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An Exelon Company

10 CFR 50
10 CFR 54

5928-08-20196
September 16, 2008

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

Reference: Letter from Mr. Jay Robinson (USNRC), to Mr. Michael P. Gallagher (AmerGen) "Request for additional information for Sections 2.3.3 and 2.3.4 of the Three Mile Island Nuclear Station, Unit 1, License Renewal Application", dated August 20th, 2008. (TAC No. MD7701)

In the referenced letter, the NRC requested additional information related to Sections 2.3.3 and 2.3.4 of the Three Mile Island Nuclear Station, Unit 1, License Renewal Application (LRA). Enclosed are the responses to this request for additional information.

This letter and its enclosure contain no commitments.

If you have any questions, please contact Fred Polaski, Manager License Renewal, at 610-765-5935.

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

Respectfully,

Executed on 09-16-2008

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

A131
NRR

Enclosure A: Response to Request for Additional Information for Sections 2.3.3 and 2.3.4 of the Three Mile Island Nuclear Station, Unit 1, License Renewal Application.

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

File No. 08001

Enclosure – A

Response to Request for Additional Information for Sections 2.3.3 and 2.3.4 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 # 2.3.3.4-1

Background:

On license renewal drawing LR-302-175, at locations G-2, F-2, F-3, and F-4, there are five components which appear to be sight flow indicators according to symbol represented on license renewal drawing LR-302-002. These components are highlighted in red, indicating they are in scope for license renewal under 10 CFR 54.4(a)(2) according to Note 1 on license renewal drawing LR-302-003. Typically, this component type "flow indicator" would have a leakage boundary function.

Issue:

Sight flow indicator is not listed in License Renewal Application (LRA) Tables 2.3.3-4 and 3.3.2-4 as a component type with a leakage boundary function.

Request:

Justify the exclusion of the component type "sight flow indicator" from LRA Tables 2.3.3-4 and 3.3.2-4.

AmerGen Response

The sight flow indicators (sight glasses), shown in red on drawing LR-302-175 at locations G-2, F-2, F-3, and F-4, are within the scope for license renewal with the intended function of leakage boundary; however they were omitted from Table 2.3.3-4 and Table 3.3.2-4. These components should have been included in Table 2.3.3-4 and Table 3.3.2-4 as shown below. Glass material should have been included in Section 3.3.2.1.4.

Component information added to Table 2.3.3-4 is shown below:

Table 2.3.3-4 Closed Cycle Cooling Water System

Components Subject to Aging Management Review

Component Type	Intended Functions
Sight Glasses	*Leakage Boundary*

Material information added to Section 3.3.2.1.4 is shown below:

3.3.2.1.4 Closed Cycle Cooling Water System

Material

- ***Glass***

Aging management information added to Table 3.3.2-4 is shown as follows:

Table 3.3.2-4 Closed Cycle Cooling Water System

Component Type	Intended Function	Material	Environment	Aging Effect/ Mechanism Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Sight Glasses	*Leakage Boundary*	*Glass*	*Air – Indoor (External)*	*None*	*None*	*VII.J-8*	*3.3.1-93*	*A*
Sight Glasses	*Leakage Boundary*	*Glass*	*Treated Water (Internal)*	*None*	*None*	*VII.J-13*	*3.3.1-93*	*A*
Sight Glasses	*Leakage Boundary*	*Carbon Steel*	*Air – Indoor (External)*	*Loss of Material / General Corrosion*	*External Surfaces Monitoring (B.2.1.21)*	*VII.I-8*	*3.3.1-58*	*B*
Sight Glasses	*Leakage Boundary*	*Carbon Steel*	*Treated Water (Internal)*	*Loss of Material / General Pitting, and Crevice Corrosion*	*Closed-Cycle Cooling Water System (B.2.1.10)*	*VII.C2-14*	*3.3.1-47*	*B*

RAI # 2.3.3.4-2

Background:

The following coolers are highlighted on their respective drawings as being in scope for license renewal:

Drawing	Location	Cooler	Description
LR-302-620	C-3, E-7	IC-C-1A, 1B	Intermediate coolers
LR-302-620	C-7, D-7, E-7	1A, 1B, 1C, 1D	Reactor coolant pump thermal barrier heat exchangers
LR-302-662	G-4, E-2, G-7	MU-C-3A, MU-C-4A, MU-C-5A	Pump and motor lube oil cooler, make-up and purification system motor air cooler, gear unit oil cooler
LR-302-645	E-5, E-6	DH-P-1A, DH-P-1B	Decay heat removal pumps motor and bearing cooling
LR-302-181	G-8	SS-C-46	TCU unit
LR-302-221	B-8, B-7	SC-C-3A, SC-C-3B	Isolated phase bus duct coolers, A and B

Issue:

The staff noted that these coolers are not specifically listed in LRA Tables 2.3.3-4 and 3.3.2-4 as being subject to an aging management review (AMR).

Request:

Justify the exclusion of the above-mentioned coolers from LRA Tables 2.3.3-4 and 3.3.2-4.

AmerGen Response:

The listed components are within the scope of license renewal. The evaluation of each component is addressed separately below. The coolers not included in Tables 2.3.3-4 and 3.3.2-4 should have been added as shown in the tables below. The added components have been grouped with coolers of similar design. Additionally, the grouping of the decay heat removal pump bearing cooler has been changed to coolers of similar design.

1) The Intermediate Coolers are safety-related heat exchangers within the scope of license renewal with a heat transfer intended function. Per Section 2.1.6.1 of the LRA, both sides of their heat transfer surfaces have been evaluated for license renewal with the Open Cycle Cooling (OCCW) System, which performs the cooling function for the heat exchangers. These components are included in LRA Tables 2.3.3-19 and 3.3.2-19. The OCCW System is shown on drawing LR-302-202.

2) The Reactor Coolant Pump Thermal Barrier Heat Exchangers are attached to the reactor coolant pumps. They are within the scope of license renewal with a pressure boundary intended function. These heat exchangers are cooled by closed cycle cooling water as shown on drawing LR-302-620. These heat exchangers should have been

included in Tables 2.3.3-4 and 3.3.2-4 as component type "*Heat exchanger components (Reactor Coolant Pump Thermal Barrier)*" as shown in the tables below.

3) Makeup and Purification System coolers MU-C-3A/B/C and MU-C-5A/B/C are in scope for license renewal with heat transfer and pressure boundary intended functions. These coolers are cooled by closed cycle cooling water as shown in drawing LR-302-662. They are included in Tables 2.3.3-4 and 3.3.2-4 as component type *"Heat exchanger components (Makeup, Decay Heat Removal, RB Spray Pump & Motor Lube Oil Cooler)."* This component type should have read "*Heat exchanger components (Makeup, RB Spray Pump & Motor Lube Oil, Gear Unit Oil Cooler)*" in Table 3.3.2-4 as shown in the tables below.

4) Makeup and Purification System Motor Air Cooler MU-C-4A/B/C (drawings LR-302-662, LR-302-645) and the Decay Heat Removal Pumps Motor Coolers (LR-302-645) are in scope for license renewal with heat transfer and pressure boundary intended functions. They are cooled by closed cycle cooling water. These coolers should have been included in Table 2.3.3-4 as component type *"Heat exchanger components (Reactor Building Fan Motor, Decay Heat Removal & Makeup Motor Air Coolers)."* These coolers should have been included in Table 3.3.2-4 as component types *"Heat exchanger components (Reactor Building Fan Motor, Decay Heat Removal & Makeup Motor Air Coolers)*" and "*Heat exchanger components (Decay Heat Removal & Makeup Motor Air Coolers)*" as shown in the tables below.

5) Decay Heat Removal Pumps Bearing Coolers (LR-302-645) are in scope for license renewal with heat transfer and pressure boundary intended functions. They are cooled by closed cycle cooling water. These coolers should have been included in Table 2.3.3-4 as component types *"Heat exchanger components (Control Rod Drive Cooling Coils, Decay Heat Removal Pumps Bearing Cooling)"* and *"Heat exchanger components (Reactor Coolant Drain Tank, Decay Heat Removal Pumps Bearing Cooling)."* These coolers should have been included in Table 3.3.2-4 as component types *"Heat exchanger components (Control Rod Drive Cooling Coils, Decay Heat Removal Pumps Bearing Cooling)", "Heat exchanger components (Reactor Coolant Drain Tank, Decay Heat Removal Pumps Bearing Cooling)"* and "*Heat exchanger components (Decay Heat Removal Pumps Bearing Cooling)*" as shown in the tables below.

6) The TCU Unit (Temperature Control Unit), SS-C-46, is a skid-mounted chiller unit that cools feedwater samples prior to entering sample racks. This chiller unit is within the scope for license renewal with a leakage boundary intended function. It is cooled by closed cycle cooling water. The TCU Unit should have been included in Tables 2.3.3-4 as component type "*Heat exchanger components (Auxiliary Boiler Sample Rack, TCU Unit).*" It should have been included in Table 3.3.2-4 as component types "*Heat exchanger components (Auxiliary Boiler Sample Rack, TCU Unit)*" and "*Heat exchanger components (Primary and Secondary Cooling Coils, TCU Unit)*" as shown in the tables below.

7) The Isolated Phase Bus Duct Coolers are part of the Closed Cycle Cooling Water System. They are shown on drawing LR-302-221. These heat exchangers perform a leakage boundary intended function and are within the scope for license renewal. They are cooled by the closed cycle cooling water and should have been included as component type "*Heat exchanger components (Control Building Air Conditioning,*

Isolated Phase Bus Duct Coolers)" in Tables 2.3.3-4 and 3.3.2-4 as shown in the associated tables shown below.

The table below shows the component types and intended functions that should have been included in Table 2.3.3-4.

Table 2.3.3-4 Closed Cycle Cooling Water System

Components Subject to Aging Management Review

Component Type	Intended Functions
Heat exchanger components (Reactor Coolant Pump Thermal Barrier)	***Pressure Boundary***
Heat exchanger components (Makeup, ~~Decay Heat Removal,~~ RB Spray Pump & Motor Lube Oil, ***Gear Unit Oil*** Cooler)	Heat Transfer
Heat exchanger components (Makeup, ~~Decay Heat Removal,~~ RB Spray Pump & Motor Lube Oil, ***Gear Unit Oil*** Cooler)	Pressure Boundary
Heat exchanger components (Reactor Building Fan Motor, ***Decay Heat Removal & Makeup Motor Air*** Coolers)	Heat Transfer
Heat exchanger components (Reactor Building Fan Motor, ***Decay Heat Removal & Makeup Motor Air*** Coolers)	Pressure Boundary
Heat exchanger components (Control Rod Drive Cooling Coils, ***Decay Heat Removal Pumps Bearing Cooling***)	Heat Transfer
Heat exchanger components (Reactor Coolant Drain Tank Heat Exchanger, ***Decay Heat Removal Pumps Bearing Cooling***)	Pressure Boundary
Heat exchanger components (Auxiliary Boiler Sample Rack Coolers, ***TCU Unit***)	Leakage Boundary
Heat exchanger components (Control Building Air Conditioning, ***Isolated Phase Bus Duct Coolers***)	Leakage Boundary

The table below shows the aging management information that should have been included in Table 3.3.2-4.

Table 3.3.2-4 Closed Cycle Cooling Water System

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Heat exchanger components (Reactor Coolant Pump Thermal Barrier)	*Pressure Boundary*	*Stainless Steel*	*Air with Borated Water Leakage (External)*	*None*	*None*	*VII.J-16*	*3.3.1-99*	*C*
Heat exchanger components (Reactor Coolant Pump Thermal Barrier)	*Pressure Boundary*	*Stainless Steel*	*Treated Water >140 F (External/ Internal)*	*Cracking/Stress Corrosion Cracking*	*Water Chemistry (B.2.1.2)*	*VIII.F-3*	*3.4.1-14*	*A*
Heat exchanger components (Reactor Coolant Pump Thermal Barrier)	*Pressure Boundary*	*Stainless Steel*	*Treated Water >140 F (External/ Internal)*	*Cracking/Stress Corrosion Cracking*	*One-Time Inspection (B.2.1.18)*	*VIII.F-3*	*3.4.1-14*	*B*
Heat exchanger components (Reactor Coolant Pump Thermal Barrier)	*Pressure Boundary*	*Stainless Steel*	*Treated Water (External/ Internal)*	*Loss of Material/Pitting and Crevice Corrosion*	*Water Chemistry (B.2.1.2)*	*VII.A4-2*	*3.3.1-23*	*A*
Heat exchanger components (Reactor Coolant Pump Thermal Barrier)	*Pressure Boundary*	*Stainless Steel*	*Treated Water (External/ Internal)*	*Loss of Material/Pitting and Crevice Corrosion*	*One-Time Inspection (B.2.1.18)*	*VII.A4-2*	*3.3.1-23*	*B*
Heat exchanger components (Reactor Coolant Pump Thermal Barrier)	*Pressure Boundary*	*Stainless Steel*	*Closed Cycle Cooling Water > 140 F (Internal)*	*Cracking/Stress Corrosion Cracking*	*Closed-Cycle Cooling Water System (B.2.1.10)*	*VII.E3-2*	*3.3.1-46*	*B*

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Heat exchanger components (Reactor Coolant Pump Thermal Barrier)	***Pressure Boundary***	***Stainless Steel***	***Closed Cycle Cooling Water (Internal)***	***Loss of Material/Pitting and Crevice Corrosion***	***Closed-Cycle Cooling Water System (B.2.1.10)***	***VII.C2-10***	***3.3.1-50***	***B***
Heat exchanger components (Makeup, ~~Decay Heat Removal,~~ RB Spray Pump & Motor Lube Oil, ***Gear Unit Oil*** Cooler)	Heat Transfer	Copper Alloy with 15% Zinc or More	Closed Cycle Cooling Water (Internal)	Reduction of Heat Transfer/Fouling	Closed-Cycle Cooling Water (B.2.1.10)	VII.C2-2	3.3.1-52	B
Heat exchanger components (Makeup, ~~Decay Heat Removal,~~ RB Spray Pump & Motor Lube Oil, ***Gear Unit Oil*** Cooler)	Heat Transfer	Copper Alloy with 15% Zinc or More	Lubricating Oil (External)	Reduction of Heat Transfer/Fouling	Lubricating Oil Analysis (B.2.1.23)	VIII.G-8	3.4.1-10	B
Heat exchanger components (Makeup, ~~Decay Heat Removal,~~ RB Spray Pump & Motor Lube Oil, ***Gear Unit Oil*** Cooler)	Heat Transfer	Copper Alloy with 15% Zinc or More	Lubricating Oil (External)	Reduction of Heat Transfer/Fouling	One-Time Inspection (B.2.1.18)	VIII.G-8	3.4.1-10	B

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Heat exchanger components (Makeup, ~~Decay Heat Removal,~~ RB Spray Pump & Motor Lube Oil, ***Gear Unit Oil*** Cooler)	Pressure Boundary	Carbon Steel	Air with Borated Water Leakage (External)	Loss of Material/Boric Acid Corrosion	Boric Acid Corrosion (B.2.1.4)	VII.I-10	3.3.1-89	A
Heat exchanger components (Makeup, ~~Decay Heat Removal,~~ RB Spray Pump & Motor Lube Oil, ***Gear Unit Oil*** Cooler)	Pressure Boundary	Carbon Steel	Air with Borated Water Leakage (External)	Loss of Material/General, Pitting and Crevice Corrosion	External Surfaces Monitoring (B.2.1.21)	VII.I-4	3.3.1-43	E, 1
Heat exchanger components (Makeup, ~~Decay Heat Removal,~~ RB Spray Pump & Motor Lube Oil, ***Gear Unit Oil*** Cooler)	Pressure Boundary	Carbon Steel	Lubricating Oil (Internal)	Loss of Material/General, Pitting, Crevice, and Microbiologically Influenced Corrosion	Lubricating Oil Analysis (B.2.1.23)	VIII.G-6	3.4.1-12	B
Heat exchanger components (Makeup, ~~Decay Heat Removal,~~ RB Spray Pump & Motor Lube Oil, ***Gear Unit Oil*** Cooler)	Pressure Boundary	Carbon Steel	Lubricating Oil (Internal)	Loss of Material/General, Pitting, Crevice, and Microbiologically Influenced Corrosion	One-Time Inspection (B.2.1.18)	VIII.G-6	3.4.1-12	B

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Heat exchanger components (Makeup, ~~Decay Heat Removal,~~ RB Spray Pump & Motor Lube Oil, ***Gear Unit Oil*** Cooler)	Pressure Boundary	Copper Alloy with 15% Zinc or More	Closed Cycle Cooling Water (Internal)	Loss of Material/ Pitting, Crevice, and Galvanic Corrosion	Closed-Cycle Cooling Water (B.2.1.10)	VII.E1-2	3.3.1-51	B
Heat exchanger components (Makeup, ~~Decay Heat Removal,~~ RB Spray Pump & Motor Lube Oil, ***Gear Unit Oil*** Cooler)	Pressure Boundary	Copper Alloy with 15% Zinc or More	Closed Cycle Cooling Water (Internal)	Loss of Material/ Selective Leaching	Selective Leaching (B.2.1.19)	V.A-6	3.2.1-41	A
Heat exchanger components (Makeup, ~~Decay Heat Removal,~~ RB Spray Pump & Motor Lube Oil, ***Gear Unit Oil*** Cooler)	Pressure Boundary	Copper Alloy with 15% Zinc or More	Lubricating Oil (External)	Loss of Material/ Pitting and Crevice Corrosion	Lubricating Oil Analysis (B.2.1.23)	VII.C1-8	3.3.1-26	D
Heat exchanger components (Makeup, ~~Decay Heat Removal,~~ RB Spray Pump & Motor Lube Oil, ***Gear Unit Oil*** Cooler)	Pressure Boundary	Copper Alloy with 15% Zinc or More	Lubricating Oil (External)	Loss of Material/ Pitting and Crevice Corrosion	One-Time Inspection (B.2.1.18)	VII.C1-8	3.3.1-26	D

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Heat exchanger components (Makeup, RB Spray Pump & Motor Lube Oil, Gear Unit Oil Cooler)	***Pressure Boundary***	***Copper Alloy with 15% Zinc or More***	***Lubricating Oil (External)***	***Loss of Material/ Microbiologically Influenced Corrosion***	***Lubricating Oil Analysis (B.2.1.23)***			***H, 5***
Heat exchanger components (Makeup, RB Spray Pump & Motor Lube Oil, Gear Unit Oil Cooler)	***Pressure Boundary***	***Copper Alloy with 15% Zinc or More***	***Lubricating Oil (External)***	***Loss of Material/ Microbiologically Influenced Corrosion***	***One-Time Inspection (B.2.1.18)***			***H, 5***
Heat exchanger components (Reactor Building Fan Motor, ***Decay Heat Removal & Makeup Motor Air*** Coolers)	Pressure Boundary	Copper Alloy with 15% Zinc or More	Air with Borated Water Leakage (External)	Loss of Material/Boric Acid Corrosion	Boric Acid Corrosion (B.2.1.4)	VII.I-12	3.3.1-88	C
Heat exchanger components (Reactor Building Fan Motor, ***Decay Heat Removal & Makeup Motor Air*** Coolers)	Pressure Boundary	Copper Alloy with 15% Zinc or More	Closed Cycle Cooling Water (Internal)	Loss of Material/ Pitting, Crevice, and Galvanic Corrosion	Closed-Cycle Cooling Water (B.2.1.10)	VII.E1-2	3.3.1-51	B
Heat exchanger components (Reactor Building Fan Motor, ***Decay Heat Removal & Makeup Motor Air*** Coolers)	Pressure Boundary	Copper Alloy with 15% Zinc or More	Closed Cycle Cooling Water (Internal)	Loss of Material/Selective Leaching	Selective Leaching (B.2.1.19)	V.A-6	3.2.1-41	A

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Heat exchanger components (Decay Heat Removal & Makeup Motor Air Coolers)	***Heat Transfer***	***Copper Alloy with 15% Zinc or More***	***Air with Borated Water Leakage (External)***	***Reduction of Heat Transfer/Fouling***	***Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components (B.2.1.22)***			***G***
Heat exchanger components (Decay Heat Removal & Makeup Motor Air Coolers)	***Heat Transfer***	***Copper Alloy with 15% Zinc or More***	***Closed Cycle Cooling Water (Internal)***	***Reduction of Heat Transfer/Fouling***	***Closed-Cycle Cooling Water (B.2.1.10)***	***VII.C2-2***	***3.3.1-52***	***B***
Heat exchanger components (Control Rod Drive Cooling Coils, ***Decay Heat Removal Pumps Bearing Cooling***)	Heat Transfer	Stainless Steel	Closed Cycle Cooling Water (Internal)	Reduction of Heat Transfer/Fouling	Closed-Cycle Cooling Water (B.2.1.10)	VII.C2-3	3.3.1-52	B
Heat exchanger components (Reactor Coolant Drain Tank Heat Exchanger ***Decay Heat Removal Pumps Bearing Cooling***)	Pressure Boundary	Stainless Steel	Closed Cycle Cooling Water (Internal)	Loss of Material/Pitting and Crevice Corrosion	Closed-Cycle Cooling Water (B.2.1.10)	V.D1-4	3.2.1.28	B
Heat exchanger components (Decay Heat Removal Pumps Bearing Cooling)	***Heat Transfer***	***Stainless Steel***	***Lubricating Oil (External)***	***Reduction of Heat Transfer/Fouling***	***Lubricating Oil Analysis (B.2.1.23)***	***VIII.G-12***	***3.4.1-10***	***B***

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Heat exchanger components (Decay Heat Removal Pumps Bearing Cooling)	***Heat Transfer***	***Stainless Steel***	***Lubricating Oil (External)***	***Reduction of Heat Transfer/Fouling***	***One-Time Inspection (B.2.1.18)***	***VIII.G-12***	***3.4.1-10***	***B***
Heat exchanger components (Decay Heat Removal Pumps Bearing Cooling)	***Pressure Boundary***	***Stainless Steel***	***Air with Borated Water Leakage (External))***	***None***	***None***	***VII.J-16***	***3.3.1-99***	***A***
Heat exchanger components (Decay Heat Removal Pumps Bearing Cooling)	***Pressure Boundary***	***Stainless Steel***	***Lubricating Oil (External)***	***Loss of Material/Pitting, Crevice, and Microbiologically Influenced Corrosion***	***Lubricating Oil Analysis (B.2.1.23)***	***VII.H2-17***	***3.3.1-33***	***B***
Heat exchanger components (Decay Heat Removal Pumps Bearing Cooling)	***Pressure Boundary***	***Stainless Steel***	***Lubricating Oil (External)***	***Loss of Material/Pitting, Crevice, and Microbiologically Influenced Corrosion***	***One-Time Inspection (B.2.1.18)***	***VII.H2-17***	***3.3.1-33***	***B***
Heat exchanger components (Auxiliary Boiler Sample Rack Coolers, ***TCU Unit***)	Leakage Boundary	Stainless Steel	Treated Water (Internal)	Loss of Material/Pitting and Crevice Corrosion	Water Chemistry (B.2.1.2)	VII.A4-2	3.3.1-23	A
Heat exchanger components (Auxiliary Boiler Sample Rack Coolers, ***TCU Unit***)	Leakage Boundary	Stainless Steel	Treated Water (Internal)	Loss of Material/Pitting and Crevice Corrosion	One-Time Inspection (B.2.1.18)	VII.A4-2	3.3.1-23	B

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Heat exchanger components (Primary and Secondary Cooling Coils, ***TCU Unit***)	Leakage Boundary	Stainless Steel	Air – Indoor (External)	None	None	VII.J-15	3.3.1-94	C
Heat exchanger components (Primary and Secondary Cooling Coils, ***TCU Unit***)	Leakage Boundary	Stainless Steel	Closed Cycle Cooling Water (Internal)	Loss of Material/Pitting and Crevice Corrosion	Closed-Cycle Cooling Water (B.2.1.10)	V.D1-4	3.2.1.28	B
Heat exchanger components (Control Building Air Conditioning, ***Isolated Phase Bus Duct Coolers***)	Leakage Boundary	Copper Alloy with 15% Zinc or More	Air – Indoor (External)	None	None	V.F-3	3.2.1-53	C
Heat exchanger components (Control Building Air Conditioning, ***Isolated Phase Bus Duct Coolers***)	Leakage Boundary	Copper Alloy with 15% Zinc or More	Closed Cycle Cooling Water (Internal)	Loss of Material/General, Pitting, Crevice, and Galvanic Corrosion	Closed-Cycle Cooling Water (B.2.1.10)	VII.E1-2	3.3.1-51	B
Heat exchanger components (Control Building Air Conditioning, ***Isolated Phase Bus Duct Coolers***)	Leakage Boundary	Copper Alloy with 15% Zinc or More	Closed Cycle Cooling Water (Internal)	Loss of Material/Selective Leaching	Selective Leaching (B.2.1.19)	V.A-6	3.2.1-41	A

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Piping and fittings	*Leakage Boundary*	*Copper Alloy with 15% Zinc or More*	*Air – Indoor (External)*	*None*	*None*	*VIII.I-2*	*3.4.1-41*	*A*
Piping and fittings	*Leakage Boundary*	*Copper Alloy with 15% Zinc or More*	*Treated Water (Internal)*	*Loss of Material/Pitting and Crevice Corrosion*	*One-Time Inspection (B.2.1.18)*	*VIII.A-5*	*3.4.1-15*	*B*
Piping and fittings	*Leakage Boundary*	*Copper Alloy with 15% Zinc or More*	*Treated Water (Internal)*	*Loss of Material/Pitting and Crevice Corrosion*	*Water Chemistry (B.2.1.2)*	*VIII.A-5*	*3.4.1-15*	*A*
Piping and fittings	*Leakage Boundary*	*Copper Alloy with 15% Zinc or More*	*Treated Water (Internal)*	*Loss of Material/Selective Leaching*	*Selective Leaching of Materials (B.2.1.19)*	*VII.C2-7*	*3.3.1-84*	*A*
Piping and fittings	*Leakage Boundary*	*Copper Alloy with 15% Zinc or More*	*Closed Cycle Cooling Water (Internal)*	*Loss of Material/Pitting and Crevice Corrosion*	*Closed-Cycle Cooling Water (B.2.1.10)*	*VII.C2-4*	*3.3.1-51*	*I, 3*
Piping and fittings	*Leakage Boundary*	*Copper Alloy with 15% Zinc or More*	*Closed Cycle Cooling Water (Internal)*	*Loss of Material/Selective Leaching*	*Selective Leaching of Materials (B.2.1.19)*	*VII.C2-6*	*3.3.1-84*	*A*
Valve Body	*Leakage Boundary*	*Copper Alloy with 15% Zinc or More*	*Treated Water (Internal)*	*Loss of Material/Pitting and Crevice Corrosion*	*One-Time Inspection (B.2.1.18)*	*VIII.A-5*	*3.4.1-15*	*B*
Valve Body	*Leakage Boundary*	*Copper Alloy with 15% Zinc or More*	*Treated Water (Internal)*	*Loss of Material/Pitting and Crevice Corrosion*	*Water Chemistry (B.2.1.2)*	*VIII.A-5*	*3.4.1-15*	*A*

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Valve Body	*Leakage Boundary*	*Copper Alloy with 15% Zinc or More*	*Treated Water (Internal)*	*Loss of Material/Selective Leaching*	*Selective Leaching of Materials (B.2.1.19)*	*VII.C2-7*	*3.3.1-84*	*A*

Plant Specific Notes:

5. ***The aging effects/mechanisms of copper alloy in a lubricating oil environment include loss of material due to microbiologically influenced corrosion. These aging effects/mechanisms are managed by the Lubricating Oil Analysis and One-Time Inspection Programs.***

RAI # 2.3.3.9-1

Background:

On license renewal drawing LR-302-351, the emergency diesel generator (EDG), air start system, air compressor has a standby diesel engine to drive the compressor in the event of a failure of the motor shown as not included in scope for license renewal. The standby diesel engine includes a tank and lines containing diesel fuel.

In accordance with LRA Section 2.1.5.2, the applicant used the preventive option approach, as described in NEI 95-10, to scope nonsafety-related components with a potential for physical or spatial interaction with safety-related SSCs. Potential spatial interaction is assumed in any structure that contains active or passive safety-related SSCs. Nonsafety-related systems and components that contain water, oil, or steam, and are located inside structures that contain safety-related SSCs, are included in scope for potential spatial interaction under criterion 10 CFR 54.4(a)(2), unless located in an excluded room.

Issue:

The standby diesel engine to the EDG air start compressor includes lines containing diesel fuel. In accordance with the applicant's methodology as described in LRA Section 2.1.5.2, this component should be included in scope under 10 CFR 54.4(a)(2).

Request:

Justify the exclusion of the fluid-filled tank and lines on the standby diesel engine for the EDG air start system air compressor from the scope of license renewal under 10 CFR 54.4(a)(2).

AmerGen Response

The fuel tank for the standby diesel engine is in scope and subject to aging management review and should have been included in Table 2.3.3-9 and Table 3.3.2-9 as shown below. The standby diesel engine fuel lines (piping and fittings, hoses), fuel filters, and fuel pump casing are included in scope and subject to aging management review and are included in LRA Tables 2.3.3-9 and 3.3.2-9 under the following component types: "Filter Housing", "Hoses", "Piping and fittings", and "Pump Casing (Engine-driven Fuel Oil Pump)".

Drawing LR-302-351 should have shown the standby diesel engine component as in-scope for license renewal.

The component type of "Tank (Standby Diesel Engine)" should have been included in LRA Table 2.3.3-9 as follows:

Table 2.3.3-9 Emergency Diesel Generators and Auxiliary Systems

Components Subject to Aging Management Review

Component Type	Intended Functions
Tank (Standby Diesel Engine)	*Leakage Boundary*

The component type of "Tank (Standby Diesel Engine)" should have been included in LRA Table 3.3.2-9 as follows:

Table 3.3.2-9 Emergency Diesel Generators and Auxiliary Systems

Component Type	Intended Function	Material	Environment	Aging Effect/ Mechanism Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Tank (Standby Diesel Engine)	*Leakage Boundary*	*Carbon Steel*	*Fuel Oil (Internal)*	*Loss of Material/General, Pitting, Crevice, and Microbiologically Influenced Corrosion, and Fouling*	*Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components (B.2.1.22)*	*VII.H1-10*	*3.3.1-20*	*E, 6*
Tank (Standby Diesel Engine)	*Leakage Boundary*	*Carbon Steel*	*Air - Indoor (Exterior)*	*Loss of Material/General Corrosion*	*External Surfaces Monitoring (B.2.1.21)*	*VII.I-8*	*3.3.1-58*	*B*

RAI # 2.3.3.14-1

Background:

On license renewal drawing LR-302-276, the instrument air (IA) system has a two-hour backup instrument air charging compressor. The charging compressor is not included in scope for license renewal. The charging compressor includes an oil pump and piping containing oil that operates up to 1500 psi. This charging compressor is located in the emergency diesel generator (EDG) room, next to the EDG.

Similar to the discussion in RAI# 2.3.3.9-1, nonsafety-related systems and components that contain water, oil, or steam, and are located inside structures that contain safety-related SSCs, are included in scope for potential spatial interaction under criterion 10 CFR 54.4(a)(2), unless located in an excluded room.

Issue:

The backup instrument air charging compressor includes components containing oil. In accordance with the applicant's methodology as described in LRA Section 2.1.5.2, this component should be included in scope under 10 CFR 54.4(a)(2).

Request:

Justify the exclusion of the backup instrument air charging compressor from the scope of license renewal under 10 CFR 54.4(a)(2).

AmerGen Response

The oil lines associated with the Two Hour Backup Instrument Air Charging Compressor are included in the scope of license renewal and should have been shown as leakage boundary piping on the license renewal drawing LR-302-276.

Table 2.3.3-14 should have included the component type and intended function that follows:

Table 2.3.3-14 Instrument and Control Air System

Components Subject to Aging Management Review

Component Type	Intended Functions
Piping & Fittings (Two Hour Backup Instr Air Charging Compressor)	***Leakage Boundary***

The components listed in the following table should have been included in the LRA Table 3.3.2-14 as follows:

Table 3.3.2-14 Instrument and Control Air System

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Piping & Fittings (Two Hour Backup Instr Air Charging Compressor)	*Leakage Boundary*	*Stainless Steel*	*Lubricating Oil (Internal)*	*Loss of Material/ Pitting, Crevice & Microbiologically Influenced Corrosion*	*Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components (B.2.1.22)*	*VIII.E-26*	*3.4.1-19*	*E, 8*
Piping & Fittings (Two Hour Backup Instr Air Charging Compressor)	*Leakage Boundary*	*Stainless Steel*	*Air-Indoor (External)*	*None*	*None*	*VII.J-15*	*3.3.1-94*	*A*

Plant Specific Notes

8. This component, material and environment combination is associated with the interior lubrication system on the Two Hour Charging Compressor. As such, the Lubricating Oil Analysis and One-Time Inspection programs do not apply. The aging effects/mechanisms will be managed by the Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components Program.

The Environments List in Section 3.3.2.1.14 should have shown the following:

3.3.2.1.14 Instrument and Control Air System

Materials

- ***Lubricating Oil***

The Aging Management Programs List in Section 3.3.2.1.14 should have shown the following:

Aging Management Programs

- ***Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components (B.2.1.22)***

RAI # 2.3.3.14-2

Background:

On license renewal drawing LR-302-271, at location D-7, the piping up to a temperature instrument connected to instrument air aftercooler IA-C-1A, is highlighted in green, indicating that it is in the scope of license renewal for 10 CFR 54.4 (a)(1) or (a)(3) criteria according to note on license renewal drawing LR-302-003. On the same license renewal drawing LR-302-271, at location D-6, the piping to a similar temperature instrument connected to instrument air after-cooler IA-C-1B, is not highlighted, indicating that it is not in the scope of license renewal.

Issue:

The IA piping from the instrument air after-cooler IA-C-1B to the temperature sensor is part of the pressure boundary of the IA system and should be included in the scope of license renewal in accordance with 10 CFR 54.4 (a)(1).

Request:

Justify the exclusion of the piping to the temperature instrument connecting to instrument air after-cooler IA-C-1B from the scope of license renewal.

AmerGen Response

The piping up to and including the temperature instrument located on the instrument air after-cooler IA-C-1B at location D-6 on drawing LR-302-271 is included in the scope of license renewal and should have been shown as in scope on the drawing.

RAI # 2.3.3.17-1

Background:

On license renewal drawing LR-302-181, at locations F-2 through F-8 and G-7, the primary sampling coolers tube side components are highlighted in red, indicating that they are within the scope of license renewal under 10 CFR 54.4 (a)(2), according to Note 1 on drawing LR-302-003.
On license renewal drawing LR-302-181, at location G-9, the condensate pump sample cooler tube side components are highlighted in red, indicating that they are within the scope of license renewal under 10 CFR 54.4 (a)(2), according to Note 1 on license renewal drawing LR-302-003.

Issue:

Note 3 on license renewal drawing LR-302-181 reads: "The tube side of the Sample Coolers is evaluated for aging management with the LGS System. The shell side of the coolers is evaluated for aging management with the CCCW System." However, LRA Table 2.3.3-17, Liquid and Gas Sampling System, Components Subject to Aging Management Review, does not list these coolers as subject to an AMR.

Note 4 on license renewal drawing LR-302-181 reads: "The tube side of the Condensate Pump Sample Cooler is evaluated for aging management with the LGS System. The shell side of the cooler is evaluated for aging management with the CCCW System." However, LRA Table 2.3.3-17 does not list this cooler as subject to AMR.

Request:

a) Justify the exclusion of the tube side of the primary sampling coolers from Table 2.3.3-17 as a component subject to an AMR.

b) Justify the exclusion of the tube side of the condensate pump sample cooler from Table 2.3.3-17 as a component subject to an AMR.

AmerGen Response

a) The Primary Sample Coolers located at F-2 through F-8 and G-7 on LR-302-181 are tube in tube coolers. The inner tubes, which were incorrectly shown as red, are contained within the outer tubes. The nonsafety-related inner tube side of the coolers are not connected to safety-related piping, do not have a spatial relationship such that their failure could adversely impact on the performance of a safety-related SSC intended function, and are not credited for any regulatory events; therefore, they do not perform any intended functions and are not in scope. LR-302-181 should have depicted the inner tube side of the coolers as black, indicating the inner tube side is not in scope for license renewal. Note 3 should have read, "The Primary Sample Coolers are evaluated for aging management with the CCCW System." The Primary Sample Coolers are not listed in Table 2.3.3-17 because the inner tube side of the coolers do not perform any intended function and the outer tube side, which performs a leakage boundary intended function, is evaluated with Closed Cycle Cooling Water. Refer to Table 2.3.3-4 for a list of Closed Cycle Cooling Water components subject to Aging Management Review.

b) Condensate Pump Sample Cooler located at G-9 is a tube in tube cooler. The outer tube of the cooler performs a leakage boundary intended function and is correctly shown as red; however, it was omitted from Table 2.3.3-17 and Table 3.3.2-17. The inner tube, which is not in scope and was incorrectly shown as red, is contained within the outer tube. The nonsafety-related inner tube side of the cooler is not connected to safety-related piping, does not have a spatial relationship such that its failure could adversely impact on the performance of a safety-related SSC intended function, and is not credited for any regulatory events; therefore, the inner tube side does not perform any intended functions and is not in scope. LR-302-181 should have depicted the inner tube side of the cooler as black, indicating the inner tube side is not in scope for license renewal. Note 4 should have read, "The Condensate Pump Sample Cooler is evaluated for aging management with the LGS System." Table 2.3.3-17 should have included the component type and intended function as follows:

Table 2.3.3-17 Liquid and Gas Sampling System

Components Subject to Aging Management Review

Component Type	Intended Functions
Heat exchanger components (Condensate Pump Sample Cooler)	***Leakage Boundary***

The External Surfaces Monitoring program, B.2.1.21, will be used to manage loss of material due to general corrosion of the Condensate Pump Sample Cooler; therefore, Table 3.3.1 Item Number 3.3.1-58 should have included the Liquid and Gas Sampling System in the Discussion list of applicable systems for the External Surfaces Monitoring program. The cooler should have been included in LRA Table 3.3.2-17 as follows:

Table 3.3.2-17 Liquid and Gas Sampling System

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Heat exchanger components (Condensate Pump Sample Cooler)	*Leakage Boundary*	*Carbon Steel*	*Air – Indoor (External)*	*Loss of Material/General Corrosion*	*External Surfaces Monitoring (B.2.1.21)*	*VII.I-8*	*3.3.1-58*	*B*
Heat exchanger components (Condensate Pump Sample Cooler)	*Leakage Boundary*	*Carbon Steel*	*Treated Water (Internal)*	*Loss of Material/General, Pitting, and Crevice Corrosion*	*Water Chemistry (B.2.1.2)*	*VIII.E-37*	*3.4.1-3*	*A*
Heat exchanger components (Condensate Pump Sample Cooler)	*Leakage Boundary*	*Carbon Steel*	*Treated Water (Internal)*	*Loss of Material/General, Pitting, and Crevice Corrosion*	*One-Time Inspection (B.2.1.18)*	*VIII.E-37*	*3.4.1-3*	*B*

RAI 2.3.3.17-2

Background:

On license renewal drawing LR-302-182, at locations C-2 and E-2, the chillers are highlighted in red, indicating that they are within the scope of license renewal under 10 CFR 54.4 (a)(2) criteria according to Note 1 on drawing LR-302-003.

Issue:

Note 3 on license renewal drawing LR-302-182 reads: "The tube side and shell side of the Chillers are evaluated for Aging Management with the LGS System." However, LRA Table 2.3.3-17, Liquid and Gas Sampling System, Components Subject to Aging Management Review, does not list these chillers as subject to an AMR.

Request:

Justify the exclusion of the tube side and shell side of the chillers from Table 2.3.3-17 as a component subject to an AMR.

AmerGen Response

The Secondary Sample Chillers, SS-C-1 and SS-C-2, are in scope for License Renewal as depicted on LR-302-182, but were omitted from Table 2.3.3-17 and Table 3.3.2-17. LRA Table 2.3.3-17 should have included component type and intended function as follows:

Table 2.3.3-17 Liquid and Gas Sampling System

Components Subject to Aging Management Review

Component Type	Intended Functions
Heat exchanger components (Secondary Sample Chillers)	***Leakage Boundary***

The External Surfaces Monitoring program, B.2.1.21, will be used to manage loss of material due to general corrosion of the Secondary Sample Chillers; therefore, Table 3.3.1 Item Number 3.3.1-58 should have included the Liquid and Gas Sampling System in the Discussion list of applicable systems for the External Surfaces Monitoring program. The chillers should have been included in LRA Table 3.3.2-17 as follows:

Table 3.3.2-17 Liquid and Gas Sampling System

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Heat exchanger components (Secondary Sample Chillers)	*Leakage Boundary*	*Carbon Steel*	*Air - Indoor (External)*	*Loss of Material/General Corrosion*	*External Surfaces Monitoring (B.2.1.21)*	*VII.I-8*	*3.3.1-58*	*B*
Heat exchanger components (Secondary Sample Chillers)	*Leakage Boundary*	*Carbon Steel*	*Treated Water (Internal)*	*Loss of Material/General, Pitting, and Crevice Corrosion*	*Water Chemistry (B.2.1.2)*	*VIII.E-37*	*3.4.1-3*	*A*
Heat exchanger components (Secondary Sample Chillers)	*Leakage Boundary*	*Carbon Steel*	*Treated Water (Internal)*	*Loss of Material/General, Pitting, and Crevice Corrosion*	*One-Time Inspection (B.2.1.18)*	*VIII.E-37*	*3.4.1-3*	*B*

RAI 2.3.3.17-3

Background:

On various license renewal drawings, the applicant shows the piping leading up to and out of an enclosure, such as a sampling panel, highlighted in red, indicating that the components are within the scope of license renewal under 10 CFR 54.4 (a)(2) criteria according to Note 1 on drawing LR-302-003. Yet, the piping inside the panel and the panel enclosure walls are not shown as in scope. Examples of this condition can be found on license renewal drawing LR-302-181, at location E-9; the iron sampler housing, the sampling rack just below the iron sampler, and the piping inside these enclosures are all shown in black, not highlighted.

Issue:

The piping in the room up to the sampling rack and iron sampler housing is highlighted in red, indicating it is within the scope of license renewal under 10 CFR 54.4(a)(2). The staff would expect either the internal components or the panel to be included within scope of license renewal.

Request:

Justify the exclusion of the housing panels and their internal piping and components from being in scope for an AMR in accordance with 10 CFR 54.4(a)(2). In addition, provide a general explanation of how piping and components inside enclosures, as illustrated above, are evaluated for inclusion in scope under 10 CFR 54.4(a)(2).

AmerGen Response

These enclosures are in scope and evaluated for license renewal in Section 2.4.13, Structural Commodities as commodity type Cabinets, Enclosures and Panels for Electrical Equipment and Instrumentation. AmerGen's practice was to not highlight structural components on mechanical drawings.

As indicated on the drawing, piping up to the enclosure is required to perform a leakage boundary function; therefore, it is subject to AMR for 10 CFR 54.4(a)(2) due to the potential of spatial interaction with safety-related equipment. Piping inside the enclosure does not have a potential for spatial interaction with safety-related equipment, because the enclosure protects the safety-related equipment from spray originating from the nonsafety-related components. Refer to Table 2.4-13 and AMR Table 3.5.2-13.

RAI # 2.3.3.19-1

Background:

On license renewal drawing LR-302-203 at locations C-3 through C-5 and B-3 through B-5, the traveling water screens and auto bar rakes are highlighted in green, indicating that they are within the scope of license renewal under 10 CFR 54.4 (a)(1) or (a)(3) according to Note 1 on license renewal drawing LR-302-003. The traveling water screens and debris bars (bar racks, not the automatic rakes) have a passive intended function of filter. LRA Section 2.3.3.19, Open Cycle Cooling Water System (OCCWS), on page 2.3-139 in the last paragraph, states that the OCCWS System boundary begins at the intake screen and pump house bar racks.

Issue:

The staff noted that, in LRA Table 2.3.3-19, Open Cycle Cooling Water System, Components Subject to Aging Management Review, the traveling water screens and debris bars have not been listed. A review of LRA Section 2.4.8, Intake Screen and Pump House, indicates the traveling water screens and debris bars have also not been included in this building system.

Request:

Justify the exclusion of the components bar racks and traveling screens for the intended function of filter from Table 2.3.3-19.

AmerGen Response

The bar racks are passive components within the scope of license renewal with a filter intended function. The bar racks are subject to aging management and should have been included in Table 2.3.3-19. The traveling screens are also within the scope of license renewal with a filter intended function, but are active components and not subject to aging management review. Due to their active intended function, the traveling screens were excluded from Table 2.3.3-19.

Additionally, bar grids are located at the outermost portion of the intake structure. The bars grids are 2-foot by 2-foot stainless steel grids that prevent large debris from entering the intake. They perform a filter passive intended function similar to the function of the bar racks. These bar grids are not shown on drawing LR-302-203.

Paragraphs one and two of "System Operation" in LRA Section 2.3.3.19 on page 2.3-138 should have read as follows:

> The OCCW System is comprised of ***bar grids***, bar rakes, ***bar racks***, traveling screens, river water pumps, strainers, piping and components, heat exchangers, and instrumentation and control. The river water pumps are the Decay Heat River, Nuclear Service River Water, Secondary Service Cooling Water, and Screen House Ventilation Cooling Water Pumps.
>
> ~~Automatic Bar Rakes remove the initial large debris from the river water at the entrance to the Intake Screen and Pump House (ISPH)~~. ***Stainless steel bar grids, with a 2-foot horizontal spacing and a 3.5-foot vertical spacing, are located on the inlet openings of the Intake Screen and Pump House (ISPH)***

to prevent large river debris from entering the ISPH. Downstream of the bar grids, carbon steel bar racks are positioned to provide a 1- inch clearance for a finer passive filtering of river debris. Collected debris is removed automatically by ~~a~~ power driven ~~rake~~ ***bar rakes***, which lifts trash up the front of the vertical ~~bars~~ ***bar racks*** and dumps the trash into a trough. Traveling screens are located just after the ~~automatic~~ bar ~~rakes~~ ***racks***. Small ~~size~~ ***3/8-inch*** openings in the traveling screens catch debris that has passed through the bar ~~rakes~~ ***racks.*** The traveling screens are cleaned by pumped river water that is strained and then sprayed on the screens. ***The bar grids, bar rakes, bar racks, and traveling screens together perform a filtering function that assures a highly reliable, screened supply of river water at the suction of the Nuclear Services and Decay Heat River Water Pumps, allowing them to perform their nuclear safety-related function. Based on this filter function, these components are included the OCCW System scope required for License Renewal. The bar rakes and traveling screens are considered active components and are not subject to aging management review.***

Paragraphs one and two of "System Boundary " in LRA Section 2.3.3.19 on page 2.3-139 should read as follows:

> The OCCW System boundary begins at the ISPH bar ~~racks~~ ***grids***. The system continues through the ***bar rakes, bar racks***, traveling screens, river water pumps***,*** and strainers and ***then runs*** underground into the Heat Exchanger Vault and Turbine Building. The system then passes through the heat exchangers and leads to the common river discharge line. The system then passes through the river discharge line in both directions to the East Dike and through the MDCT basin, radiation monitor pit, and to discharge at the river. The OCCW boundary also includes the radiation monitor pit pump, associated piping and valves, and radiation monitor. The boundary includes discharge piping through, but not including, the East Dike.
>
> The boundary includes the Screen House Ventilation Equipment pumps, strainers, piping, through the vent equipment, to the ISPH. The Screen House Ventilation cooling coils are evaluated with the Intake Screen and Pump House Ventilation System. The boundary also includes the Screen Wash pumps ***and continues*** through the pump discharge strainers, traveling water screens, ***and*** auto bar rakes~~,~~ to the sluice canal. The boundary includes the river pump strainer backwash, ***which*** discharges to the river.

System Intended Function #2 in LRA Section 2.3.3.19 on page 2.3-141 should have read as follows:

> 2. Resist nonsafety-related SSC failure that could prevent satisfactory accomplishment of a safety-related function. 10 CFR 54.4(a)(2). ***The bar grids, bar rakes, bar racks, and traveling screens together perform a filtering function that assures a highly reliable, screened supply of river water at the suction of the Nuclear Service and Decay Heat River Water Pumps, allowing them to perform their nuclear safety-related function. The OCCW System also contains nonsafety-rated water-filled lines,***

which have the potential for spatial interaction (spray or leakage) with safety-related SSC's.

Table 2.3.3-19 should have included the component type of "strainer element" and intended function of "filter" for the ISPH bar grid and bar racks as shown below.

Table 2.3.3-19 Open Cycle Cooling Water System

Components Subject to Aging Management Review

Component Type	Intended Functions
Strainer Element (ISPH Bar Grids, ISPH Bar Racks)	*Filter*

LRA Section 3.3.2.1.19, as shown below, includes the Structures Monitoring (B.2.1.28) aging management program.

3.3.2.1.19 Open Cycle Cooling Water System

Aging Management Programs

- ***Structures Monitoring (B.2.1.28)***

Table 3.3.2.19, as shown below, includes the aging management for the ISPH bar grids and bar racks.

Table 3.3.2.19 Open Cycle Cooling Water System

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Strainer Element (ISPH Bar Grids, ISPH Bar Racks)	*Filter*	*Carbon Steel*	*Air – Indoor (External)*	*Loss of Material/General Corrosion*	*Structures Monitoring Program (B.2.1.28)*	*VII.I-8*	*3.3.1-58*	*E, 4*
Strainer Element (ISPH Bar Grids, ISPH Bar Racks)	*Filter*	*Carbon Steel*	*Raw Water (Internal)*	*Loss of Material/ General, Pitting, Crevice, and Microbiologically Influenced Corrosion, fouling, and lining/coating degradation*	*Structures Monitoring Program (B.2.1.28)*	*VII.C1-19*	*3.3.1-76*	*E, 3*
Strainer Element (ISPH Bar Grids, ISPH Bar Racks)	*Filter*	*Stainless Steel*	*Air – Outdoor (External)*	*Loss of Material/Pitting and Crevice Corrosion*	*Structures Monitoring Program (B.2.1.28)*	*III.B4-7*	*3.5.1-50*	*C*
Strainer Element (ISPH Bar Grids, ISPH Bar Racks)	*Filter*	*Stainless Steel*	*Raw Water (Internal)*	*Loss of Material/Pitting and Crevice Corrosion, and fouling*	*Structures Monitoring Program (B.2.1.28)*	*VII.C1-15*	*3.3.1-79*	*E, 2*

Plant Specific Notes:

2. The aging effects/mechanisms of stainless steel in a raw water environment include loss of material due to pitting, crevice, and microbiologically influenced corrosion, and fouling. These aging effect mechanisms are managed by the Structures Monitoring Program.
3. The aging effects/mechanisms of carbon steel in a raw water environment include loss of material/ general, pitting, crevice, and microbiologically influenced corrosion, fouling, and lining/coating degradation. These aging effect mechanisms are managed by the Structures Monitoring Program.
4. The aging effects/mechanisms of carbon steel in an indoor air environment include general corrosion. This aging effect mechanism is managed by the Structures Monitoring Program.

RAI # 2.3.3.19-2

Background:

On license renewal drawing LR-302-202 at locations C-5 and D-5, two restricting orifices are highlighted in red, indicating that they are within the scope of license renewal under 10 CFR 54.4 (a)(2) according to Note 1 on drawing LR-302-003.

Issue:

The staff noted that, LRA Table 2.3.3-19, Open Cycle Cooling Water System, Components Subject to Aging Management Review, shows restricting orifices with a pressure boundary function only, indicting they are in scope based on 10 CFR 54.4(a)(1) or (a)(3) criteria. Since the components are highlighted in red, the appropriate function for (a)(2) components would be leakage boundary; however, this function is not included in Table 2.3.3-19 for restricting orifices.

Request:

Justify the exclusion of the leakage boundary function for the restricting orifices from Table 2.3.3-19.

AmerGen Response

Restricting orifices in the Open Cycle Cooling Water System perform both pressure and leakage boundary functions. The restricting orifices shown on drawing LR-302-202 at locations C-5 and D-5 are within the scope for license renewal with the intended function of leakage boundary, but their intended function of leakage boundary was omitted from Tables 2.3.3-19 and 3.3.2-19.

Table 2.3.3-19 should have included the intended function of leakage boundary for the restricting orifices as follows:

Table 2.3.3-19 Open Cycle Cooling Water System

Components Subject to Aging Management Review

Component Type	Intended Functions
Restricting Orifices	***Leakage Boundary***

Table 3.3.2.19, should have included the leakage boundary function for the restricting orifices as follows:

Table 3.3.2.19 Open Cycle Cooling Water System

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Restricting Orifices	*Leakage Boundary*	*Stainless Steel*	*Air – Indoor (External)*	*None*	*None*	*VII.J-15*	*3.3.1-94*	*A*
Restricting Orifices	*Leakage Boundary*	*Stainless Steel*	*Raw Water (Internal)*	*Loss of Material/Pitting, Crevice, and Microbiologically Influenced Corrosion*	*Open-Cycle Cooling Water System (B.2.1.9)*	*VII.H2-18*	*3.3.1-80*	*B*

RAI # 2.3.3.20-1

Background:

On license renewal drawing LR-302-833, sheet 1, location G-7, an isokinetic nozzle (RE-A14) is highlighted in green, indicating it is within the scope of license renewal under 10 CFR 54.4 (a)(1) according to Note 1 on license renewal drawing LR-302-003. The nozzle is associated with the radiation monitor RM-A14 and has an intended function of pressure boundary and direct flow.

Issue:

LRA Table 2.3.3-20, Radiation Monitoring System, Components Subject to Aging Management Review, does not show the nozzle as a component with an intended function of pressure boundary or direct flow.

Request:

Justify the exclusion of the isokinetic nozzle from LRA Table 2.3.3-20.

AmerGen Response

The isokinetic nozzle shown on drawing LR-302-833, at location G-7, is within the scope for license renewal; however, it was omitted from Tables 2.3.3-20 and Table 3.3.2-20. The nozzle has the intended functions of direct flow and pressure boundary. The nozzle directs flow to the RM-A-14 manual sampling rack and penetrates surrounding ductwork. This component should have been included in Tables 2.3.3-20 and Table 3.3.2-20 as follows:

Table 2.3.3-20 Radiation Monitoring System

Components Subject to Aging Management Review

Component Type	Intended Functions
Nozzle (Isokinetic Nozzle)	*Direct Flow*
	Pressure Boundary

Aging management information for Table 3.3.2-20 is shown as follows:

Table 3.3.2-20 Radiation Monitoring System

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Nozzle (Isokinetic Nozzle)	*Direct Flow*	*Stainless Steel*	*Air/Gas Wetted (External)*	*Loss of Material/Pitting and Crevice Corrosion*	*One-Time Inspection (B.2.1.18)*	*VII.F2-1*	*3.3.1-27*	*E, 1*
Nozzle (Isokinetic Nozzle)	*Direct Flow*	*Stainless Steel*	*Air/Gas Wetted (Internal)*	*Loss of Material/Pitting and Crevice Corrosion*	*One-Time Inspection (B.2.1.18)*	*VII.F2-1*	*3.3.1-27*	*E, 1*
Nozzle (Isokinetic Nozzle)	*Pressure Boundary*	*Stainless Steel*	*Air/Gas Wetted (External)*	*Loss of Material/Pitting and Crevice Corrosion*	*One-Time Inspection (B.2.1.18)*	*VII.F2-1*	*3.3.1-27*	*E, 1*
Nozzle (Isokinetic Nozzle)	*Pressure Boundary*	*Stainless Steel*	*Air/Gas Wetted (Internal)*	*Loss of Material/Pitting and Crevice Corrosion*	*One-Time Inspection (B.2.1.18)*	*VII.F2-1*	*3.3.1-27*	*E, 1*

RAI 2.3.3.22-1

Background:

On license renewal drawing LR-302-846, at location D-3, level indicator LI-1007 is highlighted in red, indicating that it is within the scope of license renewal for 10 CFR 54.4 (a)(2) according to Note 1 on drawing LR-302-003. This component type typically includes a sight glass, which would have a leakage boundary function.

Issue:

Sight glass is not listed in Tables 2.3.3-22, Service Building Chilled Water System, Components Subject to Aging Management Review, and 3.3.2-22, Service Building Chilled Water System, Summary of Aging Management Evaluation, as a component type with a leakage boundary function.

Request:

Justify the exclusion of the component type "sight glass" from LRA Tables 2.3.3-22 and 3.3.2-22.

AmerGen Response

The sight glass, LI-1007, is in scope for License Renewal as depicted on LR-302-846, but was omitted from Table 2.3.3-22 and Table 3.3.2-22. Table 2.3.3-22 should have included component type and intended function as follows:

Table 2.3.3-22 Service Building Chilled Water System

Components Subject to Aging Management Review

Component Type	Intended Functions
Sight glass	***Leakage Boundary***

The component is comprised of carbon steel, which is already in Section 3.3.2.1.22, and glass. Additional material of glass should be included in Section 3.3.2.1.22 as follows:

3.3.2.1.22 Service Building Chilled Water System

Materials

- ***Glass***

The sight glass should have been included in LRA Table 3.3.2-22 as follows:

Table 3.3.2-22 Service Building Chilled Water System

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Sight glass	*Leakage Boundary*	*Carbon Steel*	*Air – Indoor (External)*	*Loss of Material/General Corrosion*	*External Surfaces Monitoring (B.2.1.21)*	*VII.I-8*	*3.3.1-58*	*B*
Sight glass	*Leakage Boundary*	*Carbon Steel*	*Closed Cycle Cooling Water*	*Loss of Material/General, Pitting, and Crevice Corrosion*	*Closed-Cycle Cooling Water System (B.2.1.10)*	*VII.C2-14*	*3.3.1-47*	*B*
Sight glass	*Leakage Boundary*	*Glass*	*Air – Indoor (External)*	*None*	*None*	*VII.J-7*	*3.3.1-93*	*A*
Sight glass	*Leakage Boundary*	*Glass*	*Closed Cycle Cooling Water*	*None*	*None*			*G, 3*

Plant Specific Notes

3. There are no aging effects for glass in a closed cycle cooling water environment.

RAI # 2.3.3.25-1

Background:

The staff noted that on license renewal drawing LR-302-162, at location G-1, a vacuum degasifier tank is highlighted in red, indicating that it is within the scope of license renewal for 10 CFR 54.4 (a)(2) according to Note 1 on drawing LR-302-003. This component type "tank" would have a leakage boundary function.

Issue:

LRA Table 2.3.3-25, Water Treatment & Distribution System, Components Subject to Aging Management Review, includes "tank" as a component type and itemizes which tanks are included; however, the table does not show "tank (vacuum degasifier)" as a component subject to an AMR.

Request:

Justify the exclusion of "tank (vacuum degasifier)" from LRA Table 2.3.3-25.

AmerGen Response

The drawing is correct. The vacuum degasifier tank is in scope for leakage boundary. This tank was omitted from LRA Table 2.3.3-25 Water Treatment & Distribution System Components Subject to Aging Management Review and LRA Table 3.3.2-25 Water Treatment & Distribution System Summary of Aging Management Evaluation.

As also indicated on drawing LR-302-162, the degasifier booster pumps are in scope for leakage boundary. The degasifier booster pumps were also omitted from LRA Tables 2.3.3-25 and 3.3.2-25.

LRA Table 2.3.3-25 should have included the following component types and their intended functions:

Table 2.3.3-25 Water Treatment & Distribution System

Components Subject to Aging Management Review

Component Type	Intended Functions
Pump Casing (Degasifier Booster Pumps)	*Leakage Boundary*
Tanks (Vacuum Degasifier Tank)	*Leakage Boundary*

LRA Table 3.3.2-25 should have included the following:

Table 3.3.2-25 Water Treatment & Distribution System Summary of Aging Management Evaluation

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Pump Casing (Degasifier Booster Pumps)	*Leakage Boundary*	*Ductile Cast Iron*	*Air – Indoor (External)*	*Loss of Material/General Corrosion*	*External Surfaces Monitoring (B.2.1.21)*	*VII.D-3*	*3.3.1-57*	*B*
Pump Casing (Degasifier Booster Pumps)	*Leakage Boundary*	*Ductile Cast Iron*	*Raw Water (Internal)*	*Loss of Material/General, Pitting, Crevice, and Microbiologically Influenced Corrosion, and Fouling*	*Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components (B.2.1.22)*	*VII.C1-19*	*3.3.1-76*	*E, 1*
Tanks (Vacuum Degasifier Tank)	*Leakage Boundary*	*Carbon Steel*	*Air – Indoor (External)*	*Loss of Material/General Corrosion*	*External Surfaces Monitoring (B.2.1.21)*	*VII.D-3*	*3.3.1-57*	*B*
Tanks (Vacuum Degasifier Tank)	*Leakage Boundary*	*Carbon Steel*	*Raw Water (Internal)*	*Loss of Material/General, Pitting, Crevice, and Microbiologically Influenced Corrosion, and Fouling*	*Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components (B.2.1.22)*	*VII.C1-19*	*3.3.1-76*	*E, 1*

RAI # 2.3.4.4-1

Background:

LRA Section 2.3.4.4, Extraction Steam System, states that the extraction steam system meets 10 CFR 54.4(a)(1) because it is a system that is relied upon to remain functional during and following design basis events.

Issue:

The staff could not identify the 10 CFR 54.4(a)(1) functions provided by the extraction steam system in order to verify the applicant did not omit any components.

Request:

Provide the functions that support the 10 CFR 54.4(a)(1) designation provided by the extraction steam system and identify the components that perform these functions.

AmerGen Response

The extraction steam system performs no 10 CFR 54.4(a)(1) intended functions. LRA Section 2.3.4.4, Reason for Scope Determination, incorrectly stated that extraction steam system meets 10 CFR 54.4(a)(1). The extraction steam system is in scope for license renewal because it meets 10CFR 54.4(a)(2).

LRA Section 2.3.4.4, "Reason for Scope Determination" should have read as follows:

> The Extraction Steam System is not in scope under 10 CFR 54.4(a)(1) because no portions of the system are safety-related and relied upon to remain functional during and following design basis events. It meets 10 CFR 54.4(a)(2) because failure of nonsafety-related portions of the system could prevent satisfactory accomplishment of function(s) identified for 10 CFR 54.4(a)(1). The Extraction Steam System is not in scope under 10 CFR 54.4(a)(3) because it is not relied upon in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for Fire Protection (10 CFR 50.48), Environmental Qualification (10 CFR 50.49), Pressurized Thermal Shock (10 CFR 50.61), Anticipated Transient Without Scram (10 CFR 50.62), and Station Blackout (10 CFR 50.63).

RAI # 2.3.4.8-1

Background:

On license renewal drawing LR-302-141, at location G-5, a turbine gland seal atmospheric drain tank is highlighted in red, indicating that it is within the scope of license renewal under 10 CFR 54.4 (a)(2) according to Note 1 on drawing LR-302-003. Typically, this component type "tank" has a leakage boundary function.

Issue:

LRA Table 2.3.4-8, Steam Turbine and Auxiliary Systems, Components Subject to Aging Management Review, includes "tank" as a component type and itemizes which tanks are included. However, the table does not show "tank (turbine gland seal)" as a component subject to an AMR.

Request:

Justify the exclusion of the turbine gland seal atmospheric drain tank from LRA Table 2.3.4-8.

AmerGen Response

The Turbine Gland Seal Atmospheric Drain Tank, GS-T-1, is a nonsafety-related tank within the scope of license renewal. It has a leakage boundary function and is subject to aging management review. This tank is part of the Condensate System and should have been included in LRA Tables 2.3.4-1 and 3.4.2-1 as shown below.

Boundary flags on drawings LR-302-141 and LR-302-172 incorrectly indicate that the turbine gland seal atmospheric drain tank and associated piping is part of the Steam Turbine & Auxiliaries System (STA). These flags should have been removed from the drawings. They are located at valves GS-V-14 (LR-302-141, G-5) and CO-V-60 (LR-302-172, D-4). Additionally, on drawing LR-302-141 at G-4, the STA flag should have been replaced by a Condensate System (CO) flag.

Table 2.3.4-1 Condensate System

Components Subject to Aging Management Review

Component Type	Intended Functions
Tanks (Condensate Seal Water Head Tank, Miscellaneous Drains Collection Tank, ***Turbine Gland Seal Atmospheric Drain Tank)***	*Leakage Boundary*

Table 3.4.2-1, as shown below, should have included the name and function of the Turbine Gland Seal Atmospheric Drain Tank as follows:

Table 3.4.2-1 Condensate System

Component Type	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Vol. 2 Item	Table 1 Item	Notes
Tanks (Condensate Seal Water Head Tank, Miscellaneous Drains Collection Tank, ***Turbine Gland Seal Atmospheric Drain Tank***)	Leakage Boundary	Carbon Steel	Air – Indoor (External)	Loss of Material/General, Corrosion	External Surfaces Monitoring (B.2.1.21)	VIII.H-7	3.4.1-28	B
Tanks (Condensate Seal Water Head Tank, Miscellaneous Drains Collection Tank, ***Turbine Gland Seal Atmospheric Drain Tank***)	Leakage Boundary	Carbon Steel	Treated Water (Internal)	Loss of Material/General, Pitting and Crevice Corrosion	One-Time Inspection (B.2.1.18)	VIII.E-40	3.4.1-6	B
Tanks (Condensate Seal Water Head Tank, Miscellaneous Drains Collection Tank, ***Turbine Gland Seal Atmospheric Drain Tank***)	Leakage Boundary	Carbon Steel	Treated Water (Internal)	Loss of Material/General, Pitting and Crevice Corrosion	Water Chemistry (B.2.1.2)	VIII.E-40	3.4.1-6	A