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SUSQUEHANNA STEAM ELECTRIC STATION
UNITS 1 AND 2, LICENSE RENEWAL APPLICATION (LRA)
AMENDMENTS TO SECTIONS 2.1.1, B.2.14, B.2.22, B.2.28, B.2.31, AND B.2.46
IN RESPONSE TO NRC REGIONAL INSPECTION **Docket Nos. 50-387**
PLA-6428 **and 50-388**

Reference: 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-6391, Mr. B. T. McKinney (PPL) to Document Control Desk (USNRC), "Request or Additional Information for the Review of the Susquehanna Steam Electric Station Units 1 and 2, License Renewal Application (LRA) Sections B.2.23, B.2.24, B.2.26, B.2.27, B.2.28, B.2.31," dated July 25, 2008.*

3) *PLA-6177, Mr. B. T. McKinney (PPL) to Document Control Desk (USNRC), "Application for Renewed Operating Licenses Numbers NPF-14 and NPF-22 Response to Scoping and Screening RAI's," dated April 17, 2007.*

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 License Renewal process includes an inspection by regional inspectors to verify the applicant's license renewal program is implemented in accordance with the requirements of 10 CFR 54. NRC conducted a regional inspection of the SSES LRA from August 11, 2008 through August 29, 2008. As a result of the inspection, the SSES LRA scoping methodology (2.1.1), and aging management programs (AMP) for closed cooling water chemistry (B.2.14), chemistry program effectiveness inspection (B.2.22), small bore class 1 piping inspection (B.2.31) and area-based NSAS inspection (B.2.46) were determined to require revision. The LRA changes to resolve these inspection issues are identified in the enclosure.

There are no new regulatory commitments contained herein as a result of the attached responses.

A120
NRR

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

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

Executed on: 9-30-08

B. T. McKinney

Enclosure: PPL Responses to NRC's Regional Inspection

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-6428
PPL Responses to NRC's
Regional Inspection

NRC Inspection Issue Related to Scoping of HPCI Suction Swap Cables:

PPL Response:

The fact that the safety-related cables associated with the Unit 2 HPCI suction swap from condensate storage tank to suppression pool are located partially in the turbine building is not discussed in the LRA. The LRA is amended as follows to address this situation.

2.1.1.2.2 Spatial Failures of Nonsafety-Related SSCs

- LRA Section 2.1.1.2.2 (page 2.1-6) is amended by addition (***bold italics***) to address the non-safety affecting safety aspects of the HPCI suction swap cables located in the Turbine Building.

An important aspect in the scope of spatial failures of nonsafety-related SSCs for SSES is the fact that, ***with one exception,*** there are no components located in the Turbine Building that either perform or would prevent a safety-related function from occurring. This is documented in the current licensing bases and confirmed through evaluation for license renewal.

The exception is the safety-related cables associated with the High Pressure Coolant Injection (HPCI) System pump suction transfer between the condensate storage tank and the suppression pool for Unit 2. These cables are routed through the turbine building. However, an analysis concluded that the plant can achieve safe shutdown with the loss of these cables due to a high energy line break and single failure, which bounds the potential spatial interactions. Accomplishment of a safety-related function (safe shutdown) will not be prevented or impaired by the failure of nonsafety-related components in the Turbine Building.

This means that:

1) Nonsafety-related systems located only in the Turbine Building and not connected to safety-related systems do not satisfy the 10 CFR 54.4(a)(2) criterion and are not in the scope of license renewal.

2) Nonsafety-related portions of systems that are directly connected to safety-related piping and in the Turbine Building are included in the scope of license renewal up to the first seismic restraint, or anchor to plant structure, beyond the seismic Category I structure, as described below.

NRC Inspection Issue Related to AMP B.2.14 – Closed Cooling Water Chemistry Program:

PPL Response:

The SSES LRA credits a one time inspection to confirm effectiveness of the Closed Cooling Water Chemistry Program instead of a periodic inspection, as recommended by GALL. The LRA is amended to identify this exception to GALL.

- LRA Section B.2.14, Closed Cooling Water Chemistry Program (pages B-47 and B-48), is amended by addition (***bold italics***), as follows, to identify the one-time Chemistry Program Effectiveness Inspection as an exception to the periodic inspection recommended in GALL.

Exceptions to NUREG-1801

Program Elements Affected:

- Parameters Monitored or Inspected (and Detection of Aging Effects, Monitoring and Trending, and Acceptance Criteria)

  The Closed Cooling Water Chemistry Program does not include performance or functional testing since performance and functional testing verify that component active functions can be accomplished, but in most cases, provide little definitive information or value with respect to the condition of passive components. In lieu of performance monitoring/functional testing, the Closed Cooling Water Chemistry Program includes monitoring of corrosion in the emergency diesel generator jacket water subsystem and is supplemented by the one-time Chemistry Program Effectiveness Inspection, which includes closed cooling water system locations, and the one-time Heat Exchanger Inspection, which includes heat exchangers served by closed cooling systems, to confirm adequate mitigation in low flow and stagnant areas.

  The Closed Cooling Water Chemistry Program does not include periodic inspections. However, consistent with the approach taken for the BWR Water Chemistry Program, the program is supplemented by the Chemistry Program Effectiveness Inspection to verify that the program is effective. Implementation of the Chemistry Program Effectiveness Inspection may, depending on the findings of the one-time inspection, result in the establishment of periodic inspection activities.

NRC Inspection Issue Related to AMP B.2.22 – Chemistry Program Effectiveness Inspection:

PPL Response:

The SSES LRA is amended to clarify that the Chemistry Program Effectiveness Inspection will be implemented consistent with the requirements of the ASME Code and 10 CFR 50 Appendix B.

- LRA Section B.2.22, Chemistry Program Effectiveness Inspection (page B-69), is amended by addition (***bold italics***) as follows:

  - Parameters Monitored or Inspected
    The parameters to be inspected by the Chemistry Program Effectiveness Inspection include wall thickness and visual evidence of internal surface degradation as measures of loss of material, or of cracking for stainless steel exposed to temperatures above 140°F. Inspections will be performed by qualified personnel using established nondestructive examination (NDE) techniques appropriate to the system/location being inspected ***and following procedures consistent with the requirements of the ASME Code and 10 CFR 50, Appendix B.***

  - Detection of Aging Effects
    The Chemistry Program Effectiveness Inspection will use a combination of established volumetric and visual examination techniques (such as equivalent to VT-1 or VT-3) performed by qualified personnel ***following procedures consistent with the requirements of the ASME Code and 10 CFR 50, Appendix B. Inspections will be performed*** on a sample population of subject components to identify evidence of a loss of material, or cracking of stainless steel exposed to temperatures above 140°F, or to confirm a lack thereof. The results of the inspection***s*** will be applied to all of the components within the scope of the inspection activity.

NRC Inspection Issue Related to AMP B.2.28 – Supplemental Piping/Tank Inspection:

PPL Response:

The Supplemental Piping/Tank Inspection AMP is revised to ensure the internal surfaces of the diesel generator starting air receivers are monitored for degradation.

- LRA Section B.2.28, Supplemental Piping/Tank Inspection (pages B-88 and B-89), is amended by addition (***bold italics***) to add the diesel generator starting air receivers to the inspection population as follows:

  - Scope of Program
    The Supplemental Piping/Tank Inspection also detects and characterizes relative to the following to determine whether, and to what extent, degradation is occurring (or is likely to occur):

    - Loss of material due to crevice, galvanic, general, and pitting corrosion on internal carbon steel surfaces within the scram discharge volume (piping and valve bodies) of the Control Rod Drive Hydraulic System, and within the air space of the condensate storage tanks ***and the Diesel Generator starting air receiver tanks and E diesel compressor skid air receiver tanks.***

  - Detection of Aging Effects
    For components exposed to a moist air internal environment, the sample population should include the following locations:

    – Scram discharge volume piping or valve bodies in the Control Rod Drive Hydraulic System

    – Suppression chamber spray header piping in the RHR System

    – Starting air receiver tanks and E diesel compressor skid air receiver tanks in the Diesel Generators System (the sample will include at least 2 of the starting air receiver tanks)

➢ The following line item in Table 3.3.1 (on LRA page 3.3-95) is revised by addition (***bold italics***) to credit the Supplemental Piping/Tank Inspection for inspection of the internal surfaces of the air receiver tanks, as follows:

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**
3.3.1-98	Steel, stainless steel, and copper alloy piping, piping components, and piping elements exposed to dried air	None	None	NA - No AEM or AMP	Consistent with NUREG-1801. Although no aging effects are identified as requiring management, the Fire Water System Program will include replacement of sprinkler heads (with 50 years in service/place), regardless of whether aging effects require management. ***No aging effects are identified for the Diesel Generator starting air receiver tanks. However, the Supplemental Piping/Tank Inspection is credited to verify that aging is not occurring on the internal surfaces.***

- The following line item in Table 3.3.2-9 (on LRA page 3.3-209) is revised by addition (***bold italics***) and deletion (~~strikethrough~~) to credit the Supplemental Piping/Tank Inspection for inspection of the internal surfaces of the air receiver tanks, as follows:

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
Tanks, Air Receiver (0T535A - E)	Pressure Boundary	Carbon Steel	Air-Gas (Internal)	None Identified	~~None Required~~ ***Supplemental Piping/Tank Inspection***	VII.J-22	3.3.1-98	~~A~~ ***E, 0362***
			Indoor Air (External)	Loss of Material	System Walkdown Program	VII.I-8	3.3.1-58	A

➢ The following line item in Table 3.3.2-9, added to the LRA via PPL Letter PLA-6177 (Reference 3) in response to RAI 2.1-3, is revised by addition (***bold italic***) and deletion (~~strikethrough~~) to credit the Supplemental Piping/Tank Inspection for inspection of the internal surfaces of the air receiver tanks, and to make the generic note associated with the "External" environment consistent with that used for other air receiver tanks (0T535A-E), as follows:

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
Tanks, Air Receiver (E DG Skid)	Structural Integrity	Carbon Steel	Air-Gas (Internal)	None Identified	~~None Required~~ ***Supplemental Piping/Tank Inspection***	VII.J-22	3.3.1-98	***E*** ~~C~~, 0362
			Indoor Air (External)	Loss of Material	System Walkdown Program	VII.I-8	3.3.1-58	~~C~~ ***A***

- The following line item in the table of Plant-Specific Notes (on LRA page 3.3-351) added to the LRA via PPL Letter PLA-6177 (Reference 3) in response to RAI 2.1-3 is revised by addition (***bold italic***) and deletion (~~strikethrough~~) to credit the Supplemental Piping/Tank Inspection for inspection of the internal surfaces of the air receiver tanks, as follows:

Plant-Specific Notes:	
0362	Air in the DG starting air system that is downstream of the dryers (such as the air receiver tanks ~~for the E DG~~) is dry and no aging mechanisms are present, whereas general corrosion is possible in components upstream of the dryers. ***Although no aging effects are identified, the Supplemental Piping/Tank Inspection is credited for inspection of the internal surfaces of the air receiver tanks.***

NRC Inspection Issue Related to AMP B.2.31 – Small Bore Piping:

PPL Response:

Some of the program elements in LRA Section B.2.31 include discussions of past small bore piping failures that were attributed to vibrational fatigue. The vibrational fatigue failures are not relevant to AMP B.2.31, because vibrational fatigue is a design issue and not an aging effect. Therefore, no discussion of vibrational fatigue in LRA Section B.2.31 is warranted, because the Small Bore Class 1 Inspection does not manage vibrational fatigue or cracking due to vibrational fatigue.

The SSES LRA is revised by deleting references to vibrational fatigue in the program elements of Section B.2.31.

B.2.31 Small Bore Class 1 Piping Inspection

- The discussion under Aging Management Program Elements in Section B.2.31 (LRA page B-99) is revised by deletion (~~strikethrough~~). Previous changes from Attachment 3 of Reference 2 have been incorporated.

- Detection of Aging Effects
  SSES has not experienced cracking of small bore class 1 piping due to stress corrosion or thermal and mechanical loading; therefore, this inspection is appropriate. This inspection will perform volumetric examinations on selected weld locations. ~~SSES has found crack-like indications due to vibrational fatigue of small bore piping and has performed additional inspections for vibrational fatigue through augmentation of the SSES Inservice Inspection Program.~~

- Monitoring and Trending
  The SSES inspection will include a representative sample of the system population, and, where practical, will focus on the bounding or lead components most susceptible to aging due to time in service, severity of operating conditions, and lowest design margin. Actual inspection locations will be based on physical accessibility, exposure levels, available non-destructive examination (NDE) techniques, and operating experience. Nondestructive volumetric examinations will be performed by qualified personnel following procedures that are consistent with Section XI of ASME Code and 10 CFR 50, Appendix B. ~~Inspections already performed by augmentation of the SSES Inservice Inspection Program for vibrational fatigue of small bore piping, will be factored into the sample determination for the Small Bore Class 1 Piping Inspection.~~

Unacceptable inspection findings will be evaluated by the SSES corrective action process. The SSES Small Bore Class 1 Piping Inspection will require an increased sample size in response to unacceptable inspection findings. Evaluation of indications may lead to the creation of a plant-specific AMP.

NRC Inspection Issue Related to AMP B.2.46 – Area Based NSAS Inspection:

PPL Response:

- LRA Section B.2.46, Area-Based NSAS Inspection (on page B-140), is revised by addition (***bold Italic***) and deletion (~~strikethrough~~) to delete the evaluation for ammonia as a criteria in determining the population of copper to be inspected for cracking as follows:

- Scope of Activity
  In addition, ~~conditions in non-radioactive equipment/area drainage water, potable water, and raw water environments will be evaluated for the presence of ammonia or ammonium compounds and, if found,~~ a representative sample of nonsafety-related copper alloy components ***in non-radioactive equipment/area drainage water, potable water, and raw water environments*** will be examined for evidence of cracking due to stress corrosion cracking (SCC).

- Parameters Monitored or Inspected
  The parameters inspected by the Area-Based NSAS Inspection will include wall thickness and/or visual evidence of internal surface degradation as a measure of loss of material of components exposed to non-radioactive equipment/area drainage water or potable water; ***and*** ~~. If needed, the parameters inspected by the Area-Based NSAS Inspection will also include~~ visual or volumetric evidence of internal surface degradation as a measure of cracking of copper alloy components exposed to non-radioactive equipment/area drainage water, potable water, or raw water ~~(containing ammonia or ammonium compounds)~~.