



Pennsylvania Power & Light Company

Two North Ninth Street • Allentown, PA 18101-1179 • 610/774-5151

Robert G. Byram
Senior Vice President-Nuclear
610/774-7502
Fax: 610/774-5019

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U.S. Nuclear Regulatory Commission
Attn.: Document Control Desk
Mail Station P1-137
Washington, D. C. 20555

**SUSQUEHANNA STEAM ELECTRIC STATION
UNITS 1 & 2- THERMO-LAG 330-1 RESOLUTION
RESPONSE TO NRC RAI ON AMPACITY
PLA-4560 FILE R41-2**

Docket Nos. 50-387
and 50-388

This letter provides PP&L's response to the Request for Additional Information regarding Generic Letter 92-08 received from the NRC on December 18, 1996. The format of our response is to provide your question followed immediately by our response. These responses apply to installations at SSES that are constructed of Thermo-Lag 330-1.

NRC Question 2.1:

In your submittal dated August 2, 1995, you did not specify a derating value for the 3-hour fire rated conduit configurations since TUEC did not include any of the subject barriers in their test program. Florida Power Corporation has recently completed ampacity testing of 3-hour Thermo-Lag-enclosed conduit configurations. These tests were conducted in accordance with the Institute of Electrical and Electronics Engineers (IEEE) Standard P848, Draft 16, "IEEE Standard Procedure for the Determination of the Ampacity Derating of Fire-Protected Cables," at the Underwriter's Laboratories Northbrook Testing Station in Northbrook, Illinois. Given this new test data for 3-hour fire rated conduit configurations please describe how you have incorporated this information and what are the ampacity derating factors now being utilized for the 3-hour Thermo-Lag fire barriers in the SSES electrical design calculations.

PP&L's Response to NRC Question 2.1:

PLA-4349 transmitted to you on August 2, 1995 discussed 3-hour conduit installations on page 4. It was our intent to use an ampacity derating value of 21% for both 1 and 3-hour conduit installations.

As requested by you, we have reviewed the ampacity testing completed since our submittal of PLA-4349. In doing this, we have compared the derating values developed in these later tests with our

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current derating value of 21% for 3-hour conduit installations. Specifically, we have reviewed the testing performed by TVA and Florida Power Corporation (FPC). We have obtained copies of the TVA test report for the testing performed at Omega Point Labs. The TVA Test Report reviewed was from Project No. 11960-97337 & 97338. We have also obtained a copy of the paper written by Mark H. Salley and Kent W. Brown of TVA entitled "Fire Endurance and Ampacity Testing of One and Three-Hour Rated Thermo-Lag Electrical Raceway Fire Barrier Systems". With respect to FPC, however, we have only been able to obtain a verbal summary of the results.

The TVA testing reviewed was a 3-hour Thermo-Lag 330-1 installation constructed with post-buttered joints and upgraded with two layers of 770-1 material. This test, which was conducted in accordance with IEEE P848 Draft 14, yielded the following results: 4" conduit ampacity derating value = 13%; 1" conduit ampacity derating value = 10%. SSES 3-hour installations do not presently have any 770-1 material on them. Due to the additional thermal resistance provided by the two layers of 770-1 material, we consider these results to be conservative relative to our current installations.

The FPC testing results obtained were for a test on conduit protected with 3-hour Thermo-Lag 330-1 performed in accordance with IEEE P848 Draft 16. The FPC test yielded the following results: 4" conduit ampacity derating value = 2.7%; 1" conduit ampacity derating value = +4.2%.

Our conclusion after reviewing the results of this testing is that an ampacity derating value of 21% for 3-hour rated conduit installations is conservative and provides a significant margin of safety.

NRC Question 2.2:

Describe whether the results of your destructive examinations and detailed field walkdowns to date demonstrate that all of the installed configurations are representative with the TUEC-tested configurations. In the event of any deviations with the TUEC-tested configurations, the licensee is requested to ascertain their impact on previous ampacity derating determinations.

PP&L's Response to NRC Question 2.2:

Our destructive examinations and detailed field walkdowns are approximately 75% complete and are scheduled to be completed by the end of the Unit 2 8th Refueling Outage scheduled for spring of 1997. To date the results of these efforts have indicated that our baseline installations are generally consistent with the baseline portions of the cable trays and conduits tested by TUEC. We have found, however, instances where for limited portions of the installations, non-standard configurations exist. These non-standard configurations can be divided into two groups: (1) Minor discrepancies that come in contact with the protected envelope, such as thermal shorts; (2) Common enclosures where multiple raceway are included within a single protected envelope.

We consider the items falling into the classification of minor discrepancies as having a negligible effect on the ampacity derating and, as such, no adjustment in the factors provided above or in PLA-4349 are required. With respect to the situations classified as common enclosures, we have not found any instances where multiple cable tray are enclosed within the same protected envelope.

We have, however, identified situations where multiple conduit are contained within the same protected envelope. In some instances, the other conduit contained in the enclosure is a non-power raceway. In some cases, two or more power conduit may share a common protected envelope for a portion of their routing.

Based on the non-standard ampacity testing performed by TVA, it can be concluded that an appropriate adjustment factor for the common enclosure situation where a single row of power conduits are wrapped in a common enclosure is on the order of 8%. Since the values that we have selected for ampacity derating for 1-hour and 3-hour conduit have margin over the actual tested value, this margin will be used to bound the situation where a single row of power conduit is wrapped in a common enclosure.


Conduit Fire Rating	Design Derating Value	Derating Value from Testing	Margin Over Test
1-hour	21 %	10.7 % [TUEC Testing]	10.3 %
3-hour	21 %	13.0 % [TVA Testing]	8.0 %

It is anticipated that virtually all of the situations encountered will be bounded by the criteria for ampacity derating described in PLA-4349 and as supplemented above.

In summary, ampacity affects have not negatively impacted cabling at SSES to date. As we implement our corrective actions necessary to resolve Thermo-Lag issues, any adjustments to wrap configurations will be appropriately addressed relative to ampacity issues.

If you have any questions on any of the issues addressed in this letter, please contact Mr. W.W. Williams at (610) 774-7742.

Very truly yours,



R.G. Byram
Attachments

copy: Regional Administrator - Region I
Mr. K. M. Jenison, NRC Sr. Resident Inspector
Mr. C. Poslusny, NRC Sr. Project Manager

AFFIDAVIT

COMMONWEALTH OF PENNSYLVANIA)

: SS

COUNTY OF LEHIGH)

I, ROBERT G. BYRAM, being duly sworn according to law, state that I am Senior Vice President - Nuclear of Pennsylvania Power & Light Company and that the facts set forth on the attached Request for Additional Information regarding Generic Letter 92-08 issued pursuant to 10CFR50.54(f) are true and correct to the best of my knowledge, information and belief.



Robert G. Byram
Senior Vice President - Nuclear

Sworn to and subscribed
before me this 4th day
of February, 1997.


Notary Public

NOTARIAL SEAL
DIANE M. KOCH, Notary Public
Allentown, Lehigh County, PA
My Commission Expires July 12, 1999