AmerGen SM

Michael P. Gallagher, PE
Vice President
License Renewal Projects

AmerGen
200 Exelon Way
KSA/2-E
Kennett Square, PA 19348

Telephone 610.765.5958
www.exeloncorp.com
michaelp.gallagher@exeloncorp.com

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10 CFR 50
10 CFR 51
10 CFR 54

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

Three Mile Island Nuclear Station, Unit 1.
Facility Operating License No. DPR-50
NRC Docket No.50-289

Subject: Response to NRC Request for Additional Information related to Three Mile Island Nuclear Station, Unit 1, License Renewal Application.

References: (a) Letter from Mr. Jay Robinson (USNRC), to Mr. Michael P. Gallagher (AmerGen) "Request for Additional Information for sections 2.3 & 2.4 of the Three Mile Island Nuclear Station, Unit 1, License Renewal Application", dated November 24, 2008. (TAC No. MD7701)

(b) AmerGen response (Letter # 5928-08-20204 dated October 20th, 2008) to "Request for Additional Information for Appendix B, Aging Management Programs", of the Three Mile Island Nuclear Station, Unit 1, License Renewal Application". (TAC No. MD7701)

In the referenced letter (a), the NRC requested additional information related to sections 2.3 & 2.4, of the Three Mile Island Nuclear Station, Unit 1, License Renewal Application (LRA). Contained within Enclosure A are the responses to this request for additional information.

In the referenced letter (b), AmerGen responded to NRC Requests for Additional Information (RAI) B.2.1.15-3. During the NRC Staff review of this response, it was determined that a clarification to this response was needed. Contained within Enclosure B is the clarification of RAI B.2.1.15-3. The RAI question along with the original response is repeated. New information included in the response is displayed in bolded italic font for ease of identification.

This letter and its enclosure contain no commitments.

If you have any questions, please contact Fred Polaski, Manager License Renewal,

at 610-765-5935.

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NRR

I declare under penalty of perjury that the foregoing is true and correct.

Respectfully,

Executed on 12-05-2008

Michael P. Gallagher
Vice President, License Renewal
AmerGen Energy Company, LLC

Enclosure A: Response to Request for Additional Information for sections 2.3 & 2.4 of the Three Mile Island Nuclear Station, Unit 1, License Renewal Application.

Enclosure B: Clarification of RAI response B.2.1.15-3

cc: Regional Administrator, USNRC Region I, w/Enclosures
USNRC Project Manager, NRR - License Renewal, Safety, w/Enclosures
USNRC Project Manager, NRR - License Renewal, Environmental, w/o Enclosures
USNRC Project Manager, NRR - TMIGS, w/o Enclosures
USNRC Senior Resident Inspector, TMIGS, w/o Enclosures

File No. 08001

Enclosure – A

Response to Request for Additional Information for sections 2.3 & 2.4 of the Three Mile Island Nuclear Station, Unit 1, License Renewal Application.

Note: As a standard convention for AmerGen RAI responses, added text will be shown as ***bolded italics*** whereas deleted text will be shown as ~~strikethrough~~.

RAI 2.3.3.17-4

Background:

On the following license renewal drawings the applicant shows the same components highlighted in different colors, reflecting the components being included in scope for license renewal for different reasons:

(a) On license renewal drawing LR-302-181 at locations H-2 through H-5, components CE10 through CE16 and their associated piping are shown highlighted in red; indicating that they are within the scope of license renewal for 10 CFR 54.4(a)(2) criteria. However, on license renewal drawing LR-302-111 at locations G-6, G-7, C-7, and E-5, and on LR-302-011 at locations E-9 and E-10, these same components and their associated piping are shown highlighted in green; indicating that they are within the scope of license renewal for 10 CFR 54.4(a)(1) or (a)(3) criteria.

(b) On license renewal drawing LR-302-182 at locations H-8 through H-10, components CE17, CE18, CE25 through CE27 and their associated piping are shown highlighted in red; indicating that they are within the scope of license renewal for 10 CFR 54.4(a)(1) or (a)(3) criteria. However, these same components and their associated piping, CE17 and CE18 (license renewal drawing LR-302-111 at location C-3), CE25 (license renewal drawing LR-302-101 at location E-3) and CE26 and CE 27 (license renewal drawing LR-302-101 at location D-2), are shown highlighted in green; indicating that they are within the scope of license renewal for 10 CFR 54.4(a)(2) criteria.

(c) On license renewal drawing LR-302-671 at location E-5, components CE118, CE119 and their associated piping, are shown in black; indicating that they are not within the scope of license renewal. However, on license renewal drawing LR-302-640 at locations F-3 and F-8, these same components and their associated piping are shown highlighted in red; indicating that they are within the scope of license renewal for 10 CFR 54.4(a)(2) criteria.

(d) On license renewal drawing LR-302-671 at locations D-7 through F-8, components CE100 through CE106 and their associated piping are shown highlighted in red; indicating that they are within the scope of license renewal for 10 CFR 54.4(a)(2) criteria. However, these same components and their associated piping, CE100 through CE104 (license renewal drawing LR-302-719 at location F-7 through G-8), CE104 (license renewal drawing LR-302-660 at location G-2), and CE105 and CE106 (license renewal drawing LR-302-650 at location F-7), are shown highlighted in green; indicating that they are within the scope of license renewal for 10 CFR 54.4(a)(1) or (a)(3) criteria.

Issue:

Proper identification of components included within the scope of license renewal is necessary to properly identify the intended function and whether additional attached or surrounding equipment needs to be included within scope of license renewal to support or protect the ability of a safety-related component to perform its safety function.

Request:

For components and their associated piping described above, the staff request the applicant to clarify which criteria the components are scoped under 10 CFR 54.4(a) and determine whether additional components are necessary to be brought within the scope of license renewal as a result.

AmerGen Response

(a) CE10 through CE16 and their associated piping are nonsafety-related components that are in scope for 10 CFR 54.4(a)(2) (functional support). As such they should be shown in green, but were incorrectly depicted on LR-302-181 in red. CE10 through CE16 and their associated piping should have been depicted in green up to and including normally closed valves SS-V1J1, SS-V1J2, SS-V1K, SS-V1L, SS-V1M, SS-V1N1, & SS-V1N2. LR-302-011 and LR-302-111 correctly depicted the scoping boundary. No additional components are necessary to be brought within the scope of license renewal as a result of this request.

(b) CE17, CE18, and CE25 through CE27 and their associated piping are nonsafety-related components that are in scope for 10 CFR 54.4(a)(2) (spatial interaction). As such they should be shown in red, but were incorrectly depicted on LR-302-101 and LR-302-111 in green. CE17, CE18, and CE25 through CE27 and their associated piping should have been depicted in red up to normally closed valves HD-V47A, HD-V47B, CO-V115A, CO-V115B, and CO-V115C, respectively. LR-302-182 correctly depicted the scoping boundary. No additional components are necessary to be brought within the scope of license renewal as a result of this request.

(c) On drawing LR-302-640 (F-3, F-6), the sample point representations for CE118 and CE119 should have been shown in black to match their representations on LR-302-671 (E-5), which are correctly shown as not in scope for 10 CFR 54.4(a)(2) (spatial interaction) because they are located inside a shielded sample panel as stated on LR-302-671 (C-6). The piping up to the sample point representations on drawing LR-302-640 is correctly shown in red to indicate its inclusion in scope for 10 CFR 54.4(a)(2) (spatial interaction) up to the shielded sample panel. No additional components are necessary to be brought within the scope of license renewal as a result of this request.

(d) CE100 through CE106 and their associated piping are nonsafety-related components that are in scope for 10 CFR 54.4(a)(2) (functional support). As such they should be shown in green, but were incorrectly depicted on LR-302-671 in red. CE100 through CE106 and their associated piping should have been depicted in green. LR-302-650 and LR-302-660 correctly depicted the scoping boundary. No additional components are necessary to be brought within the scope of license renewal as a result of this request.

RAI 2.3.3.17-5

Background:

On license renewal drawing LR-302-671 at location E-4, the piping leading to and the valves CA-V99B, CA-V99A, CA-V95 and CA-V109 are shown in black; indicating that they are not within the scope of license renewal. This piping connects directly to various 3/8" piping shown highlighted in red; indicating that this other various piping segments are within the scope of license renewal for 10 CFR 54.4(a)(2) criteria.

Issue:

The abovementioned piping and valves are directly attached to piping that is included in scope for license renewal under 10 CFR 54.4 (a)(2). Since there is no apparent physical barrier, then the abovementioned piping and valves should also be included in scope.

Request:

Justify the exclusion of the abovementioned piping and valves from the scope of license renewal and subject to an aging management review (AMR) with the intended function of leakage boundary.

AmerGen Response

The Liquid and Gas Sampling System scoping boundary, which includes potentially liquid filled lines outside of sample hoods and shielded sample panels, is incorrectly shown on LR-302-671. The Liquid and Gas Sampling System scoping boundary includes the piping to CA-V95, CA-V99A, CA-V99B, & CA-V109 (location E-4), continues through to CA-V94, CA-V98A, CA-V98B, and CA-V108 (location E-4) to the associated 3/8" OD piping that is physically located outside the sample hood (locations B-3, B-4, C-4 and D-4), and ends at the LGS/MFED boundary flag (location B-3). The scoping boundary also includes the components CA8 F1, CA9 P1, CA-V1071 (location B-4), and the piping and tubing that runs from the sample hood wall, through CA-V88 (location B-3) to the 2" pipe leading to the Auxiliary Building Sump. The aforementioned components should have been shown in red, indicating they are in scope of license renewal for 10 CFR 54.4(a)(2) (spatial interaction).

RAI 2.3.3.17-6

Background:

On license renewal drawing LR-302-671 the applicant shows many valves in black; indicating that they are not within the scope of license renewal. However, immediately before these valves, the piping is shown highlighted in red; indicating that the piping is within the scope of license renewal for 10 CFR 54.4(a)(2) criteria. The following is an itemized list of these valves and their location on the drawing:

(a) At location B-6, valves CA-V32A and CA-V32B

(b) At location F-2, valve CA-V337

(c) At location E-2, valves CA-V47 and CA-V48

(d) At location E-2 through E-4, valves CA-V53, CA-V59, CA-V61, CA-V64A, CA-V67A, CA-V64B, CA-67B, CA-V70, CA-V73, CA-V78, CA-V75, CA-V82A, CA-V82B, CA-V80, CA-V85A, and CA-V85B

Issue:

The piping immediately before these valves is within the scope of license renewal for 10 CFR 54.4(a)(2) criteria with an intended function of leakage boundary. There needs to be a method of isolating the piping components that are within the scope of license renewal for leakage boundary from the piping components that are not within scope. This isolation can be achieved by a valve which can be closed and is within scope or by a physical barrier.

Request:

Justify the exclusion of these abovementioned valves from the scope of license renewal and subject to aging management for an intended function of leakage boundary.

AmerGen Response

(a) Valves CA-V32A and CA-V32B (location B-6), OTSG Sample Coolers CA-C-2A and CA-C-2B (location B-6), valves CA-V51A and CA-V51B (location C-5), and associated piping are nonsafety-related components that are in scope for 10 CFR 54.4(a)(2) (spatial interaction). As such they perform a leakage boundary intended function and should be shown in red, but are incorrectly depicted on LR-302-671 in black. Piping and components from CA-V32A and CA-V32B to the sample hood wall downstream of CA-V51A and CA-V51B should have been depicted in red. The OTSG Sample Coolers are evaluated for license renewal in the Closed Cycle Cooling Water System as Heat exchanger components (Pressurizer Sample and OTSG Sample Coolers) in LRA Tables 2.3.3-4 and 3.3.2 4. Note 2 on LR-302-671 should have included the Closed Cycle Cooling Water System.

(b) CA-V337 is a nonsafety-related, normally closed valve that is in scope for 10 CFR 54.4(a)(2) (spatial interaction). As such it performs a leakage boundary intended function and should be shown in red, but is incorrectly depicted on LR-302-671 in black. Piping downstream of CA-V337 is nonsafety-related and is not liquid filled; therefore, it is not in scope for license renewal, because it is not required to perform any intended function.

(c) CA-V47, CA-V48, CA-V1070, CA2P1, and associated tubing are nonsafety-related, gas filled components. CE117 represents the transition from piping, which originates at Make-Up Tank MU-T-1 as shown on LR-302-661 (location B-8), to tubing, which leads to the sample hood as shown on LR-302-671. CE117 is in scope for 10 CFR 54.4(a)(2) (structural support) and is correctly shown in red on LR-302-671. CE117 should have been shown in red on LR-302-661, as corrected by AmerGen Response to RAI 2.1.5.2-2. CA-V47, CA-V48, CA-V1070, CA2P1, and associated tubing are not in scope, because tubing is not relied upon to perform a structural support intended function and there is no potential for spatial interaction with safety-related components. As such, CA-V47, CA-V48, CA-V1070, CA2P1, and associated tubing should have been depicted in black indicating they do not perform any intended function and are not in scope for license renewal.

(d) Valves CA-V53, CA-V59, CA-V61, CA-V64A, CA-V67A, CA-V64B, CA-V67B, CA-V70, CA-V73, CA-V78, CA-V75, CA-V82A, CA-V82B, CA-V80, CA-V85A, and CA-V85B and associated piping are nonsafety-related components that are in scope for 10 CFR 54.4(a)(2) (spatial interaction). As such they perform a leakage boundary intended function and should have been shown in red up to the sample hood wall, but are incorrectly depicted on LR-302-671 in black.

RAI 2.3.3.19-3

Background:

On river water system license renewal drawing LR-302-202, at location D-8, a six-inch pipe is highlighted in red, indicating that the piping is within the scope of license renewal. This piping is shown to continue onto license renewal drawing 302-161 to a "Clarifier." The continuation arrow is not highlighted, indicating the downstream components were not included in the scope of license renewal. License renewal drawing 302-161 has not been provided as a license renewal drawing.

Issue:

Structures and components shown on license renewal drawing 302-161 as part of this continued piping may be required to be included in scope for license renewal. The staff's needs to review the structures and components on this drawing to verify the applicant has properly included the components in scope and subject to an AMR as required by 10 CFR 54.21.

Request:

The staff requests the applicant to provide the continuation license renewal drawing 302-161 identifying the structures and components within the scope of license renewal and subject to an AMR, or provide a basis for the exclusion of the structures and components on this drawing.

AmerGen Response

The 30-in diameter piping from the discharge header of the secondary services pumps, shown on drawing LR-302-202 at C-8, runs underground to the heat exchanger vault, located in the Auxiliary Building. This piping is in scope for license renewal under 54.4(a)(2) because it provides structural support to attached safety-related piping. The attached six-inch branch piping, on drawing LR-302-202 at location D-8, is also buried and runs from the 30-in header to the clarifier, located in the Pretreatment Building. This six-inch piping and the clarifier do not perform an intended function and are not in-scope for license renewal. Consequently, the components shown on drawing 302-161 are not included in the scope of license renewal. Therefore, this drawing was not included as a license renewal boundary drawing. The six-inch piping should have been colored black on drawing LR-302-202 to indicate the boundary for the license renewal scope.

RAI 2.3.4.3-1

Background:

On license renewal drawing LR-302-082 the safety-related emergency feedwater control valves to the steam generators, EF-V30A, EF-V30B, EF-V30C, and EF-V30D, at locations F-4, B-4, B-5, and G-5, respectively, are shown within the scope of license renewal. However, the air operators for these valves are not highlighted, indicating the operator is not within the scope of license renewal. In LRA Section 2.3.4.3 the applicant states that these valves will initially fail closed with loss of air supply to reduce the potential for severe overcooling transients, but there is adequate time available to the operator to take action to open a flow control valve and restore flow, should the flow control valves fail closed. There are multiple sources of air available to ensure their proper positioning during a design basis event in accordance with 10 CFR 54.4(a)(1). License renewal drawing LR-302-273 for the instrument air system shows the instrument air supply up to these emergency feedwater control valves highlighted in green, indicating they are within the scope of license renewal in accordance with 10 CFR 54.4(a)(1) and/or (a)(3).

Issue:

The emergency feedwater control valves' air operators perform a function to change position to regulate flow during a design-basis event, which would require them to be included within the scope of license renewal under 10 CFR 54.4(a). Even though the operator is an active component, the valve body is passive and requires an AMR in accordance with 10 CFR 54.21.

Request:

Justify the exclusion of the emergency feedwater control valves' air operators from the scope of license renewal and an AMR.

AmerGen Response

The air operators for Emergency Feedwater System control valves EF-V30A, EF-V30B, EF-V30C, and EF-V30D are not excluded from the scope of license renewal. As shown on scoping boundary drawings LR-302-032 (coordinates G-7, G-8, G-2, and G-3) and LR-302-273 (coordinates E-7 and E-3), the control valve air operators and their air supplies are in scope for 10 CFR 54.4(a)(1). The air operator symbols for EF-V30A, EF-V30B, EF-V30C, and EF-V30D as shown on LR-302-082 (coordinates F-4, B-4, B-5, and G-5) should have been shown as in scope for 10 CFR 54.4(a)(1). As active components, the control valve air operators are not subject to AMR (reference: NUREG-1800, Table 2.1-5, Item 111).

RAI 2.3.4.8–2

Background:

In LRA Section 2.3.4.2, Condensers and Air Removal System, the applicant states that the condenser shell has the intended function of pressure boundary in accordance with 10 CFR 54.4(a)(2) for iodine partitioning. Typically on the turbine pedestal, there are drain lines originating in each of the wells where the turbine shaft penetrates the low pressure turbine housings for the purpose of draining condensate from excessive gland sealing steam. These drain lines penetrate the condenser housing where they originate and where they exit. Neither LRA Section 2.3.4.2 nor Section 2.3.4.8, discuss this drain piping usually referred to as "slop drains." The failure of this piping is routinely seen in the industry and noted as a source of air inleakage to the condenser affecting vacuum.

Issue:

This drain piping would be a part of the pressure boundary for the condenser and included within the scope of license renewal in accordance with 10 CFR 54.4(a)(2) as a functional (a)(2) because its failure would affect the condenser shell's pressure boundary intended function.

Request:

Clarify whether the turbine pedestal "slop drains" lines are present at Three Mile Island and justify their exclusion from the scope of license renewal under 10 CFR 54.4(a)(2).

AmerGen Response

The turbine pedestal "slop drains" are present at TMI-1 and they are in the scope for license renewal. These drains perform a 10 CFR 54.4(a) (2) intended function (functional support) because they form a portion of the pressure boundary for condenser shell vacuum, which is required for iodine partitioning. These drains are shown on drawings LR-302-306 (F-5, F-3, F-2) and LR-302-307 (F-7) as 2-inch drain lines from the low-pressure turbine bearing drip pans to collection tanks LO-T-7A, LO-T-7B, and LO-T-7C. This drain piping was incorrectly colored red on these drawings. The piping should have been colored green representing its pressure boundary intended function.

RAI 2.4.6-2

Background:

On license renewal drawing LR-1E-120-01-001, the Storm Drainage and Flood Control Structure is shown outlined in black, indicating that the structure is not within the scope of license renewal. In LRA Section 2.4.6, "Dike/Flood Control System," the applicant states that the Dike/Flood Control System is in scope under 10 CFR 54.4(a)(2).

Issue:

The Storm Drainage and Flood Control Structure was identified as being in scope of license renewal and should be highlighted as such on the license renewal drawing.

Request:

Justify the exclusion of the Storm Drainage and Flood Control Structure from the scope of license renewal on the license renewal drawing.

AmerGen Response

The Storm Drainage and Flood Control Structure is in scope for License Renewal under 10 CFR 54.4(a)(2) as indicated in LRA Section 2.4.6, "Dike/Flood Control System." License Renewal drawing LR-1E-120-01-001 at location G-4 should have shown the Storm Drainage and Flood Control Structure outlined in green indicating that the structure is in scope for License Renewal.

Enclosure – B

Clarification of RAI response B.2.1.15-3

Note: As a standard convention for AmerGen RAI responses, added text will be shown as ***bolded italics*** whereas deleted text will be shown as ~~strikethrough~~.

RAI#: B.2.1.15-3

LRA Section: B.2.1.15, Aboveground Steel Tanks

Background:

On page B-57 of the LRA, an exception is taken which states that the program utilizes tank inspection at least every five years in place of periodic system walkdowns each outage. The exception further states that the change in frequency is based on industry guidance and experience that indicates that monitoring of exterior surfaces of components made of carbon steel with a protective coating on a frequency of at least every five years provides reasonable assurance that loss of material will be detected before an intended function is affected.

Issue:

The program element, "monitoring and trending", of the GALL Report AMP XI.M29, states that operating experience has shown that periodic walkdowns during each outage will provide timely detection of aging effects.

Request:

1. Clarify the current inspection frequency of all the tanks that are within the scope of this program.

2. Provide the details of the industry guidance and experience that is referred to in the exception and justify your basis for not performing walkdowns of these tanks each outage as recommended by the GALL Report.

AmerGen Response

1. As stated in LRA Section B.2.1.15, the inspection frequency for all of the tanks within the scope of the Aboveground Steel Tanks program is five years.

2. The five year frequency for monitoring the external surfaces of aboveground steel tanks is consistent with the frequency specified in TMI-1 Structures Monitoring Program, B.2.1.28 for the inspections of the external surfaces of the tanks' supporting structures. The five year frequency, which is consistent with industry guidelines as stated in SAND96-0343, Aging Management Guideline for Commercial Nuclear Power Plants – Tanks and Pools, has proven effective in detecting loss of material due to corrosion before loss of intended function can occur. Plant operating experience, as documented in LRA Section B.2.1.15, confirms the five-year inspection interval successfully identifies loss of material on the external surfaces of the applicable tanks at TMI-1 before loss of intended function can occur. ***The five-year frequency is also consistent with the Maintenance Rule (10 CFR 50.65) requirements.*** Furthermore, the staff has accepted the 5-year inspection intervals for the Oyster Creek Generating Station as stated in Section 3.0.3.2.18 of NUREG-1875, Vol. 2, Safety Evaluation Report Related to the License Renewal of Oyster Creek Generating Station, Docket No. 50-219.