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SUSQUEHANNA STEAM ELECTRIC STATION
UNITS 1 AND 2, LICENSE RENEWAL APPLICATION (LRA)
SUPPLEMENTAL RESPONSE TO RAI B.2.14-2 **Docket Nos. 50-387**
PLA-6461 **and 50-388**

References: 1) *PLA-6110, Mr. B. T. McKinney (PPL) to Document Control Desk (USNRC), "Application for Renewed Operating License Numbers NPF-14 and NPF-22," dated September 13, 2006.*

2) *PLA-6400, Mr. B. T. McKinney (PPL) to Document Control Desk (USNRC), "Request for Additional Information for the Review of the Susquehanna Steam Electric Station Units 1 and 2, License Renewal Application (LRA) Sections B.2.14, B.2.25, B.2.32, and B.2.33," dated August 12, 2008.*

In accordance with the requirements of 10 CFR 50, 51, and 54, PPL requested the renewal of the operating licenses for the Susquehanna Steam Electric Station (SSES) Units 1 and 2 in Reference 1.

The enclosure to this letter provides amendments to various sections of the SSES License Renewal Application (LRA) to supplement the previous response to Request for Additional Information (RAI) B.2.14-2 provided in Reference 2. These changes are necessary to ensure consistency between impacted LRA sections and to update previously submitted information.

There are no new regulatory commitments contained herein. However, License Renewal Commitment #19 is revised as shown in the enclosure.

If you have any questions, please contact Mr. Duane L Filchner at (610) 774-7819.

A120
NRR

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

Executed on: 12-11-08

Richard D Pagodin for WHSpence

W. H. Spence

Enclosure: Supplemental Response to RAI B.2.14-2

Copy: NRC Region I
Ms. E. H. Gettys, NRC Project Manager, License Renewal, Safety
Mr. R. Janati, DEP/BRP
Mr. F. W. Jaxheimer, NRC Sr. Resident Inspector
Mr. A. L. Stuyvenberg, NRC Project Manager, License Renewal, Environmental

Enclosure to PLA-6461
Supplemental Response to RAI B.2.14-2

RAI-B.2.14-2:

In the program description of AMP B.2.14, Closed Cooling Water Chemistry Program, it states that the CCW Chemistry Program is supplemented by an appropriate one time inspection. The description mentions the AMP B.2.22 Chemistry Program Effectiveness Inspection and the AMP B.2.24 Heat Exchanger Inspection. Clarify whether the appropriate one-time inspection will be performed for all the Aging Management Review (AMR) Table-2 line items credited with using the AMP B.2.14. Also, please identify which one-time inspection, if any, will be used for any applicable AMR Table-2 line items that credit the AMP B.2.14 for aging management.

PPL Supplemental Response:

The original response to RAI B.2.14-2 in Reference 2 stated in part that, "The Chemistry Program Effectiveness Inspection (CPEI) will be used to supplement the Closed Cooling Water (CCW) Chemistry Program in the associated Table-2 line items, with the exception of the Diesel Jacket Cooling Water system. Corrosion monitoring probes are installed in the Diesel Jacket Cooling Water system to identify actual corrosion rates; therefore a separate one-time inspection is not necessary."

Subsequent reviews have identified that the LRA changes included in Reference 2 were incomplete with respect to the Diesel Generators System. As discussed in LRA Section B.2.14, corrosion probes in the Diesel Jacket Cooling Water system monitor actual corrosion rates, as part of the CCW Chemistry Program. As such, loss of material for steel components of the Diesel Generators System exposed to a treated water environment (Jacket Cooling Water) is managed by the Closed Cooling Water Chemistry Program only. However, loss of material for materials other than steel is not monitored by the corrosion probes installed in the system and the CPEI is appropriate to supplement the CCW Chemistry Program for these Table-2 line items.

The LRA is amended as follows to reflect this change.

- The following text in LRA Section 3.3.2.1.9 (on LRA pages 3.3-14 – 3.3-15) is revised by addition ***(bold italics)*** (Note: The Chemistry Program Effectiveness Inspection was previously deleted from the list of programs via the original response to RAI B.2.14-2 submitted in Reference 2):

3.3.2.1.9 Diesel Generators System

Aging Management Programs
The following aging management programs manage the aging effects for the Diesel Generators System components/commodities:

- Bolting Integrity Program
- Closed Cooling Water Chemistry Program
- ***Chemistry Program Effectiveness Inspection***
- Lubricating Oil Analysis Program
- Lubricating Oil Inspection
- Piping Corrosion Program
- Selective Leaching Inspection
- Supplemental Piping/Tank Inspection
- System Walkdown Program

➢ The following text in LRA Table 3.3.1 (on LRA page 3.3-62) is revised by addition ***(bold italics)*** and deletion (~~strikethrough~~) (Note: The Chemistry Program Effectiveness Inspection was previously deleted from the Discussion column via the original response to RAI B.2.14-2 submitted in Reference 2):

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of the GALL Report

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-23	Stainless steel and steel with stainless steel cladding heat exchanger components exposed to treated water	Loss of material due to pitting and crevice corrosion	Water Chemistry and One-Time Inspection	Yes, detection of aging effects is to be evaluated	The Closed Cooling Water Chemistry Program ***and the Chemistry Program Effectiveness Inspection are*** ~~is~~ credited to manage loss of material for stainless steel heat exchanger components that are exposed to treated water. A Note E is used. There are no steel with stainless steel cladding heat exchanger components that are exposed to treated water in the Auxiliary Systems for SSES. Further evaluation is documented in Section 3.3.2.2.10.2.

➢ The following text in LRA Table 3.3.1 (on LRA page 3.3-63) is revised by addition ***(bold italics)*** and deletion (~~strikethrough~~) (Note: Changes previously submitted in Reference 2 are included for clarity, but are not highlighted):

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of the GALL Report

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-24	Stainless steel and aluminum piping, piping components, and piping elements exposed to treated water	Loss of material due to pitting and crevice corrosion	Water Chemistry and One-Time Inspection	Yes, detection of aging effects is to be evaluated	Consistent with NUREG-1801. The BWR Water Chemistry Program and the Chemistry Program Effectiveness Inspection are credited to manage loss of material for stainless steel and aluminum components exposed to treated water. The BWR Water Chemistry Program is also credited to manage loss of material for spent fuel racks (see Table 3.5.2-2). The BWR Water Chemistry Program is also credited to manage cracking of aluminum components exposed to treated water. This item is also applicable to accumulators and immersion heaters. A Note C is used. The Closed Cooling Water Chemistry Program ***and the Chemistry Program Effectiveness Inspection are*** ~~is~~ credited to manage loss of material for aluminum heat exchanger components in the Diesel Generators System. A Note E is used. Further evaluation is documented in Section 3.3.2.2.10.2.

➢ The following text in LRA Table 3.3.1 (on LRA page 3.3-76) is revised by addition ***(bold italics)*** (Note: Changes previously submitted in Reference 2 are included for clarity, but are not highlighted):

Table 3.3.1 Summary of Aging Management Programs for Auxiliary Systems Evaluated in Chapter VII of the GALL Report

Item Number	Component/Commodity	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
3.3.1-47	Steel piping, piping components, piping elements, tanks, and heat exchanger components exposed to closed cycle cooling water	Loss of material due to general, pitting, and crevice corrosion	Closed-Cycle Cooling Water System	No	The Closed Cooling Water Chemistry Program and the Chemistry Program Effectiveness Inspection are credited to manage loss of material for steel components that are exposed to closed cycle cooling water~~.~~, **except for those steel components exposed to diesel jacket cooling water.** A note E is used. ***Only the Closed Cooling Water Chemistry Program is credited to manage loss of material for steel components in the Diesel Generators System that are exposed to diesel jacket cooling water. A note D is used.***

➢ The following text in LRA Table 3.3.2-9 (on LRA page 3.3-176) is revised by addition ***(bold italics)*** (Note: The Chemistry Program Effectiveness Inspection was previously deleted from the Aging Management Programs column via the original response to RAI B.2.14-2 submitted in Reference 2):

Table 3.3.2-9 Aging Management Review Results – Diesel Generators System

Component / Commodity	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Volume 2 Item	Table 1 Item	Notes
Heat Exchangers (0E533A-E) End Bells	Pressure Boundary	Aluminum	Treated Water (Internal)	Loss of Material	Closed Cooling Water Chemistry Program ***Chemistry Program Effectiveness Inspection***	VII.A4-5	3.3.1-24	E

➢ The following text in LRA Table 3.3.2-9 (on LRA page 3.3-177) is revised by addition ***(bold italics)*** and deletion (~~strikethrough~~):

Table 3.3.2-9 Aging Management Review Results – Diesel Generators System								
Component / Commodity	**Intended Function**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Programs**	**NUREG-1801 Volume 2 Item**	**Table 1 Item**	**Notes**
Heat Exchangers (0E533A-E) Tubes	Pressure Boundary, Heat Transfer	Copper Alloy	Treated Water (Internal)	Loss of Material	Closed Cooling Water Chemistry Program ***Chemistry Program Effectiveness Inspection***	VII.H2-8	3.3.1-51	~~D~~ ***E***

➢ The following text in LRA Table 3.3.2-9 (on LRA page 3.3-184) is revised by addition ***(bold italics)*** and deletion (~~strikethrough~~):

Table 3.3.2-9 Aging Management Review Results – Diesel Generators System								
Component / Commodity	**Intended Function**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Programs**	**NUREG-1801 Volume 2 Item**	**Table 1 Item**	**Notes**
Flexible Connections (Expansion Joints)	Pressure Boundary	Stainless Steel	Treated Water (Internal)	Loss of Material	Closed Cooling Water Chemistry Program ***Chemistry Program Effectiveness Inspection***	VII.C2-10	3.3.1-50	~~B~~ ***E***

➢ The following text in LRA Table 3.3.2-9 (on LRA page 3.3-187) is revised by addition ***(bold italics)***:

Table 3.3.2-9 Aging Management Review Results – Diesel Generators System

Component / Commodity	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Programs	NUREG-1801 Volume 2 Item	Table 1 Item	Notes
Heat Exchangers (0E507A-D) Tubes	Pressure Boundary	Stainless Steel	Treated Water (External)	Loss of Material	Closed Cooling Water Chemistry Program ***Chemistry Program Effectiveness Inspection***	VII.A4-2	3.3.1-23	E
Heat Exchangers (0E507A-D) Tubesheet	Pressure Boundary	Stainless Steel	Treated Water (External)	Loss of Material	Closed Cooling Water Chemistry Program ***Chemistry Program Effectiveness Inspection***	VII.A4-2	3.3.1-23	E

➢ The following text in LRA Table 3.3.2-9 (on LRA page 3.3-188) is revised by addition ***(bold italics)*** and deletion (~~strikethrough~~):

Table 3.3.2-9 Aging Management Review Results – Diesel Generators System								
Component / Commodity	**Intended Function**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Programs**	**NUREG-1801 Volume 2 Item**	**Table 1 Item**	**Notes**
Heat Exchangers (0E507A-D) Tube Plugs	Pressure Boundary	Stainless Steel	Treated Water (External)	Loss of Material	Closed Cooling Water Chemistry Program ***Chemistry Program Effectiveness Inspection***	VII.A4-2	3.3.1-23	E
Heat Exchangers (0E507E) Tubes	Pressure Boundary, Heat Transfer	Copper Alloy (Copper-Nickel)	Treated Water (External)	Loss of Material	Closed Cooling Water Chemistry Program ***Chemistry Program Effectiveness Inspection***	VII.C2-4	3.3.1-51	~~D~~ ***E***

➢ The following text in LRA Table 3.3.2-9 (on LRA page 3.3-189) is revised by addition ***(bold italics)*** and deletion (~~strikethrough~~):

Table 3.3.2-9 Aging Management Review Results – Diesel Generators System								
Component / Commodity	**Intended Function**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Programs**	**NUREG-1801 Volume 2 Item**	**Table 1 Item**	**Notes**
Heat Exchangers (0E507E) Tubesheet	Pressure Boundary	Copper Alloy (Copper-Nickel)	Treated Water (External)	Loss of Material	Closed Cooling Water Chemistry Program ***Chemistry Program Effectiveness Inspection***	VII.C2-4	3.3.1-51	~~D~~ ***E***
Heat Exchangers (0E507E) Tube Plugs	Pressure Boundary	Copper Alloy (Copper-Nickel)	Treated Water (External)	Loss of Material	Closed Cooling Water Chemistry Program ***Chemistry Program Effectiveness Inspection***	VII.C2-4	3.3.1-51	~~D~~ ***E***

➢ The following text in LRA Table 3.3.2-9 (on LRA page 3.3-190) is revised by addition ***(bold italics)*** and deletion (~~strikethrough~~):

Table 3.3.2-9 Aging Management Review Results – Diesel Generators System								
Component / Commodity	**Intended Function**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Programs**	**NUREG-1801 Volume 2 Item**	**Table 1 Item**	**Notes**
Heaters Immersion (0E508E) Flanges	Pressure Boundary	Stainless Steel	Treated Water (Internal)	Loss of Material	Closed Cooling Water Chemistry Program ***Chemistry Program Effectiveness Inspection***	VII.C2-10	3.3.1-50	~~B~~ ***E***

➢ The following text in LRA Table 3.3.2-9 (on LRA page 3.3-191) is revised by addition ***(bold italics)*** and deletion (~~strikethrough~~):

Table 3.3.2-9 Aging Management Review Results – Diesel Generators System								
Component / Commodity	**Intended Function**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Programs**	**NUREG-1801 Volume 2 Item**	**Table 1 Item**	**Notes**
Heaters Immersion (0E508A-E) Sheaths	Pressure Boundary	Copper Alloy	Treated Water (External)	Loss of Material	Closed Cooling Water Chemistry Program ***Chemistry Program Effectiveness Inspection***	VII.C2-4	3.3.1-51	~~D~~ ***E***
Heaters Immersion (0E508A-D) Sheaths	Pressure Boundary	Stainless Steel	Treated Water (External)	Loss of Material	Closed Cooling Water Chemistry Program ***Chemistry Program Effectiveness Inspection***	VII.C2-10	3.3.1-50	~~D~~ ***E***

➢ The following text in LRA Table 3.3.2-9 (on LRA page 3.3-194) is revised by addition ***(bold italics)*** and deletion (~~strikethrough~~):

Table 3.3.2-9 Aging Management Review Results – Diesel Generators System								
Component / Commodity	**Intended Function**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Programs**	**NUREG-1801 Volume 2 Item**	**Table 1 Item**	**Notes**
Tubing (and Fittings)	Pressure Boundary	Stainless Steel	Treated Water (Internal)	Loss of Material	Closed Cooling Water Chemistry Program ***Chemistry Program Effectiveness Inspection***	VII.C2-10	3.3.1-50	~~B~~ ***E***
Tubing (and Fittings)	Pressure Boundary	Copper Alloy (Brass)	Treated Water (Internal)	Loss of Material	Closed Cooling Water Chemistry Program ***Chemistry Program Effectiveness Inspection***	VII.C2-4	3.3.1-51	~~B~~ ***E***

➢ The following text in LRA Table 3.3.2-9 (on LRA page 3.3-195) is revised by addition ***(bold italics)*** and deletion (~~strikethrough~~):

Table 3.3.2-9	**Aging Management Review Results – Diesel Generators System**							
Component / Commodity	**Intended Function**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Programs**	**NUREG-1801 Volume 2 Item**	**Table 1 Item**	**Notes**
Tubing (and Fittings)	Pressure Boundary	Copper Alloy (Bronze)	Treated Water (Internal)	Loss of Material	Closed Cooling Water Chemistry Program ***Chemistry Program Effectiveness Inspection***	VII.C2-4	3.3.1-51	~~B~~ ***E***

➢ The following text in LRA Table 3.3.2-9 (on LRA page 3.3-196) is revised by addition ***(bold italics)*** and deletion (~~strikethrough~~):

Table 3.3.2-9 Aging Management Review Results – Diesel Generators System								
Component / Commodity	**Intended Function**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Programs**	**NUREG-1801 Volume 2 Item**	**Table 1 Item**	**Notes**
Valve Bodies	Pressure Boundary	Copper Alloy (Brass)	Treated Water (Internal)	Loss of Material	Closed Cooling Water Chemistry Program ***Chemistry Program Effectiveness Inspection***	VII.C2-4	3.3.1-51	~~B~~ ***E***
Valve Bodies	Pressure Boundary	Copper Alloy (Bronze)	Treated Water (Internal)	Loss of Material	Closed Cooling Water Chemistry Program ***Chemistry Program Effectiveness Inspection***	VII.C2-4	3.3.1-51	~~B~~ ***E***

➢ The following text in LRA Table 3.3.2-9 (on LRA page 3.3-199) is revised by addition ***(bold italics)*** and deletion (~~strikethrough~~):

Table 3.3.2-9 Aging Management Review Results – Diesel Generators System								
Component / Commodity	**Intended Function**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Programs**	**NUREG-1801 Volume 2 Item**	**Table 1 Item**	**Notes**
Heat Exchangers (0E505A&E) Water Boxes	Pressure Boundary	Copper Alloy (Copper-Nickel)	Treated Water (Internal)	Loss of Material	Closed Cooling Water Chemistry Program ***Chemistry Program Effectiveness Inspection***	VII.C2-4	3.3.1-51	~~D~~ ***E***

➢ The following text in LRA Table 3.3.2-9 (on LRA page 3.3-200) is revised by addition ***(bold italics)*** and deletion (~~strikethrough~~):

Table 3.3.2-9 Aging Management Review Results – Diesel Generators System								
Component / Commodity	**Intended Function**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Programs**	**NUREG-1801 Volume 2 Item**	**Table 1 Item**	**Notes**
Heat Exchangers (0E505A-E) Heating Core Tubes	Pressure Boundary, Heat Transfer	Copper Alloy (Copper-Nickel)	Treated Water (Internal)	Loss of Material	Closed Cooling Water Chemistry Program ***Chemistry Program Effectiveness Inspection***	VII.C2-4	3.3.1-51	~~D~~ ***E***

➢ The following text in LRA Table 3.3.2-9 (on LRA page 3.3-201) is revised by addition ***(bold italics)*** and deletion (~~strikethrough~~):

Table 3.3.2-9 Aging Management Review Results – Diesel Generators System								
Component / Commodity	**Intended Function**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Programs**	**NUREG-1801 Volume 2 Item**	**Table 1 Item**	**Notes**
Heat Exchangers (0E505A&E) Heating Core Tubesheet	Pressure Boundary	Copper Alloy (Copper-Nickel)	Treated Water (Internal)	Loss of Material	Closed Cooling Water Chemistry Program ***Chemistry Program Effectiveness Inspection***	VII.C2-4	3.3.1-51	~~D~~ ***E***

➢ The following text in LRA Table 3.3.2-9 (on LRA page 3.3-202) is revised by addition ***(bold italics)*** and deletion (~~strikethrough~~):

Table 3.3.2-9 Aging Management Review Results – Diesel Generators System								
Component / Commodity	**Intended Function**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Programs**	**NUREG-1801 Volume 2 Item**	**Table 1 Item**	**Notes**
Heat Exchangers (0E505A-E) Heating Core Tube Plugs	Pressure Boundary	Nickel Alloys (Monel)	Treated Water (Internal)	Loss of Material	Closed Cooling Water Chemistry Program ***Chemistry Program Effectiveness Inspection***	N/A	N/A	G

➢ The following text in LRA Table 3.3.2-9 (on LRA page 3.3-214) is revised by addition ***(bold italics)*** and deletion (~~strikethrough~~):

Table 3.3.2-9 Aging Management Review Results – Diesel Generators System								
Component / Commodity	**Intended Function**	**Material**	**Environment**	**Aging Effect Requiring Management**	**Aging Management Programs**	**NUREG-1801 Volume 2 Item**	**Table 1 Item**	**Notes**
Piping and Piping Components	Structural Integrity	Copper Alloy	Treated Water (Internal)	Loss of Material	Closed Cooling Water Chemistry Program ***Chemistry Program Effectiveness Inspection***	VII.H2-8	3.3.1-51	~~B~~ ***E,*** 0348

➢ The following text in LRA Table A-1 (on LRA page A-39) is revised by addition ***(bold italics)*** and deletion (~~strikethrough~~):

Table A-1 SSES License Renewal Commitments			
Item Number	**Commitment**	**FSAR Supplement Location (LRA App. A)**	**Enhancement or Implementation Schedule**
19) Chemistry Program Effectiveness Inspection	Program is a new one-time inspection. The Chemistry Program Effectiveness Inspection includes the internal surfaces of aluminum, copper and copper alloy, carbon and low alloy steel, cast iron, ~~and~~ stainless steel***, and nickel alloy*** components in systems that contain treated water or fuel oil. A representative sample of components in low flow and stagnant areas (i.e., locations that are isolated from the flow stream and possibly prone to gradual accumulation/concentration of contaminants) will be examined for evidence of a loss of material (due to crevice, galvanic, general, or pitting corrosion or to erosion, and to MIC in fuel oil), or to confirm a lack thereof, and the results applied to the rest of the system(s) based on engineering evaluation.	A.1.2.12	Within the 10-year period prior to the period of extended operation.

➢ The following text in LRA Section B.2.22 (on LRA page B-68) is revised by addition (***bold italics***) and deletion (~~strikethrough~~):

B.2.22 Chemistry Program Effectiveness Inspection

Aging Management Program Elements

The results of an evaluation of each program element are provided below.

- Scope of Program
  The scope of the Chemistry Program Effectiveness Inspection includes the internal surfaces of aluminum, copper alloy, carbon and low alloy steel, cast iron, ~~and~~ stainless steel***, and nickel alloy*** components in the following license renewal systems that contain treated water, treated water that is closed cooling water, or fuel oil that is controlled by a SSES chemistry program: