

AmerGen

A PECO Energy/British Energy Company

AmerGen Energy Company, LLC
Three Mile Island Unit 1

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April 14, 2000

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

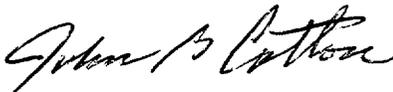
Dear Sir or Madam:

SUBJECT: THREE MILE ISLAND NUCLEAR STATION UNIT 1 (TMI UNIT 1)
OPERATING LICENSE NO. DPR-50
DOCKET NO. 50-289
FINAL SAFETY ANALYSIS REPORT, UPDATE 15
FIRE HAZARDS ANALYSIS REPORT, REVISION 18

Enclosed are one signed original and ten copies of the Final Safety Analysis Report, Update 15 (UFSAR), for TMI-1, submitted pursuant to 10 CFR 50.71(e). This UFSAR update package contains changes necessary to reflect facility changes, procedure changes and analyses through October 19, 1999, which marked the end of the 13R Refueling and Maintenance Outage. Consistent with the guidance contained in NEI 98-03, Rev. 1, Attachment 1 provides brief descriptions of information removed from the UFSAR and the basis for the removal.

In addition, as part of the annual SAR update process, enclosed herewith is one copy of Revision 18 to the Fire Hazards Analysis Report (FHAR). The FHAR, Revision 18, reflects the methodology used at TMI-1 to meet 10 CFR 50, Appendix R. Revision of the document reflects changes to plant design and fire hazards analysis incorporated since Revision 17, through March 1, 2000, as annotated by revision bars on the affected pages.

Sincerely,



John B. Cotton
Vice President TMI Unit 1

Enclosures/Attachment

JBC/awm

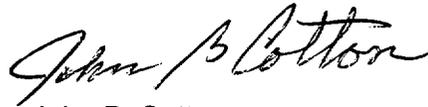
cc: Region I Administrator, w/FSAR
TMI-1 Senior Project Manager, wo/enclosure
TMI Senior Resident Inspector, w/FSAR and FHAR
File 00067

Ad 53
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AmerGen Energy Company, LLC
Three Mile Island Nuclear Station, Unit 1 (TMI Unit 1)
Operating License No. DPR-50
Docket No. 50-289

Final Safety Analysis Report, Update 15
Fire Hazards Analysis Report, Revision 18

This letter is submitted to update the Final Safety Analysis Report, Update 15 and the Fire Hazards Analysis Report, Revision 18. As part of this submittal, replacement pages to the Final Safety Analysis Report and the entire Fire Hazards Analysis Report are enclosed.



John B. Cotton
Vice President TMI Unit 1

Signed and sworn before me this

14th day of April, 2000.



Notary Public

Notarial Seal
Suzanne C. Miklosik, Notary Public
Londonderry Twp., Dauphin County
My Commission Expires Nov. 22, 2003

Member, Pennsylvania Association of Notaries

Attachment 1**BRIEF DESCRIPTIONS OF INFORMATION REMOVED FROM THE UFSAR****General Changes**

1. The changes resulting from the sale of TMI-1 from GPUN to AmerGen and designation of AmerGen as the owner/operator/licensee of TMI-1 has resulted in numerous deletions and additions with regard to designations throughout the UFSAR.

Chapter 1 Changes

2. Section 1.2.5.h - deleted the description of the hydrogen purge system. This system function deleted because the equipment is not ES equipment.
3. Table 1.3-1 was revised resulting in numerous deletions and additions. The EFW Design Bases information was updated and included changes regarding pump capacity, design and licensing basis events, and system service conditions.
4. Deleted part of last sentence of paragraph at top of page 1.4-6. This information removed is redundant to information better defined elsewhere in the UFSAR.
5. Section 1.4.53 - deleted "Figure 5.3-1 and" from last sentence in this section. Figure 5.3-1 was removed during Update 14.
6. Section 1.4.61 - removed "Figure 6.0-4," and replaced with "Drawing 302-831". Drawing 302-831 is the replacement for Figure 6.0-4 and Drawing 302-831 is updated as needed to reflect as built conditions.

Chapter 2 Changes

7. Section 2.5 - numerous deletions. Reflects the recent analyses submitted and reviewed by the NRC as documented in License Amendments 210 and 215.
8. Section 2.6 - organizational restructuring. Implements TSCR No. 282 - Plant Organization Title.

Chapter 4 Changes

9. Table 4.2-8 - numerous deletions. Update of the Loss of Feedwater with Anticipatory Reactor Trip Accident Analysis.
10. Sections 4.3.3.h, 4.3.3.j, 4.3.7.b - numerous deletions. To reflect updated Reactor Vessel P/T limits and period of applicability per TSCR No. 270 and as approved by NRC in License Amendment No. 208.
11. Section 4.3.10.3 - deleted 2nd paragraph. Paragraph deleted because Section 8.5 addresses this subject.
12. Replaced last three paragraphs of section 4.3. Changed to reflect current design basis for Letdown Line Break analysis.

Chapter 5 Changes

13. Section 5.1.1.2.c - deleted "Containment Purge Ventilation System". This system is not Seismic Class II. UFSAR Section 5.1.1.3.d currently refers to the system correctly as Seismic Class III.
14. Deleted a paragraph in Section 5.1.2.1.2. Revised the paragraph by adding new information to clarify use of SQUG methodology for seismic verification of equipment.
15. Section 5.1.2.2.b - deleted Integrated Control System (ICS) from Seismic II systems list. The system is downgraded to "Anti-Fall-down", Regulatory Required, and QA/QC required.
16. Page 5.1-4 - deleted "Water gates in the fuel storage pools". These gates, FH-V-0002 and FH-V-0003 perform no seismic functions other than passive integrity.
17. Section 5.2.2.3.3.d.2.a.4 - deleted. Section deleted is a repeat of Section 5.2.2.3.3.d.1.a.2 and as such adds no value. Most of Section 5.2.2.3.3.e was relocated and became a new Section 5.2.2.3.7. This new section was also designated as "Historical."
18. Section 5.2.2.5 - revised to clarify design provisions for protection of the containment structure against corrosive influences. Section 5.2.2.5 (a) was deleted because concrete cover provides adequate corrosion protection for the carbon steel reinforcement without the necessity for any coatings and maintenance of any original applied coatings is unnecessary. The other changes add clarification.
19. Section 5.3.1 - deleted "or passive" from second paragraph. The phrase "or passive" was added to section 5.3.1 without any additional basis during Update 1.
20. Section 5.3.3.2.a - deleted last part of 3rd paragraph. Referenced the appropriate Tech Spec. section and deleted the incomplete description of when the RB Purge Isolation Valves can be opened.
21. Section 5.4 - organizational restructuring. Implements TSCR No. 282 - Plant Organization Title.
22. Sections 5.7.5.2.3 and 5.7.5.2.5 were partially deleted. Section 5.7.5.2.3 has been revised to incorporate the pre-stress force acceptance criteria specified in IWL-3221.1. Information regarding tendon grease test sampling methods & acceptance limits was deleted from Section 5.7.5.2.5. This information is not needed in the UFSAR because TMI-1 is required by law to comply with ASME Section XI 1992 Edition through 1992 Addenda, Subsection IWL via 10CFR50.55a.

Chapter 6 Changes

23. Removed two sentences in Section 6.0, which discussed design requirement for the hydrogen recombiners. Deleted a paragraph from section 6.1.3.1, which discussed the applicability of NRC Bulletin 88-08 to the TMI-1 design. Deleted a phrase from Table 6.1-5, which identified plant conditions for testing of LPI injection valves (DH-V-4A/B). Deleted a phrase on section 6.1.4, which limited the applicability of a sentence about ECCS system testing to HPI and deleted reference 4. The sentences removed from section 6.0 were partially in conflict with section 6.5.3 and otherwise did not add any new description or requirements not found elsewhere in the UFSAR. The section 6.1.3.1 paragraph was

deleted in accordance with letter C311-89-2097 (Hukill to NRC), in which GPUN concluded, "we do not believe that the conditions described in NRC Bulletin 88-08 are applicable to TMI-1". The deletion in Table 6.1-5 is not a necessary requirement per the ASME code and Tech Spec 4.5.2 and therefore the change makes the statement less prescriptive. The phrase removed from section 6.1.4 was inappropriate and had no basis.

24. Section 6.4.5 - numerous deletions. Revised section to incorporate new design basis calculation (C-1101-573-E410-004).
25. Deleted information in sections 6.5.3.1, 6.5.3.2, and 6.5.3.3 and replaced with new information. Revised sections to reflect current status of hydrogen generating material inside the RB and to eliminate incorrect information that does not belong in the UFSAR.
26. Page 6A-2 - deleted footnote. Footnote removed so that there is no confusion about the data in the table.
27. Table 6B-6 (Sheet 4 of 6) - deleted the heading "EMERGENCY CORE COOLING SYSTEM " above last paragraph on this page. Heading belongs on Table 6B-6 (Sheet 5 of 6).
28. Page 6B-13 deleted TDR-250 footnote. Information moved to C-1101-424-E540-064, Rev. 1.

Chapter 7 Changes

29. Section 7.1 - second paragraph, deleted the Oconee Unit 1 information. Information is obsolete and is not part of the TMI-1 RPS.
30. Table 7.1-1 - deleted information related to power/ RC pumps trip. Information is redundant.
31. Table 7.1-1 - numerous deletions. Update of the Loss of Feedwater with Anticipatory Reactor Trip Accident Analysis.
32. Section 7.1.1.7 - deleted reference to 10CFR50.49. Corrected section because not all protection system detectors are required to be environmentally qualified since certain detectors have completed their protective function prior to the Reactor Building becoming a harsh environment.
33. Section 7.1.4 was revised resulting in numerous deletions and additions. The EFW Design Bases information was updated and included changes regarding pump capacity, design and licensing basis events, and system service conditions.
34. Section 7.2.3.a - modified and Section 7.2.3.4 deleted. To remove excessive detail and redundancies regarding ICS failure considerations.
35. Section 7.2.3.1 - deleted last sentence of second paragraph. Removed redundant ICS maneuvering rate information.
36. Section 7.2.3.2 - deleted references to Figure 7.2.4 and also deleted Figure 7.2.4. Replaced information with reference to drawing 1D-621-41-1000, which reflects as built conditions.
37. Section 7.2.3.2.c - deleted "The combined actions of the control system and the turbine bypass system permit a load drop of 30 percent without safety valve operation." To remove

duplicate capacity information.

38. Section 7.2.3.2.d.3 - deleted the last sentence. Removed excessive detail and to correct an inaccuracy in section 7.2.3.2.d.3.
39. Section 7.3 - organizational restructuring. Implements TSCR No. 282 - Plant Organization Title.
40. Section 7.3.2.2, and Table 7.3-2 - deleted reference to Main Steam Relief Valve Audio Monitoring. Equipment removed from service.
41. Table 7.3-2 - deleted diagnostic description evaluation related to cooler discharge pressure and "60 psig". (1) River water cooler flow provides much more useful diagnostic information than cooler discharge pressure; (2) Sections 9.6.1.b and 6.3.2 already address RR-V6 backpressure.
42. Section 7.4 - numerous deletions. Updated Control Room Habitability section to account for recent analysis.

Chapter 8 Changes

43. Revised Sections 8.2.1.2.f, 8.2.2.2, 8.2.2.4, and 8.2.3.1.a to add clarification regarding single transformer operation. This is follow-up action resulting from CAP T1998-0429, which reported a lack of clarity in station documents relating to operation with one auxiliary transformer out of service.
44. Section 8.2.2.7 - deleted the last 3 paragraphs because of excessive/unnecessary detail.
45. Deleted Tables 8.2-12 & 8.2-13. Removed tables and incorporated a calculation, by reference, which contains the same data as the tables but which may require periodic update.

Chapter 9 Changes

46. Section 9.1.2.1 - Deleted remainder of paragraph beginning with "The addition of a large capacity makeup valve, MU-V217...". Section 9.1.2.6 - deleted "The effect of small break LOCA piping cross-connects is discussed in Section 14.2.2.4." Section 9.5.2.a - deleted the last 2 paragraphs. Section 9.5.2.c - deleted section. Deletion made in Section 9.1.2.1 because there is no discussion in the restart report on MU-V-217. MU-V-217 was added for operational flexibility and is not required for a safety function. Other changes in 9.1.2.1 remove unnecessary detail and eliminate the inappropriate implications. Deleted sentence in Section 9.1.2.6 because it is not true and adds no value. Chapter 14 discusses the effectiveness of HPI to mitigate a LOCA. What is meant by "The effect of small break LOCA piping cross-connects" is not clear. Deleted paragraphs in Section 9.5.2.a and relocated them to Section 6.4. Deleted Section 9.5.2.c and relocated the information to Section 6.1.
47. Sections 9.3.2.a, 9.3.2.1, 9.3.2.4, Table 9.3-1 deleted ICCW flow data. Changed text and table to reflect current design and operating information.
48. Sections 9.4.3, 9.4.5, 9.4.6, 9.4.7 - various deletions. Removed information that is not part of the licensing basis, redundant, relocated, or inconsistent.

49. Section 9.6.1.b - deleted "separate" in relation to the RR trains. Section 9.6.1.d - deleted how the biocide system is set to actuate. Page 9.6-4 - deleted the word "Removal". Page 9.6-10 - deleted location of the SC chemical mix tank. Section 9.6.1.b - there are two trains but they are not "separate." Section 9.6.1.d - information deleted provides no useful information for the licensing basis or design basis and is unnecessary detail. Page 9.6-4 changed because the entire section discusses the cooling water systems and Decay Heat Removal has its own section. Page 9.6-10 removes redundant information.
50. Removed the footnotes in Table 9.6-1. Table 9.6-1 was designated as "Historical" and the footnotes were removed because the Table may not be updated and removing the footnotes restores the Table to the way it was in the original FSAR.
51. Removed "river level of elevation 271 ft" from Section 9.6.2.1. Section 2.6.3 provides the exact details for river water elevation on loss of dam(s).
52. Section 9.6.2.1 - Deleted detail information about the River Water Lubrication System. Removes excessive detail. Specifically, the details about capacity, pressure ratings, pressure gages and pressure switch is not needed because this equipment does not perform a nuclear safety related function; Booster pump shall not restart on restoration of power after blackout has been moved to the last paragraph on page 9.6-8; the exact boundary between Seismic II and Seismic I is not needed in the UFSAR - the boundary is established and those boundaries assure that the lube water system can not affect nuclear safety related equipment; the electrical descriptions are redundant and the remaining description is adequate to address the interface with safety related electrical equipment.
53. Section 9.7.1.6 - deleted vendor manual - type information. Remove vendor manual information because it does not help describe the safety function of the system.
54. Section 9.7.2.3 - deleted reference to limit switches for East Fuel Transfer Carriage & Upenders. The Fuel Handling Systems are classified as safety related only for the fuel pool isolation valves. Removal of the limit switch information has no effect on any functions of the Fuel Handling or storage systems. Information is excessive detail.
55. Section 9.8.1 -deletions in several paragraphs. Changes made to incorporate up-to-date information on Control Room Habitability, new procedural guidance, and more accurate descriptions of the system.
56. Section 9.8.3.4.a: Removed description of "Decontamination Facility Cleaning Area." A Plant modification removed the facility. The information removed is obsolete.
57. Section 9.9.2: - revised to add reference to Technical Specification requirements for Remote Shutdown System functions.

Chapter 10 Changes

58. Deleted part of Section 10.2.1.b. Deleted FIG. 10.2-1 and 10.2-2. The information deleted represented expected performance of the Turbine Generator and was not plant design base information. The technical information on the drawings is no longer accurate, will vary considerably depending upon plant conditions and the description on Tables 10.2-1 and 10.2-2 is being revised to clarify that this information is representative of typical process data and design base data. The information on the drawings was redundant to the tables and thus the drawing were eliminated.

59. Section 10.3.1.2 - deleted reference to Main Steam Relief Valve Audio Monitoring. Equipment removed from service.
60. Delete the last seven words from the first sentence of the fourth paragraph of Section 10.3.4.2. Deleted "or from the eighth stage heater shell". A plant modification removed valve HD-V-006, some piping, and capped ends of piping.
61. Section 10.6 - organizational restructuring. Implements TSCR No. 282 - Plant Organization Title.
62. Section 10.6 was revised resulting in numerous deletions and additions. The EFW Design Bases information was updated and included changes regarding pump capacity, design and licensing basis events, and system service conditions.
63. Section 10.6.2 - deleted "100 percent capacity" from first paragraph and deleted second paragraph of this section. Reanalysis of the EFW flow requirements.
64. Section 10.7.1.a.8) - deleted "above 25 percent load (if b.1 below cannot be completed within ~3.5 minutes." Information deleted is excessive detail.

Chapter 11 Changes

65. Table 11.5-1 - deleted "EBERLINE ALPHA-5" information. Not required per updated Regulatory Guide 8.13.
66. Revised Section 11.2.2.4, which included deletion of much of the section. Section revised to reflect that the WGDT can withstand a detonation and to describe modified makeup tank venting,
67. Revised Sections 11.5, 11.5.2, 11.5.8, 11.6.1, 11.6.3 due to Organizational changes resulting from transition of TMI-1 from GPUN to AmerGen.
68. Section 11.5.8.6 - entire section was changed. To comply with 10CFR20.

Chapter 12 Changes

69. Section 12.1 revised to show transfer of responsibilities for various Radwaste Operations. Organizational restructuring.
70. Section 12.1.1.26: Remove maintenance and calibration of Radiological Instrumentation from responsibility of Radiological Controls Department. This is the responsibility of the Maintenance Department.

Chapter 14 Changes

71. Section 14.1.2.2 - Revised, added description and reference for 20% average steam generator tube plugging to the Startup Accident Analysis.
72. Section 14.1.2.4 - deleted statement that the bounding flow rate of 500 gpm can only be achieved at pressures less than 1000 psi. Removed part of Table 14.1-7 and relocated the information to Section 9.1.2.7. Part of Moderator Dilution Accident Analysis rework and update.

73. Sections 14.1.2.6 - numerous deletions. Added description and reference for 20% average steam generator tube plugging analysis to the Loss of Coolant Flow Accident to clarify current description.
74. Sections 14.1.2.8 - numerous deletions. Changes due to re-analysis and update to reflect Station Blackout Thermal-hydraulic for 20% SG tube plugging.
75. Sections 14.1.2.9 - numerous deletions. Changed description and reference to recent re-analysis for the Main Steam Line Break Accident.
76. Section 14.2.2.2 - numerous deletions. Update of the Rod Ejection Accident Analysis
77. Sections 14.2.2.3, 14.2.2.4, 14.3 - numerous deletions. Updated the UFSAR to reflect the changes in the LOCA Analysis to support 20% Tube Plugging.
78. Section 14.2.2.3.c.2 - Deleted initial core concentration. Deleted discussion on DHR line pressurization & pressure lock. The changes reflect the results of analysis concerning boron precipitation following a LOCA.
79. Revised 14.2.2.5, Appendix 14B, Appendix 14C to update dose consequences and calculation methodologies for the Maximum Hypothetical Accident. For compliance in accordance with License Amendment 215.
80. Section 14.2.2.6 - numerous deletions. Revised Accident Doses to reflect changes made in TSCR's 274 & 276.
81. Revised 14.2.2.7.b.2 to establish acceptable EFW flow requirements. Reflects changes resulting from TS Amendment 214.
82. Section 14.2.2.8.a – deleted “,i.e., 43 feet” from the paragraph. Section 14.2.2.8.b – deleted “is 43 feet. This height” from the 1st paragraph. Deleted the maximum drop height of a fuel cask from FSAR Section 14.2.2.8 because Technical Specification 3.11 sets forth the lifting conditions with the FHB crane and allowable areas of travel where loads lifted/transported are in excess of 15 tons, between 3,000 pounds and 15 tons, or consist of irradiated fuel elements.
83. Section 14.2.2.8.b - deleted "Thus, the radiological consequences of the fuel cask drop are evaluated" from first paragraph. Casks drop reanalysis.
84. Section 14.3 - deleted 20 references from the list. Updated to reflect Chapter 14 review results.
85. Deleted Appendix 14E. Required information addressed in Appendix 14C.