METROPOLITAN EDISON COMPANY

JERSEY CENTRAL POWER AND LIGHT COMPANY

PENNSYLVANIA ELECTRIC COMPANY d/b/a

GPU ENERGY

GPU NUCLEAR, Inc.

Three Mile Island Nuclear Station, Unit 1
Operating License No. DPR-50
Docket No. 50-289
Technical Specification Change Request No. 265

COMMONWEALTH OF PENNSYLVANIA)
) SS:
COUNTY OF DAUPHIN)

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 part of this request, proposed replacement pages for Appendix A are also included. All statements contained in this submittal have been reviewed, and all such statements made and matters set forth therein are true and correct to the best of my knowledge.

BY: James W Langenbach
Vice President and Director, TMI

Sworn and subscribed before me this
4th day of June 1999.

Suzanne C. Miklosik
Notary Public

Notarial Seal
Suzanne C. Miklosik, Notary Public
Londonderry Twp., Dauphin County
My Commission Expires Nov. 22, 1999
Member, Pennsylvania Association of Notaries

Enclosure 1

TMI-1 TSCR 265 Safety Evaluation and No Significant Hazards Consideration Analysis

I. TECHNICAL SPECIFICATION CHANGE REQUEST (TSCR) NO. 265

GPU Nuclear requests that the following changes be made to the existing TMI-1 Technical Specifications (TS):

A. Replacement pages:

3-26a, 3-26c

II. REASON FOR CHANGE AND MARK-UP OF CHANGES

The current requirements of Specification 3.4.2 contain a section for maintaining decay heat removal capability that the NRC has characterized as being non-conservative (reference IR 50-289/97-09); i.e. TMI-1 TS 3.4.2.3.c allows one DHR String to be taken out of service for maintenance for up to 7 days, independent of the water level in the Fuel Transfer Canal (FTC). Also, specification 3.4.2 contains a section that has never been used and is not applicable until approximately 60-70 days after a reactor shutdown; i.e. TMI-1 TS 3.4.2.3.b allows one DHR String to be taken out of service if the "Reactor Coolant temperature is less than 140°F with BWST level greater than 44 feet and an associated flow path through the RCS (is) OPERABLE such that core outlet temperature can be maintained subcooled for at least 7 days." This TSCR would delete these specifications, and would modify the Bases to remove reference to the deleted specifications and to define the redundancy requirements of the DHR Strings. This change would ensure that no less than two active means of core cooling would be available in the drained down condition. Also, a clarification is requested for TS 3.4.2.3.a to more accurately specify water level. Finally, clarifying changes are requested to the Bases which more accurately reference ANSI 5.1-1979 and to state that the OTSG be capable of supporting natural circulation.

Page 3-26a Mark-up:

3.4.2.3 The number of means for decay heat removal required to be operable per 3.4.2.1 may be reduced to one provided that ~~one of the following conditions is satisfied~~:

~~a. t~~The Reactor is in a Refueling Shutdown condition with the Fuel Transfer Canal water level greater than **or equal to** 23 feet above the reactor vessel flange.

~~b. Reactor coolant temperature is less than 140°F with BWST level greater than 44 feet and an associated flow path through the RCS OPERABLE such that core outlet temperature can be maintained subcooled for at least 7 days.~~

~~c. Equipment Maintenance on one of the means for decay heat removal specified by 3.4.2.1 is required and the equipment outage does not exceed 7 days.~~

Page 3-26c Mark-up:

When the RCS is below 250°F, a single DHR string, or single OTSG and its associated emergency feedwater flowpath **capable of supporting natural circulation** is sufficient to provide removal of decay heat at all times following the cooldown to 250°F. **The Decay Heat Removal String redundancy required by TS 3.4.2.1 is achieved with independent active components capable of maintaining the RCS subcooled. A single DHR flow path with redundant active components is sufficient to meet the requirements of TS 3.4.2.1.a and 3.4.2.1.b.** The requirement to maintain two OPERABLE means of decay heat removal ensures that a single **active** failure does not result in a complete loss of decay heat removal capability. The requirement to keep a system in operation as necessary to maintain the system subcooled at the core outlet provides the guidance to ensure that steam conditions which could inhibit core cooling do not occur.

~~Limited reduction in redundancy is allowed for preventive or corrective maintenance on the primary means for decay heat removal to ensure that maintenance necessary to assure the continued reliability of the systems may be accomplished.~~

~~As decay heat loads are reduced through decay time or fuel off loading, alternate flow paths will provide adequate cooling for a time sufficient to take compensatory action if the normal means of heat removal is lost.~~

With the reactor vessel head removed and 23 feet of water above the reactor vessel flange, a large heat sink is available for core cooling. ~~The BWST with level at 44 feet provides an equivalent reservoir available as a heat sink. Operability of the BWST is to be determined using calculations based on actual plant data or through plant testing at the time the system is to be declared operable. At such times that either of these means is determined to be operable, removal of the redundant or diverse cooling system is permitted.~~ **In this condition, only one DHR loop is required to be Operable because the volume of water above the reactor vessel flange provides a large heat sink which would allow sufficient time to recover active decay heat removal means.**

Following extensive outages or major core off loading, the decay heat generation being removed from the Reactor Vessel is so low that ambient losses are sufficient to maintain core cooling and no other means of heat removal is required. The system is passive and requires no redundant or diverse backup system. Decay heat generation ~~is~~ **was** calculated in accordance with ANSI 5.1-1979 ~~to determine when this situation exists~~.

III. SAFETY EVALUATION JUSTIFYING CHANGE

TMI-1 TS 3.4.2.3.c currently allows one DHR String to be taken out of service for maintenance for up to 7 days. During the course of refueling, conditions exist when the FTC is

drained down and the RCS loops are not filled. In this condition the reactor vessel water level is within the horizontal portion of the hot leg. During this condition, loss of the operating DHR pump could lead to boiling in the reactor vessel.

An analysis was performed to assess the RCS Boiling and Core Damage Risk associated with one DHR String out of service in the drained down condition. Based on this analysis, it was determined that the majority of risk increase would be due to the increase in calculated RCS Boiling frequency. The Core Damage risk increase would be small since other means of providing inventory to the RCS would be available following the draining of the fuel transfer canal. These alternate injection paths which provide inventory control (i.e. gravity feed from the BWST or forced injection from the makeup pumps) would be sufficient to prevent core damage given a total loss of decay heat removal, and RCS boiling.

The dominant contributor to RCS Boiling frequency was determined to be the loss of the running DHR pump, due to loss of power, loss of cooling water, or mechanical failure.

This proposed change would delete the specification to allow equipment maintenance on one DHR String for up to 7 days. The Bases section would be revised to state that the DHR redundancy required by TS 3.4.2.1 is achieved with independent active components capable of maintaining the RCS subcooled. A single DHR flow path with redundant active components is sufficient to meet the requirements of TS 3.4.2.1. It is noted that for the redundant active components to be operable, the associated Decay Heat Closed Cooling Water System and Decay Heat River Water System must also be operable. Thus TS 3.4.2.1 would require that both DHR Strings be operable when the reactor is in a refueling shutdown condition with the Fuel Transfer Canal water level less than 23 feet above the reactor vessel flange. This revised requirement maintains redundancy in core cooling capability, while still allowing for the isolation of part of one string for maintenance or testing. For example, by opening the DHR cooler outlet cross-connect valves, both DHR Strings would be operable while still allowing for certain maintenance or testing of the DHR injection check valve on the isolated discharge leg.

In addition, the existing Technical Specification 3.4.2.3.b allows a backup cooling method utilizing the Borated Water Storage Tank (BWST). This TSCR would delete this exception. This backup cooling method is not effective until the reactor has been shutdown for at least 60-70 days. It has never been used and is not anticipated to be used as a TS required backup cooling method in the future. This change is considered administrative in nature.

Specification 3.4.2.3.a currently allows one means for decay heat removal if the reactor is in a Refueling Shutdown condition with the Fuel Transfer Canal water level greater than 23 feet above the reactor vessel flange. The bases states that with 23 feet of water above the reactor vessel flange, removal of the redundant cooling system is permitted. This change clarifies that

at a water level greater than or equal to 23 feet only one means of decay heat removal is required to be operable. This change is considered administrative in nature.

The bases on page 3-26c would be revised to state that the DHR redundancy required by TS 3.4.2.1 is achieved with independent active components capable of maintaining the RCS subcooled. A single DHR flow path with redundant active components is sufficient to meet the requirements of 3.4.2.1. This definition allows maintenance or testing on valves in the isolated discharge leg, while still maintaining redundant active DHR strings.

The bases change would also delete the second and third paragraphs and revise the fourth paragraph. The second paragraph currently addresses an allowed limited reduction in redundancy for preventive or corrective maintenance on DHR. The third paragraph is associated with the BWST backup cooling method. The revision in the fourth paragraph involves deleting the discussion associated with the BWST backup cooling method. Since these specifications are being eliminated, references to them should be removed from the bases section.

The revision in the fifth paragraph reflects the historical use of ANSI 5.1-1979 in the development of specification 3.4.2.4. This change is requested to avoid changing the reference to ANSI 5.1-1979 if this is no longer the appropriate standard when a decay heat generation calculation is performed in the future.

The change in the first sentence of the first paragraph is made to clarify what is currently implied. That is, the OTSG and its associated emergency feedwater flowpath is capable of supporting natural circulation. This change is for clarification only and is considered administrative in nature.

IV. NO SIGNIFICANT HAZARDS CONSIDERATION

GPU Nuclear has determined that this Technical Specification Change Request poses no significant hazards as defined by NRC in 10 CFR 50.92. Operation of the facility in accordance with the proposed amendment would not:

1. Involve a significant increase in the probability of occurrence or the consequences of an accident previously evaluated because the proposed changes would remove exceptions for decay heat removal system operability requirements during the time the plant is in a Refueling Shutdown with the RCS loops not filled. The proposed changes effectively add requirements to maintain redundancy in decay heat removal systems.

2. Create the possibility of a new or different kind of accident from any accident previously evaluated because the proposed changes would not introduce any new failure modes or modify existing systems.

3. Involve a significant reduction in a margin of safety because the proposed amendment would not involve changes to the safety limits, limiting safety system settings, or operating limits.

V. IMPLEMENTATION

It is requested that the amendment authorizing this change become effective upon issuance.