

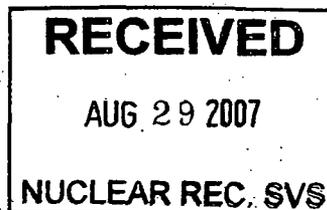
Britt T. McKinney
Sr. Vice President & Chief Nuclear Officer

PPL Susquehanna, LLC
769 Salem Boulevard
Berwick, PA 18603
Tel. 570.542.3149 Fax 570.542.1504
btmckinney@pplweb.com



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**SUSQUEHANNA STEAM ELECTRIC STATION
REQUEST FOR ADDITIONAL INFORMATION (RAI) FOR THE
REVIEW OF THE SUSQUEHANNA STEAM ELECTRIC STATION
UNITS 1 AND 2, LICENSE RENEWAL APPLICATION (LRA)
SECTION 2.5
PLA-6261**

**Docket Nos. 50-387
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) *Letter from Ms. E. H. Gettys, (USNRC) to Mr. B. T. McKinney (PPL), "Request for Additional Information for the Review of the Susquehanna Steam Electric Station, Units 1 and 2 License Renewal Application," dated July 30, 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.

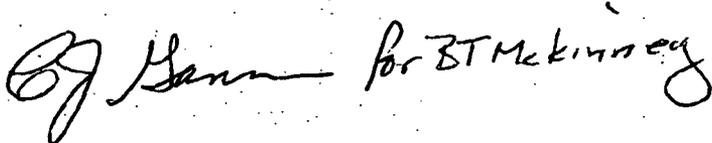
Reference 2 is a request for additional information related to LRA Section 2.5. The enclosure to this letter provides the additional information requested by NRC reviewers.

There are no new regulatory commitments contained herein as a result of the additional information provided in these responses.

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: 8/23/2007

A handwritten signature in black ink, appearing to read "B. T. McKinney". The signature is written in a cursive style and is positioned above the printed name.

B. T. McKinney

Enclosure: PPL Responses to NRC's Request for Additional Information (RAI)

Copy: NRC Region I

Ms. E. H. Gettys, NRC Project Manager, License Renewal, Safety

Mr. R. V. Guzman, NRC Sr. Project Manager

Mr. R. Janati, DEP/BRP

Mr. F. W. Jaxheimer, NRC Sr. Resident Inspector

Mr. A. L. Stuyvenberg, NRC Project Manager, License Renewal, Environmental

bc w/o enclosures:

D. H. Cassel	GENPL5
M. H. Crowthers	GENPL4
M. B. Detamore	GENPL5
R. A. Fedor (SRC)	GENPL4
J. S. Fields	GENPL5
D. R. Flyte	GENPL5
C. J. Gannon	NUCSB3
R. Gardner	GENPL5
M. S. Gorski	GENPL5
J. E. Kraiss	GENPL5
R. R. Sgarro	GENPL4
T. G. Wales (DBD)	GENPL4
J. S. Weik	GENPL5
NRA File	GENPL4 with att.
DCS	GENPL4 with att.

**Enclosure to PLA-6261
PPL Responses to NRC's
Request for Additional Information (RAI)**

NRC RAI 2.5-1

The General Design Criterion 17 described in Title 10 *Code of Federal Regulations* Part 50 (10 CFR Part 50), Appendix A, requires that electric power from the transmission network to the onsite electric distribution system be supplied by two physically independent circuits to minimize the likelihood of their simultaneous failure. In addition, the guidance provided by letter dated April 1, 2002, "Staff Guidance on Scoping of Equipment Relied on to Meet the Requirements of the Station Blackout Rule (10 CFR 50.63) for License Renewal (10 CFR 54.4(a)(3))," states:

For purposes of the license renewal rule, the staff has determined that the plant system portion of the offsite power system that is used to connect the plant to the offsite power source should be included within the scope of the rule. This path typically includes switchyard circuit breakers that connect to the offsite system power transformers (startup transformers), the transformers themselves, the intervening overhead or underground circuits between circuit breaker and transformer and transformer and onsite electrical system, and the associated control circuits and structures. Ensuring that the appropriate offsite power system long-lived passive structures and components that are part of this circuit path are subject to an aging management review will assure that the bases underlying the SBO requirements are maintained over the period of extended license.

According to the above, both paths, from the safety-related 4 kiloVolt (kV) buses to the first circuit breaker from the offsite line, used to control the offsite circuits to the plant should be age managed. The guidance does not specify that the switchyard is not part of the plant system nor that the switchyard does not need to be included in the scope of license renewal. According to Section 2.5 of the license renewal application, the high voltage switchyard circuit breakers that connect to the offsite sources, the circuits connecting the startup transformers to the switchyard and the associated components and structures are not presently included within the scope of license renewal. Justify why these components are not within the scope of license renewal. In addition, explain in detail which high voltage breakers and other components in the switchyard will be connected from the startup transformers T10 and T20 up to the offsite power system for the purpose of station blackout recovery.

PPL Response:

As stated in RAI 2.5-1, the requirements of General Design Criterion (GDC) 17 are existing licensing requirements. The Susquehanna Steam Electric Station (SSES) current licensing basis meets the requirements of GDC 17 as described in SSES Final Safety Analysis Report (FSAR) Chapter 8.

The entire Susquehanna Steam Electric Station (SSES) plant system portion of the offsite power system used for SBO recovery is included within the scope of license renewal. This includes the plant portion of both offsite power sources. The SSES scoping for SBO recovery is consistent with the ISG-2 "NRC Staff Position on the License Renewal Rule (10 CFR 54.4) as it relates to The Station Blackout Rule (10 CFR 50.63)" section titled "Staff Position" which states, "Consistent with the requirements specified in 10 CFR 54.4(a)(3) and 10 CFR 50.63(a)(1), the plant system portion of the offsite power system should be included within the scope of license renewal."

The SSES license renewal application (LRA) Section 2.5.6.2, "Station Blackout Evaluation Boundaries," provides a detailed discussion of the SBO recovery scoping, and justification for why this scoping is consistent with the NRC guidance provided in ISG-2. The plant system portion of the offsite power system for SSES was determined by identifying the boundary, or interface, between the plant and the transmission system. All components and associated structures on the plant side of the identified boundary constitute the plant system portion of the offsite power system and are included within the scope of license renewal. As described in LRA Section 2.5.6.2, this boundary for SSES is established at motor operated disconnect switches on the high voltage side of the startup transformers (physically located between the startup transformers and the switchyard circuit breakers). These disconnect switches are operated remotely by nuclear plant operators from the SSES main control room. The rationale for establishing this boundary is that these disconnect switches are the last (and only 230 kV) SBO recovery-related active components that are under the control of the plant control room operator. All other SBO recovery-related 230 kV equipment is under the control of offsite agencies. The 230 kV equipment on the transmission system side of the motor operated disconnect switches is not included in the scope of license renewal because it is part of the transmission system (grid) and not a part of the plant system portion of the offsite power system.

The following provides supporting bases for the SSES SBO recovery scoping determination.

- The high voltage switchyard circuit breakers and other components mentioned in RAI 2.5-1 are not included within the scope of license renewal because they are not relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulation for station blackout (10 CFR 50.63) and therefore, do not meet the scoping requirements of the license renewal rule, specifically 10 CFR 54.4(a)(3). As described in the SSES LRA, the requirements of the license renewal rule, the guidance provided in NUREG-1800 and ISG-2, the SSES design basis and the SSES current licensing basis were used to determine the plant portion of the offsite power system that is within the scope of license renewal for SBO. Consistent with the staff position in ISG-2, the plant portion of the offsite power system is included within the scope of license renewal for SSES.

The license renewal rule does not explicitly require inclusion of specific structures and components within the scope of license renewal, and the staff position in ISG-2 does not establish any requirement to include specific structures or components within scope. The plant portion of the offsite power system within the scope of license renewal for SSES does not include all of the structures and components that ISG-2 identifies as "typically included." Because plant design configurations for connection to the grid are not the same for all plants, differences in scope from the 'typical' described in ISG-2 can exist.

- The SSES SBO recovery scoping determination was compared to that made by other licensees since the issuance of ISG-2. It was found that other licensees have made similar scoping determinations and have not included all of the high voltage switchyard components identified in ISG-2 within the scope of license renewal, and that some licensees have established the scoping boundary between the plant and the transmission system at a disconnect switch. One example of this is the license renewal scoping determination made for the Palisades Nuclear Plant, which did not include switchyard circuit breakers and established the scoping boundary at disconnect switches. As indicated in the Palisades license renewal safety evaluation report (SER), the Staff found this scoping determination acceptable.

The Palisades SER (ML062710074) states, "Upstream of the motor operating disconnects are the 345kV buses, switchyard components, and the incoming lines, all parts of the transmission (grid) system, not the plant system. As part of the staff's scoping methodology review, the Electrical Engineering Branch (EEEB) evaluated the switchyard components and the license renewal boundaries established by the applicant. EEEB concluded that the switchyard configuration provides a reliable source of power to the preferred and alternate offsite circuits. In addition, EEEB concluded that the established boundaries are adequate for switchyard equipment within the scope of license renewal."

- The interface point between SSES and the transmission system, and responsibilities for restoration of offsite power have already been defined via formal agreements and procedures. These formal agreements and procedures clearly identify the interface point with the transmission system as being the disconnect switches previously discussed. Establishing the license renewal scoping boundary at this already defined interface point helps ensure consistent definition of boundaries and understanding of responsibilities among all parties.

The license renewal scoping boundary established for SSES is consistent with the formal interconnection agreement, filed with the Federal Energy Regulatory Commission (FERC), between SSES (PPL Susquehanna, LLC), the Transmission System Operator (PJM Interconnection, LLC (PJM)), and the Transmission Owner

(PPL Electric Utilities (EU)). This interconnection agreement identifies which portions of the 230 kV system are part of the plant and which are part of the transmission system.

SSES procedure, PSP-32, "Interface Agreement and Procedures for PPL EU Transmission Facilities Related to PPL Susquehanna, LLC," which is the interface agreement between SSES and the Transmission Owner, also identifies which portions of the 230 kV system are part of the plant and which are part of the transmission system. This procedure states,

"The major SSES-related transmission facilities, i.e. those facilities which provide the direct interconnection for the generating units and the off-site power system are identified in Appendix A. These facilities are referred to as SSES-related facilities but are, in fact, major components of the transmission system in northern PPL EU. The northern PPL EU transmission system, in aggregate, accommodates the connection for SSES generation and provides off-site power to SSES."

The SSES switchyards and the transmission line taps to the startup transformer disconnect switches are included in the facilities identified in "Appendix A", as being major components of the transmission system.

The components mentioned in RAI 2.5-1, but not included within the scope of license renewal, are formally identified as being part of the transmission system (grid) in the existing interconnection agreement and the plant procedure for interface with the Transmission Owner.

- Section 2.5.6.2 of the SSES LRA concludes that a disconnect switch, as used in the SSES design, is equivalent to the switchyard circuit breaker mentioned in ISG-2 as typical of the SBO recovery path. Interruption of the offsite power source under load, for protection of the onsite safety buses, is accomplished using station switchgear (within the scope of license renewal) on the secondary (low voltage) side of the startup transformers. Restoration of power to the safety buses is accomplished using these same circuit breakers after power is restored to the startup transformers. Because these plant circuit breakers are relied upon to disconnect and reconnect the load, the disconnect switches used to connect the plant to the transmission system only need the capacity to switch the no load inrush current of the startup transformer.

The second part of RAI 2.5-1 requests a detailed explanation of, "...which high voltage breakers and other components in the switchyard will be connected from the startup transformers T10 and T20 up to the offsite power system for the purpose of station blackout recovery."

Transmission System Operators and Transmission Owners are both required, by the North American Electric Reliability Council (NERC), to make nuclear power plants a priority for offsite power restoration. For SSES, these organizations procedurally have the responsibility for restoration of at least one source of offsite power to either T10 or T20 within four hours following a total Loss of Offsite Power (LOOP) or SBO. The restoration procedures are not specific with respect to which circuit breakers and other switchyard components are to be interconnected. During restoration, various combinations of offsite power sources and switchyard components can be available and the procedures allow equipment operation at the discretion of the Transmission System Operator to restore offsite power.

In summary, the switchyards at SSES are part of the offsite power system. The boundary between the plant portion of the offsite power system is established at disconnect switches on the high voltage side of the startup transformers. This boundary is also firmly established in formal interconnect agreements and procedures. For SSES, the high voltage components used to make the connection from the startup transformers to the offsite power system are transmission conductors and motor-operated disconnect switches, located in the startup transformer yards, as described in LRA Section 2.5.6.2.