November 17, 2000

Mr. James A. Hutton
Director-Licensing
PECO Energy Company
Nuclear Group Headquarters
Correspondence Control
P.O. Box 160
Kennett Square, PA 19348

SUBJECT: SAFETY EVALUATION ADDRESSING THERMO-LAG RELATED AMPACITY DERATING ISSUES, PEACH BOTTOM ATOMIC POWER STATION, UNITS 2 AND 3, AND LIMERICK GENERATING STATION, UNITS 1 AND 2(TAC NOS. MA8709, MA8710, MA8707, AND MA8708)

Dear Mr. Hutton:

By letter dated April 4, 2000, PECO Energy Company (PECO) requested additional clarification to the safety evaluation provided in a U.S. Nuclear Regulatory Commission (NRC) letter dated January 12, 2000, which evaluated ampacity derating issues at the Peach Bottom Atomic Power Station, Units 2 and 3, and the Limerick Generating Station, Units 1 and 2. As a result of the issues raised by PECO, the NRC staff has revised the subject report to provide greater clarification. The results are documented in the enclosed safety evaluation and Sandia National Laboratories' (SNL's) Technical Letter Report (TLR), "A Final Technical Review of the PECO Ampacity Assessment Methodology and RAI Responses for Limerick and Peach Bottom," dated April 30, 1998 (Attachment 1 to the Enclosure); SNL TLR, "A Final Technical Evaluation of the PECO Conduit Ampacity Assessment Methodology for Limerick and Peach Bottom," dated October 19, 1999 (Attachment 2 to the Enclosure); and, a letter from S. Nowlen, the SNL Principal Investigator for the subject contract, to R. Jenkins of the NRC, dated February 14, 2000 (Attachment 3 to the Enclosure). This supersedes the safety evaluation enclosed with the letter dated January 12, 2000. The changes are indicated by lines in the margin.

On the basis of its review, the staff has concluded that the ampacity derating analysis results are acceptable; and, there are no significant safety hazards associated with the application of PECO's ampacity derating methodology at Limerick and Peach Bottom. PECO should retain all documentation related to the resolution of the ampacity issues for future NRC audits or inspections.

If you have any questions regarding this matter, please contact me at 301-415-2901.

Sincerely,

/RA/

John P. Boska, Project Manager, Section 2
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-277, 50-278, 50-352 and 50-353

Enclosure: Safety Evaluation

cc w/encl: See next page

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

GENERIC LETTER 92-08 THERMO-LAG-RELATED AMPACITY DERATING ISSUES

PECO ENERGY COMPANY

PEACH BOTTOM ATOMIC POWER STATION, UNITS 2 AND 3

LIMERICK GENERATING STATION, UNITS 1 AND 2

DOCKET NOS. 50-277, 50-278, 50-352 AND 50-353

1.0 BACKGROUND

By letters dated March 13, 1998, and March 12, 1999, PECO Energy Company (the licensee) submitted a response to the U.S. Nuclear Regulatory Commission's (NRC's) Request for Additional Information (RAI) dated November 14, 1997, related to Generic Letter (GL) 92-08, "Thermo-Lag 330-1 Fire Barriers," for Peach Bottom Atomic Power Station (Peach Bottom), Units 2 and 3 and Limerick Generating Station (Limerick), Units 1 and 2.

Listed below is a brief outline of the history associated with the matter under review:

3/24/97: In response to GL 92-08 and an NRC RAI dated June 22, 1995, the licensee provided documentation of its methodology intended to assess the ampacity derating factors associated with its installed fire barriers systems.

11/14/97: NRC's RAI was issued to request information regarding licensee's ampacity methodology.

3/13/98: Licensee's response addressed RAI Questions.

11/18/98: A meeting was held between the NRC staff, Sandia National Laboratories (SNL), and licensee's representatives to discuss the licensee's conduit validation studies.

3/12/99 Licensee's response addressed RAI questions.

1/12/00 NRC issues Safety Evaluation on the ampacity derating method.

4/4/00 Licensee requests clarification of NRC Safety Evaluation.

This safety evaluation supersedes the Safety Evaluation dated January 12, 2000. The NRC staff's evaluation of the ampacity derating methodology for Peach Bottom and Limerick Stations follows.

Enclosure

2.0 EVALUATION

After reviewing the licensee's submittals, SNL Technical Letter Reports (see Attachments 1 and 2) as supplemented by the letter from S. Nowlen to R. Jenkins (see Attachment 3), the staff agrees with the SNL analyses and conclusions. The ampacity derating analysis questions, the licensee's responses, and the staff's evaluations of the responses follow.

2.1 Ampacity Derating Analysis Review

Question 1

SNL found that the licensee's thermal model development had the following areas of technical concern which may contribute to non-conservatism in the models:

Modeling of Internal Convection

a. The licensee has treated internal air spaces using correlations only appropriate to the analysis of open unobstructed surfaces. SNL finds that this treatment is inappropriate as a general model of internal convection behavior. It is recommended that the licensee either: (1) justify its current treatment on a case-by-case basis for each case considered, and/or (2) implement an alternate treatment of internal convection based on accepted methods of confined space convection analysis.

b. The licensee has treated multiple heat sources in a common enclosure independently rather than simultaneously. This treatment will overestimate the rates of convective heat transfer for many typical applications. To correct this problem, it is recommended that the licensee modify its assumptions regarding the effective barrier heat transfer area available for convective exchange to each individual commodity. A specific approach to resolution has been documented in the SNL Letter Report dated September 23, 1997.

Radiation Shape Factors

c. In the analysis of radiative heat transfer for stacked cable trays, the licensee apparently intends to utilize a generic value to characterize tray-to-side panel radiation view factors for intermediate (blocked) trays. SNL finds that the cited value has not been shown to conservatively bound the anticipated value of this coefficient, and was nonconservative for the one relevant example case cited in the licensee submittal. It is recommended that the licensee either: (1) demonstrate that the generic value used is conservatively bounding for all cases to be analyzed; or (2) calculate the correct value on a case-by-case basis for each configuration (simplified correlations for this process were cited in the SNL Letter Report dated September 23, 1997).

Concerns Specific to Junction Box and Gutter Models

d. SNL finds that the thermal model as applied to junction boxes and cable gutters was not as thoroughly documented as were the conduit and cable tray models.

> SNL recommends that the licensee clarify its treatment of the following aspects of these applications: (1) How has heat transfer between the cable bundle and the enclosure (the junction box or gutter) and between the enclosure and the fire barrier been handled? (2) How does the assumed baseline ampacity impact the results of the analysis? (3) What is the rationale for treating cable gutters in a manner unique from that of a general cable tray?

In conclusion, the licensee is requested to address the concerns identified or proposed an alternate approach which addresses the thermal modeling issues.

Licensee's Response

In its submittal dated March 13, 1998, the licensee provided the following responses to each of the thermal modeling issues identified above (Questions 1.a through 1.d):

Response to Q1.a.

The majority of the raceway and enclosure configurations analyzed using the thermal model have large and often irregular internal spaces which cannot be idealized as "cavities" with clearly defined parallel faces and no intervening objects. The raceways analyzed using the thermal model involved the following protected raceways and enclosures:

1. Single conduits (Limerick)
2. Single trays (Limerick)
3. Cable gutters (Limerick)
4. Multiple trays in a common enclosure (Limerick)
5. Multiple conduits in a common enclosure (Peach Bottom)
6. Junction boxes (Limerick and Peach Bottom)

Of the raceways and enclosures listed above, only the single tray and gutter enclosures could be considered to have "cavities" for which a cavity heat transfer equation might have been more appropriate than the simplified free convection equation used in the model. The single conduit enclosures are formed using flat panels, such that, instead of a single gap of a uniform thickness between the conduit and the fire barrier, four interconnected spaces of varying width are formed. The junction boxes have large internal air spaces cris-crossed with cables such that a clearly defined "cavity" between the cables and the enclosure does not exist. Similarly, the multiple conduits or trays in a common enclosure have a large single air space interrupted by the raceways.

A detailed justification of the approach used in the model is provided in Attachment 2 of the March 13, 1998, submittal, where the film equation used in the model is compared with the "cavity" equation for a protected cable tray. The results of this comparison show that the average interior heat transfer coefficient based on the film equation produces a heat transfer coefficient that is about 10 to 20 percent smaller than the average heat transfer coefficient calculated using the cavity equation. The convective heat transfer is significantly smaller than the radiative heat transfer so that a 20 percent change in the convective heat transfer coefficient affects the overall heat transfer coefficient for the entire cable-tray fire barrier assembly by only about 1 percent. The overall effect of this approach on the ampacity derating factor is approximately half a percent.

Therefore, a thermal model based on the simple film coefficient has been found more appropriate and less restrictive than the cavity heat transfer equation. The incremental benefit to be gained from a more sophisticated model is well within the uncertainties introduced into these analyses due to approximations elsewhere.

Staff's Evaluation

Based on the NRC staff's review of the information provided by the licensee, as described above, we conclude that the licensee has justified its current treatment of internal air spaces on a case-by-case basis for each case considered. The information provided by the licensee fully resolves the staff's concerns.

Response to Q1.b.

The issue of independent treatment of multiple heat sources has raised concerns regarding the proper use of the enclosure air space temperature and the effective barrier heat transfer area. Both concerns are addressed below.

The thermal model treats each raceway independently only as far as the calculation of the convective heat transfer coefficient from the raceway to the air inside the enclosure is concerned. The barrier temperature (inside and outside) is based on the total heat generated simultaneously by all of the raceways enclosed within the barrier. Since different raceways within the same barrier may have different thermal resistances, it is natural to expect that they may also have different surrounding air temperatures. This difference, however, is not very large. Examination of the Limerick and Peach Bottom calculations shows that the deviation from the mean air temperature is well within 10°F. This deviation from the mean air temperature does not introduce non-conservatism into the results. On the contrary, it introduces conservatism, though negligibly small, because the raceway-to-barrier convective heat transfer coefficient attains its highest value when based on the mean temperature. Any temperature above or below it produces a smaller heat transfer coefficient. Since the recommended approach (simultaneous heat transfer) would result in a single internal enclosure air temperature very close to the mean air temperature, and therefore a somewhat higher heat transfer coefficient, we have concluded that the approach used in the model is an adequate alternative because of its conservatism and practicality.

With regard to the concern of proper allocation of the effective barrier heat transfer area, the thermal model has been revised as recommended such that each raceway in a common enclosure is allocated a barrier heat transfer area proportional to its own surface area. This modification has been applied to all enclosures containing two or more raceways, and the Limerick and Peach Bottom ampacity derating calculations will be revised accordingly.

Staff's Evaluation

Based on the NRC staff's review of the information provided by the licensee, we find the proposed alternative regarding the use of enclosure space, as well as the revised allocation of the effective heat transfer areas, as recommended by SNL in Question 1.b., to be acceptable. The information provided by the licensee fully resolves the staff's concerns.

Response to Q1.c.

In accordance with the SNL recommendation, the radiation shape factors have been calculated on a case-by-case basis using the actual raceway/enclosure dimensions in lieu of the generic values, and the Limerick and Peach Bottom ampacity derating calculations will be revised accordingly.

Staff's Evaluation

The staff finds that the licensee's adoption of the SNL recommendation in the calculation of the radiation shape factors and the commitment to revise the ampacity derating factors accordingly fully resolve the staff's concerns.

Response to Q1.d.

The discussion of the junction boxes and cable gutters has been expanded to provide greater clarification. In brief, the answers to the questions raised are as follows:

1. For junction boxes, the heat transfer from the cables to the junction box is by conduction through the cable bundle and convection plus radiation from the surface of the cable bundle to the junction box. The cables in each conduit attached to the junction box are assumed to stay in a solid circular bundle. The heat transfer from the junction box to the fire barrier is by conduction in the air gap plus radiation. The cable gutters are treated similar to the junction boxes except that only a single cable bundle is assumed.

2. The baseline ampacity for cables in the junction boxes and gutters is used as a reference value to calculate the ampacity derating factor. Thus, the higher the baseline ampacity, the higher the ampacity derating factor is and vice versa. Unlike the conduits, for which the baseline ampacity is also used to calculate the thermal resistance of the cable-conduit assembly, the baseline ampacities for junction boxes and gutters serve as reference values. The thermal resistance of the cable bundle is calculated from the classic conduction equation for solids with internal heat generation. The baseline ampacities are assigned in accordance with the IEEE/NEC (Institute of Electrical and Electronics Engineers/National Electric Code) guidelines applicable to conduits.

3. The rationale for treating the cable gutters differently from the cable trays is that, unlike the cable trays, gutters have a solid metal enclosure on all four faces. As a result of this, the gutters may also have a continuous but narrow air gap between the metal enclosure and the fire barrier. For these reasons, gutters are

closer to junction boxes than to trays. Treating the gutters as cable trays would require neglecting the effect of the air gap between the metal enclosure and the fire barrier which would result in a lower ampacity derating factor.

Staff's Evaluation

The staff has reviewed the additional clarifying information provided in the licensee's response and finds that it provides the appropriate data to support the application of the licensee's thermal model as it applies to junction boxes and cable gutters and fully resolves the staff's concerns on this issue.

Question 2

SNL found that the current licensee validation studies to be insufficient because the licensee calculations do not make direct comparison to all of the available experimental data. SNL recommends that the licensee document validation results for the following cases:

a. In the case of the conduit calculations, it is recommended that the licensee be asked to document validation results for the conduit barrier enclosure tests performed by Tennessee Valley Authority (TVA) for the Watts Bar plant as follows: (1) Test Article 7.4, three one-inch conduits in a common, tight-fitting enclosure, (2) Test Article 7.5, six one-inch conduits in a common tight-fitting enclosure, (3) Test Article 7.8, six one-inch conduits in an oversize enclosure, (4) Test Article 7.7a, single one-inch conduit in a small boxed enclosure, and (5) Test Article 7.7b, single one-inch conduit in an oversized boxed enclosure.

b. For the cable tray calculations, it is recommended that the licensee be asked to document validation results which are directly comparable to available experiments from Texas Utilities (TU), TVA, and/or Florida Power Corporation. These evaluations should include at least one representative case for a single tray enclosure and the TVA 3-tray stack test (TVA Test Article 7.3).

The licensee is requested to reconsider its validation of its thermal model and to provide example case calculations in light of the specific SNL findings and the thermal modeling concerns identified in Question 1 above. (See Sections 3.1 through 3.4 of the SNL Letter Report dated September 23, 1997 for further details).

Licensee's Response

In its submittal dated March 13, 1998, the licensee provided the following responses to each of the thermal modeling issues identified above (Questions 2.a and 2.b):

a. The conduit model was validated against test data from TU. In accordance with the SNL recommendation, the validation of the conduit model has been expanded to include additional test cases from the available TVA Watts Bar test series for single and multiple conduits.

On the basis of these results, it is concluded that the conduit model is reasonably conservative, except for the case of a single conduit in a box enclosure for which the model's prediction is 0.3 to 1.3 percentage point lower than the test data.

b. The cable tray model was validated against test data from TU. The validation cases have been expanded to include additional tests from the available TVA Watts Bar three-stack trays. Data for Florida Power Corporation single tray test case is treated proprietary and is not made available to the public. The results of the validation study and example case calculations are provided in the March 13, 1998, submittal. Below is a brief summary of the test cases and the results.

Test Case	ADF	
	Test	Model
Single Unprotected Tray (IPCEA Table 3.6) - Baseline Ampacity	55 amp	51.8 amp
Single Protected Tray (TU Test AT-1)	31.6%	32.4%
Three Trays in a Tight Enclosure (TVA Test 7.3)	35.5%	41.4%

This comparison shows that the predictions of the cable tray model reasonably bound the test data.

On the basis of these comparisons, it is concluded that the cable tray model is sufficiently conservative, and no adjustment of the results is necessary to provide additional margin.

Staff's Evaluation

The licensee clarified in their April 4, 2000, response that the action cited in their March 13, 1998, submittal to increase the Peach Bottom and Limerick cable ampacity derating factors by two percentage points in order to compensate for the abovementioned small deviation with the test data is not necessary due to the conservative nature of the conduit model for single conduits in box enclosures. It should be noted that TVA Tests 7.a and 7.7.b configurations include a unistrut frame to which the Thermo-Lag material is attached and could only be approximately modeled by the licensee. Since the licensee does not use configurations with the unistrut frame there is little benefit in refining the model or in making adjustments to the ampacity derating factor (ADF) to compensate for differences between the subject test data and the model projections.

The information provided by the licensee indicates that the cable tray model was validated against applicable industry data thereby resolving the staff's concerns for Question 2.b. For Question 2.a, the information provided by the meeting held on

November 18, 1998, with the licensee's representatives and the licensee's submittal dated March 12, 1999, clarified the validation studies for the conduit ampacity derating analyses thereby resolving the staff's concerns.

<u>Question 3</u>

The licensee is requested to identify the industry ampacity derating values being applied to the Peach Bottom and Limerick plant-installed configurations. The licensee should also explain the technical basis used to ensure that any installed plant configurations which utilize industry test data are representative in terms of design and construction of the applicable tested fire barrier configurations.

<u>Licensee's Response</u>

In its submittal dated March 13, 1998, the licensee provided the following information:

> The ampacity derating factors for Peach Bottom are all based on heat transfer calculations using the thermal model. None of the Peach Bottom configurations compared with the industry test configurations and, therefore, no industry ampacity test values were used for Peach Bottom.
>
> Industry ampacity derating values have been applied to Limerick-installed plant configurations for 1-hour rated single trays, 1-hour rated single conduits, and 1-hour rated two-stacked trays. The ampacity derating factors for 1-hour rated single trays and single conduits are based on TU's test data as revised by the NRC Safety Evaluation Report for Comanche Peak Steam Electric Station dated June 14, 1995. The technical basis to ensure that tested configurations are representative of the Limerick configurations is provided below.

In its submittal dated April 4, 2000, the licensee supplemented the above information:

> The ADFs for Peach Bottom at the time of the March 13, 1998, response were based on the PECO heat transfer model. Subsequently, some of the Peach Bottom fire barriers were designed with the same configuration as the industry tested fire barriers and therefore available test data could be directly utilized. As such, industry derating values were able to be used in a small number of cases at Peach Bottom which were similar to the cases previously described for Limerick.

Table 1: Comparison of Limerick Raceway Configurations with TU Test Configurations

Raceway Attribute	Limerick As-Designated Configuration	Comanche Peak Tested Configuration	Comments
Cable Trays			
Cable Tray Size	24" x 4"	24" x 4"	As-Designed is the same as Tested.
Cable Trays Material	Aluminum	Steel	See Note 1 below.
Barrier Material	Thermo-Lag 330-1 Prefabricated V-rib Panel	Thermo-Lag 330-1 Prefabricated V-rib Panel	As-Designed is the same as Tested.
Barrier Thickness	5/8" (± 1/8")	5/8" (± 1/8")	As-Designed is the same as Tested.
Joint Types	Pre-buttered with trowel grade material	Pre-buttered with trowel grade material	As-Designed is the same as Tested.
Joint Upgrade Methods	Stress Skin, Trowel Grade, Wire, Staples	Stress Skin, Trowel Grade, Wire, Staples	As-Designed is the same as Tested.
Conduits			
Raceway Type	Conduit	Conduit	As-Designed is the same as Tested.
Conduit Size	0.75" to 6"	2.0" & 5.0"	Tested sizes are representative of the range of As-Designed.
Conduit Material	Steel	Steel	As-Designed is the same as Tested.
Barrier Material	Thermo-Lag 330-1 Prefabricated Conduit Sections	Thermo-Lag 330-1 Prefabricated Conduit Sections	As-Designed is the same as Tested.
Barrier Thickness	5/8" (± 1/8")	5/8" (± 1/8")	As-Designed is the same as Tested.
Joint Types	Pre-buttered with trowel grade material	Pre-buttered with trowel grade material	As-Designed is the same as Tested.

Note:
1. Tray material is not a factor in ampacity testing of ladder type open trays since the heat transfer is directly from the surface of the cables to the fire barrier.

Staff's Evaluation

The licensee stated that the industry test data utilized for configurations installed at Peach Bottom and Limerick are representative of the tested fire barrier configurations, thereby resolving the staff's concerns.

2.2 Application of Ampacity Derating Methodology

2.2.1 Non-Diversity Model

The intent of the licensee's thermal model is to analytically predict fire barrier ADF values for untested configurations. The same basic model is applied to single tray, to single conduit, and to unique configurations such as multiple raceways in a common fire barrier envelope. The model is also used to analyze barrier enclosures that include concrete walls as one or more sides of the barrier system. The ultimate objective of the PECO methodology is to predict the ADF, or equivalently, the ampacity correction factor (ACF), for a specific raceway (conduit, cable tray, junction box, etc.) in a given fire barrier installation.

In practice, the licensee analyzes a "generic" raceway using the specific as-installed barrier configuration information and a representative cable fill. That is, the fire barrier is modeled as installed in the plant, but in the model the raceway is assumed to carry a roughly equivalent cable fill intended to represent but not reproduce the cables actually installed in the subject raceway. For simplicity of modeling, the cable fill is assumed to be made up of a single size of cable for which tabulated ampacity limits are readily available (rather than a mixture of cable sizes and ampacity loads as actually encountered in the plant). It is analogous to testing a standard cable tray with a standard cable load and extrapolating the results to a specific plant installation. Indeed, the approach introduces one source of conservatism in that the effects of ampacity load diversity are neglected.

Estimating the ADF requires the clad and baseline case ampacity limits. The role of the thermal model in this process is to estimate the clad case ampacity limit for the "generic" raceway in a given fire barrier configuration. The corresponding baseline limit is taken from standard industry tables of cable ampacity (i.e., IPCEA P-46-426 and ICEA P-54-440). The ADF is then based on a comparison of the predicted clad case ampacity limit to the nominal tabulated baseline ampacity limit for the same "generic" raceway. This ADF value for the fire barrier would then be applied to the existing ampacity limits of the installed cables for a final assessment of ampacity loads. Given that the thermal model for the clad case is consistent with the thermal model that underlies the original ampacity tables this approach is acceptable.

2.2.2 Diversity Model

The licensee adopted a modified load diversity model based upon the Harshe-Black methodology as described in the IEEE paper entitled “Ampacity of Cables in Single Open-Top Trays” dated December 1994. The modification involves imposing restrictions on region dimensions and ampacities in order to address potential hot spot effects and to comply with established industry ampacity standards.

The diversity model is applied to selected cable trays and gutters exhibiting a marked non-uniformity in their amperage loads. The Peach Bottom/Limerick method divides the cable mass in the raceway into three distinct regions. The first region applicable for relatively heavily loaded power cables is postulated to be in the raceway center. The second region containing relatively moderately loaded power cables are postulated to envelope the first region. The third region contains the control cables or relatively lightly loaded cables which is postulated to envelope the second region. The licensee assumes that each region generates heat uniformly under one-dimensional steady state conditions. The method models the two types of raceways - cable trays or gutters according to their geometry with the following restrictions:

1. The thickness of any region cannot be less than the diameter of the thickest cable in that region.

2. For cables in a tray, the calculated ampacity may not exceed 80 percent of the ampacity of the individual cable in free air as specified in the appropriate tables in the Insulated Power Cable Engineers Association (IPCEA) standards or the National Electric Code (NEC).

3. For cables in a gutter, the calculated ampacity may not exceed the ampacity of the individual cables in free air as specified in the appropriate tables in IPCEA.

The calculation for the diversity model is the same procedure as that specified for the non-diversity model except (1) development of a diversity parameter, which is the ratio of the actual amperage load of the cable to its nominal ampacity limit, to the defined region parameters (i.e., physical dimensions) and (2) application of the specific diversity parameter in the calculation of the allowable heat generation rate in each region resulting in an ampacity derating factor for each region.

The staff has held, as discussed in NUREG/CR-6681, “Ampacity Derating and Cable Functionality for Raceway Fire Barriers,” that the modified Harshe-Black methodology as implemented by Palisades Nuclear Plant given two implementation limitations is acceptable. As noted by SNL in the letter from S. Nowlen to R. Jenkins dated February 14, 2000, (Attachment 3) and the licensee’s submittal dated April 4, 2000, the two limitations of interest have been implemented by the licensee through the three restrictions stated above for the Harshe-Black methodology. Therefore, for Peach Bottom Units 2 and 3, and Limerick Units 1 and 2, the use of the modified Harshe-Black methodology is acceptable.

Given that the information provided by the licensee has addressed all of the identified concerns, the staff finds that the licensee has provided adequate basis to resolve the ampacity-related points of concern raised in GL 92-08 for the applicable Thermo-Lag configurations.

3.0 CONCLUSIONS

From the above evaluation the staff concludes that the licensee has provided an adequate technical basis to assure that the enclosed cables are operating within acceptable ampacity limits. Therefore, the staff finds that there are no outstanding safety concerns with respect to Generic Letter 92-08 ampacity issues for Peach Bottom, Units 2 and 3 and Limerick, Units 1 and 2.

Attachments:

1. Technical Letter Report, "A Final Technical Review of the PECO Ampacity Assessment Methodology and RAI Responses for Limerick and Peach Bottom," dated April 30, 1998.
2. Technical Letter Report, "A Final Technical Evaluation of the PECO Conduit Ampacity Assessment Methodology for Limerick and Peach Bottom, dated October 19, 1999.
3. Letter from Steven Nowlen, Sandia National Laboratories, to Ronaldo Jenkins, U. S. Nuclear Regulatory Commission, dated February 14, 2000.

Principal Contributor: R. Jenkins

Date: 11/17/00

Peach Bottom Atomic Power Station,
Units 2 and 3
Limerick Generating Station, Units 1 & 2

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