

AmerGen

A PECO Energy/British Energy Company

AmerGen Energy Company, LLC
Three Mile Island Unit 1

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Phone: 717-944-7621

May 22, 2000
5928-00-20186

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

Dear Sir or Madam:

**SUBJECT: THREE MILE ISLAND NUCLEAR GENERATING STATION, UNIT 1 (TMI-1)
OPERATING LICENSE NO. DPR-50 / DOCKET NO. 50-289
TECHNICAL SPECIFICATION CHANGE REQUEST NO. 283, SUPPLEMENT 1
DEGRADED GRID ACTIONS FOLLOWING RECEIPT OF A POST-
CONTINGENCY VOLTAGE ALARM FROM THE GRID OPERATOR
(TAC No. MA6312)**

Pursuant to 10 CFR 50.4(b)(1), enclosed is TMI-1 Technical Specification Change Request (TSCR) No. 283, Supplement 1. The purpose of this TSCR supplement is to request approval for a revision of the Unit Electric Power System action statements of Technical Specification (T.S.) 3.7.2. associated with degraded grid conditions. T.S. 3.7 Bases statements are also revised to reflect the justification for the action statement as described in Enclosure 1.

Approval of the proposed T.S. 3.7.2 action statements and supporting T.S. 3.7 Bases statements is being requested to reflect established protocols with the grid system operators and, in part, as a response to NRC Staff concerns regarding the "Post Contingency" voltage alarm setpoints used in the plant abnormal operating procedures, as discussed in teleconferences of May 10 and May 12, 2000.

Using the standards in 10 CFR 50.92, AmerGen has concluded that these proposed changes do not constitute a significant hazards consideration, as described in the enclosed analysis performed pursuant to 10 CFR 50.91(a)(1). Also enclosed is a Certificate of Service for the request, certifying service to the chief executives of the township and county in which the facility is located, as well as the designated official of the Commonwealth of Pennsylvania, Bureau of Radiation Protection.

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NRR-060

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If you have any questions concerning this Supplement 1 to TSCR No. 283 please contact Mr. Gregory M. Gurican of Regulatory Engineering at TMI Unit 1 (717) 948-8753.

Very truly yours,



John B. Cotton
Vice President, TMI Unit 1

JBC/gmg

Enclosures

cc: Administrator, NRC Region I – Hubert J. Miller
TMI-1 Senior Project Manager – Timothy G. Colburn
TMI-1 Senior Resident Inspector – Wayne L. Schmidt
File No.: 99096

5928-00-20186

ENCLOSURE 1

Operating License No. DPR-50
Docket No. 50-289

Technical Specification Change Request No. 283
SUPPLEMENT 1

I. TECHNICAL SPECIFICATION CHANGE REQUEST (TSCR) NO. 283 SUPPLEMENT 1

AmerGen Energy LLC requests that the following changes be made to Technical Specification (T.S.) No. 3.7 of the TMI-I Appendix A Technical Specifications and its associated Bases statements:

Replace the following additional T.S. pages 3-42, 3-43, and 3-43a with the revised pages enclosed.

II. REASON FOR CHANGES

The purpose of TSCR No 283 is to obtain a license amendment which authorizes: 1) a revision of the 4 kV Engineered Safeguards Bus Undervoltage Relay Degraded Voltage calibration from its present refueling interval to be performed at an annual interval on Table 4.1-1, Item 43a; and, 2) a change in the T.S. 3.5 Bases to state that the degraded voltage relay setpoint tolerance is revised from an "as left" reading to an "as found" reading, as requested in the GPU Nuclear letter No. 1920-99-20295, dated August 20, 1999.

Additionally, the original TSCR No. 283 also revises the Updated FSAR Chapter 8 Sections 8.1 and 8.2.2.2 to make the voltage protection description consistent with the possibility that manual actions may be required to restore adequate voltage in the long term following a loss-of-coolant-accident (LOCA), in order to assure adequate voltage to nuclear safety related (NSR) loads. Revised UFSAR pages 8.2-3 and 8.2-5 were provided in Enclosure 2 to the above referenced letter dated August 20, 1999.

On January 28, 2000 AmerGen received the NRR Staff's request for additional information (RAI) by letter dated January 24, 2000. AmerGen responded to the RAI questions by letter dated February 18, 2000 (AmerGen Letter No. 5928-00-20034). Subsequent clarifications of the responses to two questions and one question on the degraded grid calculation, as a result of followup conference call with the Staff on March 15, 2000, were provided by AmerGen letter No. 5928-00-20120, dated April 19, 2000. These latter clarifications were also discussed in teleconferences with the NRR technical reviewer and Project Manager on May 10, and May 12, 2000. As a results of these conference calls, AmerGen agreed to submit this Supplement 1 to TSCR No 283, which serves to capture in the Technical Specifications the actions required by previously committed changes to TMI Unit 1 Abnormal Operating procedure that address the protocols following receipt of a "Post Contingency Alarm for Loss of TMI-1" from the Transmission System Operator (TSO). The new LCO action statement and proposed Bases statements provide for an appropriate time allowance consistent with the TMI-1 PRA and sufficient time for the TSO to take necessary actions to improve grid stability and reliability of system voltages.

With this Supplement 1 to TSCR No. 283, minor editorial changes are being made as noted to change or correct terminology and to clarify Bases wording related to other parts of the T.S. 3.7.

III DESCRIPTION OF CHANGES:

Page 3-42, T.S. 3.7.1.c and .d "kv" is changed to "kV," and T.S. 3.7.1.d "sources" is changed to "source."

Page 3-42, T.S. 3.7.2.a is revised to include a subheading title: "Offsite Sources," and the old 3.7.2.a is revised and renumbered as 3.7.2.a.(i.); additionally, a new 3.7.2.a(ii.) is added to address voltage on the 230 kV grid.

Page 3-43, T.S. 3.7.2.c moved from page 3-42 to page 3-43 and is reformatted, with punctuation changes.

Page 3-43, T.S. 3.7.2.e "kv" is changed to "kV".

Page 3-43, new T.S. 3.7.2.h is added to provide a time limit for when the 230 kV grid voltage is found to be insufficient to support LOCA loading.

Page 3-43a, Bases changes: First Paragraph – spelling/typographical correction made with rewording of last sentence ("dicates" changed to "dictates"); Second Paragraph – clarification of the components to which surveillance is applicable, namely: emergency diesel generator and station battery; Third Paragraph – editorials: "diesel" changed to "emergency *diesel* generator (EDG) and EDGs as indicated; Paragraphs 4 and 5 are new and designed to support the new T.S. LCOs 3.7.2.a(ii) and 3.7.2.h.

Pages 3-42,43, and 43a, Revision bars added as appropriate; capitalization of defined terms where appropriate; and, Amendment No(s) strikethrough(s) as appropriate.

IV. NO SIGNIFICANT HAZARDS CONSIDERATION

AmerGen has determined that the change proposed to limiting conditions for operation, as addressed in this Supplement 1 to TSCR No. 283 involve no significant hazards consideration because:

1. The proposed changes to the T.S. 3.7.2 to incorporate an action statement for Post Contingency grid voltages are intended to provide greater confidence that NSR equipment power supplies are maintained. The proposed changes will enhance the ability of the undervoltage protection scheme to perform in accordance with its intended design, and will improve the ability to respond to low grid voltage conditions. Therefore, operation of the facility in accordance with the proposed amendment will not involve a significant increase in the probability [of occurrence] or the consequences of an accident previously evaluated in the SAR.

2. The proposed changes to the T.S. 3.7.2 LCO and T.S. 3.7 Bases are consistent with the intended design of the degraded voltage protection scheme and do not introduce the possibility of any new failure modes to the protection scheme or the electrical distribution system. The proposed changes reduce the probability of operation of the Unit without sufficient voltage to NSR loads from off-site sources. Therefore, operation of the facility in accordance with the proposed changes do not create a possibility of a new or different kind [type] of accident than any accident previously evaluated in the SAR.
3. The proposed changes to the T.S. 3.7.2 LCO and T.S. 3.7 Bases are intended to provide sufficient time for the transmission system operator to take appropriate action to restore grid voltage levels and operability of the offsite sources. The risk analysis results for use of the proposed LCO time period is such that there is only a small incremental increase in the core damage frequency (CDF). These changes enhance the current Technical Specifications by limiting the unavailability of the offsite sources to supply NSR equipment during a LOCA. Therefore, operation of the facility in accordance with the proposed changes would not involve a significant reduction in a margin of safety.

V EFFECTS ON THE ENVIRONMENT

No negative environmental impacts which might result from the proposed Technical Specification changes were identified.

VI. IMPLEMENTATION

It is requested that the amendment authorizing this change become effective immediately to be implemented within 30 days of issuance.

Enclosure 2

Proposed Revised Technical Specification Pages
AND
Mark-up Pages

3-42, 3-43, and 3-43a

3.7 UNIT ELECTRIC POWER SYSTEM

Applicability

Applies to the availability of electrical power for operation of the unit auxiliaries.

Objective

To define those conditions of electrical power availability necessary to ensure:

- a. Safe unit operation
- b. Continuous availability of engineered safeguards

Specification

3.7.1 The reactor shall not be made critical unless all of the following requirements are satisfied:

- a. All engineered safeguards buses, engineered safeguards switchgear, and engineered safeguards load shedding systems are operable.
- b. One 7200 volt bus is energized.
- c. Two 230 kV lines are in service.
- d. One 230 kV bus is in service.
- e. Engineered safeguards diesel generators are operable and at least 25,000 gallons of fuel oil are available in the storage tank.
- f. Station batteries are charged and in service. Two battery chargers per battery are in service.

3.7.2 The reactor shall not remain critical unless all of the following requirements are satisfied:

- a. Offsite Sources:
 - (i.) Two 230 kV lines are in service to provide auxiliary power to Unit 1, except as specified in Specification 3.7.2e below.
 - (ii.) The voltage on the 230 kV grid is sufficient to power the safety related ES loads, except as specified in Specification 3.7.2.h below.
- b. Both 230/4.16 kV unit auxiliary transformers shall be in operation except that within a period not to exceed eight hours in duration from and after the time one Unit 1 auxiliary transformer is made or found inoperable, two diesel generators shall be operable, and one of the operable diesel generator will be started and run continuously until both unit auxiliary transformers are in operation. This mode of operation may continue for a period not exceeding 30 days.

- c. Both diesel generators shall be operable except that from the date that one of the diesel generators is made or found to be inoperable for any reason, reactor operation is permissible for the succeeding seven days provided that the redundant diesel generator is:
 - 1. verified to be operable immediately;
 - 2. within 24 hours, either:
 - a. determine the redundant diesel generator is not inoperable due to a common mode failure; or,
 - b. test redundant diesel generator in accordance with surveillance requirement 4.6.1.a.

In the event two diesel generators are inoperable, the unit shall be placed in HOT SHUTDOWN in 12 hours. If one diesel is not operable within an additional 24 hour period the plant shall be placed in COLD SHUTDOWN within an additional 24 hours thereafter.

With one diesel generator inoperable, in addition to the above, verify that: All required systems, subsystems, trains, components and devices that depend on the remaining OPERABLE diesel generator as a source of emergency power are also OPERABLE or follow specifications 3.0.1.

- d. If one Unit Auxiliary Transformer is inoperable and a diesel generator becomes inoperable, the unit will be placed in HOT SHUTDOWN within 12 hours. If one of the above sources of power is not made operable within an additional 24 hours the unit shall be placed in COLD SHUTDOWN within an additional 24 hours thereafter.
- e. If Unit 1 is separated from the system while carrying its own auxiliaries, or if only one 230 kV line is in service, continued reactor operation is permissible provided one emergency diesel generator shall be started and run continuously until two transmission lines are restored.
- f. The engineered safeguards electrical bus, switchgear, load shedding, and automatic diesel start systems shall be operable except as provided in Specification 3.7.2c above and as required for testing.
- g. One station battery may be removed from service for not more than eight hours.
- h. If it is determined that a trip of the Unit 1 generator, in conjunction with LOCA loading, will result in a loss of offsite power to Engineered Safeguards buses, the plant shall begin a power reduction within 24 hours and be in HOT SHUTDOWN in an additional 6 hours, except as provided in Specification 3.7.2.e above.

Bases

The Unit Electric Power System is designed to provide a reliable source of power for balance of plant auxiliaries and a continuously available power supply for the engineered safeguards equipment. The availability of the various components of the Unit Electric Power System dictates the operating mode for the station.

Verification of emergency diesel generator and station battery operability normally consists of verifying that the surveillance is current, and that other available information does not indicate inoperability.

It is recognized that while testing the redundant emergency diesel generator (EDG) in accordance with surveillance requirement 4.6.1.a, the EDG will not respond to an automatic initiation signal. In this situation, the 12 hour time clock will not be entered per the provisions of section 3.7.2.f. due to the low probability of an event occurring while the EDG is being tested.

Trip of TMI-1 could result in a change in the 230 kV system (Grid) voltage at the TMI substation. The predicted voltage following a loss of the unit is referred to as the Post-Contingency voltage for trip of TMI-1. The transmission system operator monitors 230 kV system conditions for Post Contingency voltages. If the Post-Contingency voltage is less than the value required to support safety related ES loads, the transmission system operator will notify the TMI Unit 1 control room. The required voltage setpoint values for dual or single auxiliary transformer operation are specified by degraded grid calculations. The appropriate setpoint for the current plant condition(s) is provided to the Grid operator. The required voltage setpoint is based on the Large Break LOCA loading which results in the greatest ES loads.

Upon receipt of a valid Post-Contingency voltage Alarm for Loss of TMI-1, TMI will implement the Low System (Grid) Voltage Procedure. An allowed action time of 24 hours provides the transmission system operator time to take actions to reconfigure the 230 kV system for improved voltage support. The time allowed has been evaluated for the level of risk associated with the increased reliance on use of the onsite sources.

5928-00-20186

**Technical Specification 3.7
and Bases Statements
Mark-ups**

3.7 UNIT ELECTRIC POWER SYSTEM

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Objective

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Specification

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- a. All engineered safeguards buses, engineered safeguards switchgear, and engineered safeguards load shedding systems are operable.
- b. One 7200 volt bus is energized.
- c. Two 230 kv-V lines are in service.
- d. One 230 kv-V bus is in services.
- e. Engineered safeguards diesel generators are operable and at least 25,000 gallons of fuel oil are available in the storage tank.
- f. Station batteries are charged and in service. Two battery chargers per battery are in service.

3.7.2 The reactor shall not remain critical unless all of the following requirements are satisfied:

- a. Offsite Sources:
 - (i.) Two 230 kv-V lines are in service to provide auxiliary power to Unit 1, except as specified in Specification 3.7.2e below.
 - (ii.) The voltage on the 230 kV grid is sufficient to power the safety related ES loads, except as specified in Specification 3.7.2.h below.
- b. Both 230/4.16 kv-V unit auxiliary transformers shall be in operation except that within a period not to exceed eight hours in duration from and after the time one Unit 1 auxiliary transformer is made or found inoperable, two diesel generators shall be operable, and one of the operable diesel generator will be started and run continuously until both unit auxiliary transformers are in operation. This mode of operation may continue for a period not exceeding 30 days.

c. Both diesel generators shall be operable except that from the date that one of the diesel generators is made or found to be inoperable for any reason, reactor operation is permissible for the succeeding seven days provided that the redundant diesel generator is:

1. verified to be operable immediately;
2. within 24 hours, either:
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- d. If one Unit Auxiliary Transformer is inoperable and a diesel generator becomes inoperable, the unit will be placed in **HOT SHUTDOWN** within 12 hours. If one of the above sources of power is not made operable within an additional 24 hours the unit shall be placed in **COLD SHUTDOWN** within an additional 24 hours thereafter.
- e. If Unit 1 is separated from the system while carrying its own auxiliaries, or if only one 230 kV line is in service, continued reactor operation is permissible provided one emergency diesel generator shall be started and run continuously until two transmission lines are restored.
- f. The engineered safeguards electrical bus, switchgear, load shedding, and automatic diesel start systems shall be operable except as provided in Specification 3.7.2c above and as required for testing.
- g. One station battery may be removed from service for not more than eight hours.
- h. If it is determined that a trip of the Unit 1 generator, in conjunction with LOCA loading, will result in a loss of offsite power to Engineered Safeguards buses, the plant shall begin a power reduction within 24 hours and be in **HOT SHUTDOWN** in an additional 6 hours, except as provided in Specification 3.7.2.e above.

Bases

The Unit Electric Power System is designed to provide a reliable source of power for balance of plant auxiliaries and a continuously available power supply for the engineered safeguards equipment. The availability of the various components of the Unit Electric Power System ~~dictates the permissible mode of station operation.~~ **dictates the operating mode for the station.**

Verification of **emergency diesel generator and station battery operability** normally consists of verifying that the surveillance is current, and that other available information does not indicate inoperability.

It is recognized that while testing the redundant **emergency diesel generator (EDG)** in accordance with surveillance requirement 4.6.1.a, the diesel EDG will not respond to an automatic initiation signal. In this situation, the 12 hour time clock will not be entered per the provisions of section 3.7.2.f. due to the low probability of an event occurring while the diesel EDG is being tested.

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Upon receipt of a valid Post-Contingency voltage Alarm for Loss of TMI-1, TMI will implement the Low System (Grid) Voltage Procedure. An allowed action time of 24 hours provides the transmission system operator time to take actions to reconfigure the 230 kV system for improved voltage support. The time allowed has been evaluated for the level of risk associated with the increased reliance on use of the onsite sources.

Enclosure 3

**Certificate of Service for
Technical Specification Change Request No. 283
SUPPLEMENT 1**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

IN THE MATTER OF
AMERGEN ENERGY LLC

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

CERTIFICATE OF SERVICE

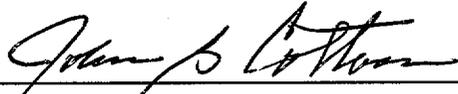
This is to certify that a copy of Technical Specification Change Request No. 283, SUPPLEMENT 1, affecting the Operating License Appendix A Technical Specifications for Three Mile Island Nuclear Station Unit 1, has, on the date given below, been filed with executives of Londonderry Township, Dauphin County, Pennsylvania; Dauphin County, Pennsylvania; and the Pennsylvania Department of Environmental Protection, Bureau of Radiation Protection, by deposit in the United States mail, addressed as follows:

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

Chairman
Board of County Commissioners of
Dauphin County
P.O. Box 1295
Harrisburg, PA 17120

Director, Bureau of Radiation Protection
PA Dept. of Environmental Protection
Rachael Carson State Office Building
P. O. Box 8469
Harrisburg, PA 17105-8469
Attn: Mr. Stan Maingi

AmerGen Energy Company, LLC

BY: 
Vice President, TMI Unit 1