

December 3, 2008

Mr. Michael P. Gallagher
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SUBJECT: SCOPING AND SCREENING AUDIT SUMMARY REGARDING THE THREE
MILE ISLAND NUCLEAR STATION, UNIT 1, LICENSE RENEWAL
APPLICATION (TAC NO. MD7701)

Dear Mr. Gallagher:

By letter dated January 8, 2008, AmerGen Energy Company, LLC submitted an application pursuant to 10 CFR Part 54 to renew the operating license for Three Mile Island Nuclear Station, Unit 1, for review by the U.S. Nuclear Regulatory Commission (NRC or the staff).

During the week of May 19, 2008, the staff led a project team responsible for auditing and reviewing the applicant's administrative controls governing implementation of the license renewal application (LRA) scoping and screening methodology. The staff reviewed the technical basis for selected scoping and screening results for various plant systems, structures, and components. In addition, the staff reviewed quality attributes for aging management programs, quality practices used during LRA development and the training for personnel that developed the LRA. A summary of the audit and review results is enclosed for your information. No specific action or written response is required.

If you have any questions, please contact me at 301-415-2878 or e-mail jay.robinson@nrc.gov.

Sincerely,

IRA

Jay Robinson, Sr. Project Manager
Projects Branch 1
Division of License Renewal
Office of Nuclear Reactor Regulation

Docket No. 50-289

Enclosure:
As stated

cc w/encl: See next page

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Letter to AmerGen Energy Company, LLC from J. Robinson dated December 3, 2008

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- 2 -

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SCOPING AND SCREENING METHODOLOGY AUDIT TRIP REPORT FOR THE AMERGEN ENERGY COMPANY, LLC, LICENSE RENEWAL APPLICATION FOR THREE MILE ISLAND NUCLEAR STATION, UNIT 1, DATED JANUARY 8, 2008

I. Introduction

During the week of May 19-22, 2008, the Division of License Renewal, Engineering Review Branch 2, performed an audit of the AmerGen Energy Company, LLC, (the applicant) license renewal scoping and screening methodology developed to support the license renewal application (LRA) for Three Mile Island, Unit 1 (TMI-1). The audit was performed at the applicant's facility located outside Harrisburg, Pennsylvania. The focus of the staff's audit was on the applicant's administrative controls governing implementation of the LRA scoping and screening methodology and review of the technical basis for selected scoping and screening results for various plant systems, structures, and components (SSCs). The audit team also reviewed quality attributes for aging management programs (AMPs), quality practices used by the applicant to develop the LRA and the training of personnel that developed the LRA.

The regulatory bases for the audit was Title 10 of the *Code of Federal Regulations*, Part 54 (10 CFR Part 54), "Requirements for Renewal of Operating Licenses for Nuclear Power Plants," and NUREG-1800, "Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants," Revision 1 (SRP-LR). In addition, the applicant had developed the LRA in accordance with Nuclear Energy Institute (NEI) 95-10, "Industry Guidelines for Implementing the Requirements of 10 CFR Part 54 - The License Renewal Rule," Revision 6 (NEI 95-10) which the NRC has endorsed via Regulatory Guide 1.188, "Standard Format and Content for Applications to Renew Nuclear Power Plant Operating Licenses" (Regulatory Guide 1.188).

II. Background

10 CFR 54.21, "Contents of Application — Technical Information," requires that each application for license renewal contain an integrated plant assessment (IPA). Furthermore, the IPA must list and identify those structures and components (SCs) that are subject to an aging management review (AMR) from the SSCs that are included within the scope of license renewal. 10 CFR 54.4(a) identifies the plant SSCs within the scope of license renewal. SCs within the scope of license renewal are screened to determine if they are long-lived, passive equipment that is subject to an AMR in accordance with 10 CFR 54.21(a)(1).

III. Scoping Methodology

The scoping evaluations for the TMI-1 LRA were performed by the applicant's license renewal project personnel. The audit team conducted detailed discussions with the applicant's license renewal project personnel and reviewed documentation pertinent to the scoping process. The audit team assessed whether the scoping methodology outlined in the LRA and implementation procedures were appropriately implemented and whether the scoping results were consistent with current licensing basis (CLB) requirements.

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The audit team also reviewed a sample of system scoping results for the following systems and structures: (1) main steam system, (2) decay heat removal, (3) turbine building, and (4) intermediate building. The audit team determined that the applicant's scoping methodology was generally consistent with the requirements of the Rule for the identification of SSCs that meet the scoping criteria of 10 CFR 54.4(a). However, the audit team determined that additional information was required in order for the staff to complete its review:

- LRA Section 2.1.5.2 states, "for a nonsafety-related piping system connected to a safety-related piping system, the nonsafety-related system was assumed to provide structural support to the safety-related system, unless otherwise confirmed by a review of the installation details. The entire nonsafety-related system was included in scope for 10 CFR 54.4(a)(2), up to one of the following," and then lists the bounding criteria contained in NEI 95-10 (seismic anchor, base-mounted component, flexible connection, free end of non-safety related piping, buried end of piping, and nonsafety-related piping runs connected to safety-related piping on both ends). In addition, LRA Section 2.1.5.2 states, "these scoping boundaries are determined from the physical installation details, and confirmed in cases by review of design drawings or visual inspection by plant walk-downs where necessary."

During the scoping and screening methodology audit, the staff reviewed the scoping results for the abandoned hydrogen purge system and was not able to determine that the applicant had applied the methods described in LRA Section 2.1.5.2 to determine the portion of the nonsafety-related piping, attached to safety-related SSCs, to be included within the scope of license renewal. The staff requested that the applicant describe the methods used and the basis for conclusions, in determining the portion of nonsafety-related abandoned system piping, attached to safety-related SSCs, to be included within the scope of license renewal.

- During the scoping and screening methodology audit, the applicant stated that for certain systems, the portion of nonsafety-related piping, attached to safety-related SSCs, to be included within the scope of license renewal, had not been completely determined. The staff reviewed the scoping results for the make-up and purification system and determined that the scoping endpoints for attached piping had not been clearly defined in three instances due to a portion of the nonsafety-related piping being inaccessible to personnel while the plant was at power. The staff requested that the applicant describe the methods used and the basis for conclusions, in determining the portion of nonsafety-related inaccessible piping, attached to safety-related SSCs, to be included within the scope of license renewal.
- LRA Section 2.1.5.2 states, "the preventive option as implemented at TMI-1 is based on a "spaces" approach for scoping of nonsafety-related systems with potential spatial interaction with safety-related SSCs. Potential spatial interaction is assumed in any structure that contains active or passive safety-related SSCs," and continues, "for structures that contain safety-related SSCs, there may be selected rooms within the structure that do not contain any safety-related SSCs. CLB document reviews and plant walk-downs were utilized as appropriate to confirm that these rooms did not contain safety-related SSCs, thereby eliminating spatial interaction concerns within these rooms."

During the scoping and screening methodology audit, the staff performed a walk-down of the turbine building. The staff determined that a portion of the turbine building contained fluid-filled, nonsafety-related systems which were not included within the scope of license renewal (referred to by the applicant as an "excluded area"). However, since the turbine

building is generally an open space, the excluded area was located in the same room as safety-related containment isolation valves (CA-V-5A and CA-V-5B). The staff determined that the nonsafety-related, fluid-filled SSCs were not separated from safety-related SSCs by a room as described in LRA Section 2.1.5.2. The staff requested that the applicant describe the methods used and the basis for conclusions, in determining to not include nonsafety-related, fluid-filled SSCs within the scope of license renewal when located in the same room as safety-related SSCs.

IV. Screening Methodology

The audit team reviewed the methodology used by the applicant to determine if mechanical, structural, and electrical components within the scope of license renewal would be subject to further AMR (screening). The applicant provided the audit team with a detailed discussion of the processes used for each discipline and provided administrative documentation that described the screening methodology. The audit team also reviewed the screening results reports for the (1) main steam system, (2) decay heat removal, (3) turbine building, and (4) intermediate building. The audit team noted that the applicant's screening process was performed in accordance with its written requirements and was consistent with the guidance provided in the SRP-LR and NEI 95-10. The audit team determined that the screening methodology was consistent with the requirements of the Rule for the identification of SSCs that meet the screening criteria of 10 CFR 54.21(a)(1).

V. AMP Quality Assurance Attributes

The audit team reviewed the applicant's AMPs described in Appendix A, "Final Safety Analysis Report Supplement," and Appendix B, "Aging Management Programs," of the TMI-1 LRA for inclusion of the appropriate quality assurance (QA) requirements for elements No. 7 (corrective action), No. 8 (confirmation process) and No. 9 (administrative controls). In addition, the audit team reviewed each individual AMP basis document to ensure consistency in the use of the QA attributes for each program. The purpose of this review was to assure that the aging management activities were consistent with the staff's guidance described in SRP-LR, Section A.2, "Quality Assurance for Aging Management Programs (Branch Technical Position IQMB-1)."

Based on the audit team's evaluation, the descriptions and applicability of the plant-specific AMPs and their associated quality attributes provided in Appendix A, Section A.1.5 and Appendix B, Section B.1.3, of the LRA were determined to be generally consistent with the staff's position regarding QA for aging management.

VI. QA Controls Applied to LRA Development

The audit team reviewed the QA controls used by the applicant to ensure that scoping and screening methodologies used to develop the LRA were adequately implemented. The applicant utilized the following QA processes during the LRA development:

- The scoping and screening methodology was governed by written procedures, and guidelines.
- The LRA was examined by the applicant's team in a structured self assessment.

- The LRA was examined by internal assessment teams including a challenge board, plant oversight review committee, nuclear oversight team, and a nuclear safety review board. Each of these teams included different levels of plant and organizational management.
- The LRA was examined by external assessment teams including peer reviews done by teams of personnel from other license renewal applicants.
- Comments received through the assessment process were addressed, and managed by peer and management review.

The audit team reviewed the applicant's Focused Area Self Assessment and a sample comment resolution table and determined that the applicant's comment resolution process is consistent and adequate.

The audit team determined that, based on the review of reports and LRA development guidance, and a discussion with the applicant's license renewal personnel, the quality assurance activities met current regulatory requirements and provided additional assurance that LRA development activities were performed consistently with the applicant's LRA program requirements.

VII. Training for License Renewal Project Personnel

The audit team reviewed the applicant's training process to ensure the guidelines and methodology for the scoping and screening activities were applied in a consistent and appropriate manner. The applicant required training for all personnel participating in the development of the LRA and used only trained and qualified personnel to prepare the scoping and screening implementing procedures. The training included the following activities:

- Training was required for the license renewal project personnel and followed documented, written guidance.
- Training included 4 phases including initial qualification, classroom training, phase training, and weekly training.
- Initial qualification was completed before the project started and included the review of the license renewal process, license renewal project guidelines, and relevant industry documents such as 10 CFR Part 54 regulations, NEI 95-10, Regulatory Guide 1.188, NUREG-1800 Revision 1, and NUREG-1801 Revision 1.
- Classroom training featured seventeen classroom training sessions on topics such as site documentation overview, systems and structures overview, system specific training, and database training.
- Phase training included the review of processes and procedures for the preparation of the Oyster Creek Generating Station basis documents.
- Weekly training featured meetings held twice a week to educate the applicant's personnel on current and emerging issues pertaining to the preparation and handling of the LRA.

The audit team reviewed completed qualification and training records of several of the applicant's license renewal personnel responsible for the scoping and screening process. Additionally, based on discussions with the applicant's license renewal personnel during the audit, the audit team determined that the personnel were knowledgeable on the scoping and screening methodology specific technical issues within their areas of responsibility.

VIII. Final Briefing

A final briefing was held with the applicant on May 22, 2008, to discuss the results of the scoping and screening methodology audit. The audit team identified preliminary areas where additional information would be required to support completion of the staff's LRA review.

IX. Documents Reviewed

1. NUREG-1800, "Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants," Revision 1
2. NEI 95-10, "Industry Guideline for Implementing the Requirements of 10 CFR Part 54 The License Renewal Rule," Revision 6
3. TM-SSBD-SSL, "License Renewal Systems and Structures," Basis Document, Revision 3
4. TM-SSBD-SCRN, "Structures, Component and Commodity Types with Active Passive Determinations and Intended Functions Basis Document," Revision 2
5. TM-SSBD-A1, "10 CFR 54.4(a)(1) Safety Related Systems," Basis Document, Revision 2
6. TM-SSBD-A2, "10 CFR 54.4(a)(2) System Scoping Criteria," Basis Document, Revision 1
7. TM-SSBD-AOT, "Abnormal Operational Transients," Basis Document, Revision 2
8. TM-SSBD-FP, "10 CFR 54.4(a)(3) Fire Protection Systems," Basis Document, Revision 2
9. TM-SSBD-EQ, "Equipment Qualification," Basis Document, Revision 1
10. TM-SSBD-ATWS, "Anticipated Transient Without Scram (ATWS)," Basis Document, Revision 3
11. TM-SSBD-SBO, "Station Blackout" Basis Document," Revision 2
12. TM-SSBD-PTS, "Pressurized Thermal Shock (PTS)," Basis Document, Revision 0
13. LR-TM-1004, "Training of License Renewal Project Team and Site Personnel," Revision 0
14. LR-TM-1005, "Scoping of Systems and Structures," Revision 2
15. LR-TM-1006, "Screening of Systems, Structures and Commodities," Revision 1
16. LR-TM-1007, "License Renewal Boundary Drawings," Revision 2.b
17. TM-AMRDB-MEAE, "Aging Management Review Basis Document for Materials, Environments, and Aging Effects," Revision 3

18. 990-1745, "TMI Unit No. 1 Fire Hazards Analysis Report," Revision 22
19. OP-TM-AOP-020, "Loss of Station Power Procedure," Revision 9
20. OP-TM-864-901, "SBO Diesel Generator (EG-Y-4) Operations," Revision 5
21. #990-1879, "Station Blackout Evaluation Report Revision 1 Addressing power Uprate to 2620 MW(t)," Revision 1
22. Component Record List (CRL)
23. NRC Letter C311-89-3001, R. W. Hernan to Henry D. Hukill (GPUN), "NRC Review of ATWS Implementation (TAC No. 59151)," Dated January 3, 1989
24. Reactor Coolant System, System and Structure Scoping Report; Part of Reactor Vessel, Internals and Reactor Coolant System Grouping; Revision 1
25. Decay Heat Removal System; System and Structure Scoping Report, Part of Engineered Safety Features Grouping, Revision 0
26. Decay Heat Removal System; System and Structure Screening Report, Part of Engineered Safety Features Grouping, Revision 2
27. License Renewal Drawing Decay Heat Removal Flow Diagram, LR-302-640, Revision 0
28. License Renewal Drawing Decay Heat Removal Decay Ht. Pumps 1A/B Aux. Systems Flow Diagram, LR-302-641, Revision 0
29. Control Building System and Structure Scoping Report, Part of Structures and Component Supports Grouping," Revision 0
30. Control Building System and Structure Screening Report, Part of Structures and Component Supports Grouping," Revision 0
31. C-1101-826-E540-021, "Calculation: Control Building Flooding Due to Pipe Rupture," Revision 1
32. Maintenance Rule Structures In-Scope Inspection Report for Control Building, Revision 0, Topical Report #161
33. 32-9004664-000, "B& W PTS Calculation" Areva Calculation Summary Sheet
34. AR# 00663601, "Focused Area Self Assessment (FASA) Report Passport – TMI – 1 License Renewal Application"
35. Boundary Drawings – License Renewal Drawing Site Plan, LR-1E-120-01-001, Revision 0
36. Diesel Generator Building System and Structure Scoping Report, Part of Structures and Component Supports Grouping," Revision 0
37. "Diesel Generator Building System and Structure Screening Report, Part of Structures and Component Supports Grouping," Revision 1

- 38. Maintenance Rule Structures In-Scope Inspection Report for Diesel Generator Building, Revision 0, Topical Report #16
- 39. "Intermediate Building System and Structure Scoping Report, Part of Structures and Component Supports Grouping," Revision 0
- 40. "Intermediate Building System and Structure Screening Report, Part of Structures and Component Supports Grouping," Revision 1
- 41. "Electrical Commodities System and Structure Screening Report, Part of Electrical Components Grouping," Revision 1
- 42. ES-010T TMI-1 Environmental Parameters, Revision 4
- 43. Structural Commodities System and Structure Scoping Report, Part of Structures and Components Support Grouping," Revision 1

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