2.2.6).
- b) create the possibility for an accident or malfunction of a new or different kind of accident from any accident previously evaluated.
- c) involve a significant reduction in the margin of safety since adopted limits of H₂ and O₂ concentrations are conservative. Therefore, significant safety hazards are not associated with this change.

AMENDMENT CLASSIFICATION (10 CFR 170)

This change request involves the review of a single safety issue and is considered a Class III Amendment. A check for \$4,000.00 is enclosed with this submittal.

IMPLEMENTATION

It is requested that this Amendment become effective upon issuance.