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U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Stop OP1-17
Washington, DC 20555

SUSQUEHANNA STEAM ELECTRIC STATION
RESPONSE TO NRC GENERIC LETTER 2007-01
INACCESSIBLE OR UNDERGROUND POWER CABLE
FAILURES THAT DISABLE ACCIDENT MITIGATION
SYSTEMS OR CAUSE PLANT TRANSIENTS **Docket Nos. 50-387**
PLA-6206 **and 50-388**

Reference: 1) NRC Generic Letter 2007-01: "Inaccessible or Underground Power Cable Failure that disable Accident Mitigation Systems or Cause Plant Transients," dated February 7, 2007.

The objective of this letter is to respond to the NRC Generic Letter request for information (Reference 1). The PPL Susquehanna, LLC (SSES) responses are submitted, as required, pursuant to 10 CFR 50.54(f) and they provide SSES specific information relative to the Generic Letter.

There are no regulatory commitments established by these responses.

If you have any questions regarding this submittal, 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: May 4, 2007

for B. T. McKinney

Attachment – Responses to Generic Letter 2007-01 Questions

cc: NRC Region I
Mr. A. J. Blamey, NRC Sr. Resident Inspector
Mr. R. V. Guzman, NRC Sr. Project Manager
Mr. R. Janati, DEP/BRP

A127

Attachment to PLA-6206
Responses to
Generic Letter 2007-01 Questions

NRC Question 1:

Provide a history of inaccessible or underground power cable failures for all cables that are within the scope of 10 CFR 50.65 (The Maintenance Rule) and for all voltage levels. Indicate the type, manufacturer, date of failure, type of service, voltage class, years of service, and the root causes for the failure.

PPL Response:

PPL Susquehanna (SSES) has identified no in-service cable failures of inaccessible or underground power cables that are within the scope of 10 CFR 50.65. A review was performed to identify any cable failures. This review was based on the following elements:

- Performance of historical searches in our Nuclear Information Management System (NIMS). NIMS is an electronic searchable database which contains the corrective action program data. Search criteria were generic based on all cable failures, irrespective of voltage class and type. Results were reviewed with no power cable failures identified.

- Interview of personnel that are or have been involved in the design and installation of the cable system since initial construction (1970's).

- Reviews of cable purchase order activity of medium voltage cables since startup (1981) which would be indicative of cable replacements.

SSES power cables have been in service for approximately 26 years without any identified in–service failures in all locations throughout the plant. In order to determine the manufacturer and types of cables used at SSES, the following table was assembled and is provided for information only. This table was compiled using electronic searches of the Cable and Raceway Management Program (CRIMP) which includes all "scheduled" cables (identified by unique number), their routing, raceway type and cable type information.

This table identifies power cable types in underground ductbanks and conduits at SSES including cable service voltage levels for 13.8 kV down to and including 120 VAC and 125 VDC. A subset of these results includes the systems within the scope of 10 CFR 50.65 (The Maintenance Rule). The table excludes security system cables (not a 50.65 system). SSES identifies all medium voltage cables (4.16 kV to 13.8 kV service) as power cables, and low voltage cables carrying 10 amperes or more as power cables.

CABLE VOLT RATING	MFGR	COND INSULATION (*)	JACKET MATL (*)
15kV	KERITE	HT KERITE DPS (EPR)	KERITE FR (CSPE)
15kV	OKONITE	OKOGUARD (EPR)	OKOLON (CSPE)
15kV	OKONITE	OKOGUARD (EPR)	OKOSEAL (FR-PVC) (1)
5kV	KERITE	HT KERITE (EPR)	HTNS KERITE (CSPE)
5kV	OKONITE	OKOGUARD (EPR)	OKOLON (CSPE)
600V	AIW	EPR	CSPE
600V	BIW	EPR	CSPE
600V	OKONITE	EPR	CSPE
600V	BRAND-REX	XLPE	CSPE

(*)
HT – high temperature, DPS – double permashield, EPR – ethylene-propylene rubber, XLPE – cross-linked polyethylene, FR – flame retardant, PVC – polyvinyl chloride, CSPE – chlorosulfonated polyethylene, HTNS – high temperature non-shielded.
(1) Less than 1000 ft. installed.

NRC Question 2:

Describe inspection, testing and monitoring programs to detect the degradation of inaccessible or underground power cables that support EDGs, offsite power, ESW, service water, component cooling water and other systems that are within the scope of 10 CFR 50.65 (The Maintenance Rule).

PPL Response:

SSES performs Medium Voltage (MV) power cable testing as part of the Preventive Maintenance Program for installed safety related and non-safety related components, primarily transformers and motors, typically at a frequency of every 4 to 8 years where the cables are tested along with the component in accordance with SSES test procedures.

The MV cable testing that is performed for preventive maintenance is an alternating current (AC, 60 Hz) insulation power factor test, which is a non-destructive electrical test that measures several fundamental AC electrical characteristics of the power cable insulation. Insulation power factor testing includes measurements of power factor, capacitance, and watts loss. This testing is performed by the PPL Insulation Test department and the test records are maintained by this organization. Test results are analyzed to identify any negative trends that could be developing, over time.

SSES does not have a monitoring program for low voltage power cable.

The scope of SSES cable testing includes testing of the following cables that are routed in underground ductbank and conduit, which can be considered inaccessible and potentially subjected to prolonged wetting. The MV cables that support offsite power feeds to the 13.8 kV buses, 13.8 kV feeds to the Engineered Safeguard Transformers, 4.16 kV feeds to the ESW pumps and RHR Service Water pumps, and 13.8 kV feeds to the Make-up Water Intake Structure transformers are included in the scope that is addressed by 10 CFR 50.65. The Emergency Diesel Generator cables connected to the safety-related 4.16 kV buses are not currently tested and not normally energized.

The cable testing performed, although not all inclusive, does test a sizable population of MV cables which may be considered susceptible to moisture-induced failure due to their routing in wetted locations in underground conduit and ductbanks. Any negative trends of the tested cables are identified and tracked in the SSES Corrective Action process, which includes Extent of Condition considerations.

The SSES cable monitoring activities (i.e., insulation power factor testing) have identified a negative trend in a MV power cable servicing the River Water Makeup Auxiliary Transformer during routine periodic cable testing. SSES is monitoring the conditions of this cable closely via our corrective action program. This cable is Kerite EPR which is representative of the type and manufacturer of most of the installed population of MV cables. This cable is in a 13.8 kV circuit, continuously energized, and a portion of the cable is submerged in water for a prolonged period of time. These conditions are considered to be the three primary stressors that lead to accelerated age degradation of MV cable insulation (Reference NEI 06-05, "Medium Voltage Underground Cable White Paper").