

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. 203

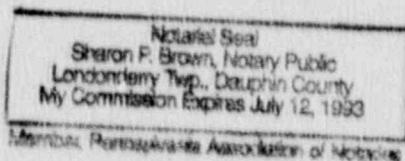
This Technical Specification Change Request is submitted in support of Licensee's request to change Appendix A to Operating License No. DPR-50 for Three Mile Island Nuclear Station, Unit 1. As a part of this request, proposed replacement pages for Appendix A are also included.

GPU NUCLEAR CORPORATION

BY: J. H. Broughton for H. D. MILL
Vice President & Director, TMI-1

Sworn and subscribed
to before me this 20th
day of November, 1990.

Sharon P. Brown
Notary Public



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I. TECHNICAL SPECIFICATION CHANGE REQUEST (TSCR) NO. 203

GPUN requests that the following changed replacement pages be inserted into the existing Technical Specifications:

Revised pages: 3-37 and 3-37a

These pages are attached to this change request.

II. REASON FOR CHANGE

Technical Specification Section 3.5.3.1 is revised to raise the degraded voltage setpoint from 3595 volts to 3760 volts. Footnote (4) to this Technical Specification is also revised to specify the minimum and maximum allowed setpoint settings for this setpoint. A statement is added to the Technical Specification Bases section to clarify the bases for these settings.

This Technical Specification change provides improved protection for the 480 volt safety related electrical loads for the maximum expected loading of the safety related buses. This change results from reanalysis of the voltages on the plant distribution system to incorporate revised assumptions and to account for the addition of plant electrical loads including those planned for the 9R refueling outage modifications. The minimum expected 230KV substation voltage remains about the same as that calculated when the existing setpoint was approved. The revised setpoint will increase the probability of separation from offsite power for worst case loading conditions. The calculated voltage for which separation could occur is slightly higher than previously calculated; however, the increased protection for safety related loads is considered an overall improvement in safety.

Technical Specification Section 3.5.3.1 is also revised to clarify that the Degraded grid timer is correctly labeled as the Degraded voltage timer, and the footnote (5) designation is removed from the Degraded Voltage location as it is correctly shown adjacent to the timer setpoint value. This is an editorial change.

III. SAFETY EVALUATION JUSTIFYING THE CHANGE

TMI-1 is supplied with offsite power from a 230KV and 500KV system. The TMI-1 substation incorporates a breaker-and-a-half arrangement for high reliability and is connected to the transmission network by four (4) circuits which provide two (2) separate sources as required by GDC-17. Two full-size auxiliary transformers are connected to different 230KV buses and provide a source of power for startup, operations, shutdown, and after shutdown loads. Two (2) levels of undervoltage relay protection exist on the 4KV safety buses. The first level of undervoltage relays, arranged in a 2 out of 3 logic on each bus, will disconnect the Class 1E bus from the system at 2400V (58% of 4160V) after 1.5 seconds. Load shedding will be initiated, the diesel generator will be started, and an alarm will sound in the Main Control Room. The second level of undervoltage protection (3760V) allows the Plant Electric System to automatically protect its safety related equipment from the thermal effects of degraded grid voltage and to prevent spurious tripping of

equipment. This protection consists of 2 out of 3 undervoltage relay logic on each Class 1E 4160V bus which will disconnect the bus from the system after a 10 second time delay, shed load, and start the diesel generators.

The proposed Technical Specification change provides assurance that safety related electrical loads will remain operable for all postulated accident conditions. The analytical methodology used for establishing the revised setpoint is consistent with the existing setpoint methodology as implemented in TMI-1 Technical Specification Amendment 70, dated July 29, 1981. The revised undervoltage protection setpoint provides the necessary protection of 480 volt safety related electrical loads for the worst case electrical lineup and loading assuming a degraded grid condition, one (1) auxiliary transformer in operation, and a design basis LOCA. In addition to the existing first and second level of undervoltage protection, existing relays on the 480 volt safety buses are used to sound an annunciator in the control room at approximately 92% of the nominal ratings of the motors (460V) connected to these buses. This alarm alerts the operators to a low voltage condition to allow them time to shed unnecessary loads to restore voltage and preclude trips if possible for this low probability event.

The degraded voltage setpoint was selected by determining the maximum expected accident loading on the safety related buses. After establishing the minimum allowable voltage for safety related loads on the 480 volt buses, the voltage drop was calculated to determine the voltage on the associated 4160 volt bus. The undervoltage relays are on the 4160 volt bus so the voltage at the 480 volt level at the time of separation is dependent on the loading.

The revised undervoltage protection setpoint will result in an increased probability of separation from the 230KV system during a postulated accident coincident with single auxiliary transformer operation and a degraded grid event while the offsite system is still capable of providing power to the plant. However, neither the accident nor the degraded grid result in any event-related electrical system transfers that would cause loss of an auxiliary transformer or the automatic transfer of loads. Existing Technical Specification Section 3.7.2 restricts single auxiliary transformer operation to a period of 30 days only, during which both emergency diesel generators (EDG) must be operable with one EDG running continuously. Accordingly, it is concluded that simultaneous occurrence of these unrelated events is a very low probability, and the intent of requiring an adequate level of undervoltage protection is maintained by the revised degraded voltage setpoint.

IV. NO SIGNIFICANT HAZARDS CONSIDERATIONS

GPUN has determined that this Technical Specification Change Request involves no significant hazards consideration as defined by NRC in 10CFR50.92.

1. Operation of the facility in accordance with the proposed amendment would not involve a significant increase in the probability of occurrence or the consequences of an accident previously evaluated. Loss of Electric Load is the only previously evaluated design basis accident that is affected by the proposed amendment. The Loss of Electric Load may be caused by separation of the unit from the transmission system. The revised undervoltage protection setpoint will result in a slight increase in the probability of a loss of offsite electric power during a postulated design basis accident coincident with single auxiliary transformer operation and a degraded grid condition. This slight increase is not considered significant since the postulated scenario involves the simultaneous occurrence of three (3) unrelated events. Existing Technical Specifications restrict single auxiliary transformer operation for only a period of 30 days. The revised undervoltage protection setpoint does not result in any significant increase in the probability of a loss of offsite electric power during normal plant operation with two (2) auxiliary transformers in operation. Loss of Feedwater (LOFW) and Loss of Coolant Flow (LOCF) accident analyses are also related to a Loss of Offsite Power (LOOP), but are not affected by this change. The LOFW and LOOP have been analyzed to verify the adequacy of Emergency Feedwater (EFW) flow. The most demanding event in terms of heat removal via EFW is the LOFW without LOOP since the event requires the removal of RCP heat as well as decay heat. The LOCF due to a loss of all offsite power has been analyzed to verify acceptable minimum DNBR. A complete loss of forced flow would occur only on a LOOP and failure of the runback feature. Natural circulation flow provides adequate flow after the pumps have stopped. Therefore, the proposed amendment does not significantly increase the probability of occurrence or the consequences of an accident previously evaluated.
2. Operation of the facility in accordance with the proposed amendment would not create the possibility of a new or different kind of accident from any accident previously evaluated. The revised setpoint provides adequate protection of safety related electrical equipment, supplied by the power distribution system, from loss of capability in the event of a sustained degraded voltage condition on the offsite electrical grid system. Therefore, this change has no effect on the possibility of creating a new or different kind of accident from any accident previously evaluated.
3. Operation of the facility in accordance with the proposed amendment would not involve a significant reduction in a margin of safety. The revised undervoltage protection setpoint provides continued protection for the safety related electrical loads for the maximum expected loading of the safety related buses. Therefore, it is concluded that operation of the facility in accordance with the proposed amendment does not involve a significant reduction in a margin of safety.

The Commission has provided guidelines pertaining to the application of the three (3) standards by listing specific examples in 45FR14870. The proposed amendment is considered to be in the same category as example (ii) of amendments that are considered not likely to involve significant

hazards consideration in that the proposed change constitutes a more restrictive undervoltage protection setpoint to provide continued protection of safety related electrical equipment from loss of capability in the event of a sustained degraded voltage condition on the offsite electrical grid system. Thus, operation of the facility in accordance with the proposed amendment involves no significant hazards consideration.

V. IMPLEMENTATION

It is recommended that the amendment authorizing this change become effective upon receipt with implementation required prior to startup from the 9R refueling outage.