Station Support Department

PECO NUCLEAR
A UNIT OF PECO ENERGY

PECO Energy Company
Nuclear Group Headquarters
965 Chesterbrook Boulevard
Wayne, PA 19087-5691

April 4, 2000

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

License Nos. DPR-44
DPR-56
NPF-39
NPF-85

United States Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Subject: Peach Bottom Atomic Power Station, Units 2 and 3
Limerick Generating Station, Units 1 and 2
Clarification to Safety Evaluation Report Addressing Thermo-Lag Related Ampacity Derating Issues

References:
1) Letter from G. D. Edwards (PECO Energy Company) to U. S. Nuclear Regulatory Commission (USNRC), dated March 13, 1998
2) Letter from G. D. Edwards (PECO Energy Company) to USNRC, dated March 12, 1999
3) Letter from B. C. Buckley, (USNRC), to J. A. Hutton (PECO Energy Company), dated January 12, 2000

Dear Sir/Madam:

In the Reference 3 letter, the U.S. Nuclear Regulatory Commission (USNRC) provided a Safety Evaluation Report (SER) evaluating ampacity derating issues at the Peach Bottom Atomic Power Station (PBAPS) and the Limerick Generating Station (LGS). As a result of our review of the above referenced SER, several issues needing clarification were identified. These issues were discussed in a telephone conference on February 11, 2000, with NRR staff members and PECO Energy Company representatives. The purpose of this letter is to provide the clarifying information that was requested during the telephone conference.

Information regarding the calculation of the heat generation rate for cables taking into account the diversity loading of the cables was submitted in Sections 2.2 and 3.2 of our letter dated March 12, 1999 (Reference 2 letter).

A029

The attachments to this letter provide information regarding the raceways and the associated power cables where diversity methodology is used in calculating the protected ampacity of the cables. Attachment 1 provides the information on the raceways wrapped by the Thermo-Lag material. Attachment 2 provides similar information for the raceways wrapped by the Darmatt material. Attachment 3 provides the same information for raceways using a combination of Thermo-Lag 330-1 and Thermo-Lag 770-1 (overlay) fire barrier materials. These attachments also provide information on raceway numbers, raceway type and size, cable numbers, the full load current, nominal and protected ampacity of the cable, Ampacity Derating Factors (ADF) and the percent margin. Information about the characteristics of the fire barrier material is also provided in these attachments. The attachments represent work performed at LGS. We request approval for the application of this methodology at both the LGS and PBAPS facilities.

We would also like to clarify and amplify Assumption 4 of Paragraph 2.2, on page 3 of 24 of the letter dated March 12, 1999. This assumption/approach currently states, "The thickness of any region cannot be less than the diameter of the thickest cable in that region."

The following clarification should help in explaining in more detail the approach used by PECO Energy Company to account for hot spot effects. The three region diversity model applicable to both LGS and PBAPS considers the cables in three distinct regions as: heavily loaded cables, moderately loaded cables and lightly loaded cables. The two region diversity model applicable to both LGS and PBAPS considers the cables in two distinct regions as: heavily loaded cables and lightly loaded cables. The two distinct region model is a subset of the three distinct region model. Therefore, the following discussion is applicable to both the three region and the two region diversity models. To account for the possibility of hot spots forming in the cable bed, it is assumed that the heavily loaded cables are surrounded by the moderately loaded cables which in turn are enveloped by the lightly loaded cables. The extent of each region is determined by adding the cross sectional areas of the cables enveloped within its boundaries. In doing so, it is also ensured that the extent of the region is large enough to accommodate the largest cable contained within it. In the existing statement the word " thickness" should be interpreted as "extent" or "boundary." Thus, the region of heavily loaded cables extends far enough to accommodate the largest cable contained within it. Similarly, the regions of moderately and lightly loaded cables extend far enough to accommodate the largest cable contained within them. In other words, the region of moderately loaded cables extends far enough on either side of the heavily loaded region such that the combined height of these two regions is equal to or greater than the diameter of the largest moderately loaded cable. This same rule has been applied to lightly loaded cables.

The purpose of this rule is, as stated above, to account for hot spot effects. The approach is even more conservative than the acceptable approach used at some other plants which use an 80 percent approach. In the 80 percent approach the combined depth of fill (i.e., thickness) of "hot" (heavily loaded) and "warm" (moderately loaded) cables is allowed to be 80 percent of the diameter of the largest cable contained in them. In other words, a "hot" cable is allowed to extend beyond the boundaries of the "hot" region.

We request the USNRC to approve the use of the diversity methodology described in our March 12, 1999, submittal and as further clarified by this letter. We also request that this approval be applicable to all the configurations identified in the attachments to this letter and for future use of this methodology at both LGS and PBAPS.

The following items were also discussed with the NRC during the aforementioned telephone conference. Please provide the requested concurrence of our understanding of the following items.

Pages 1 and 7 of the SER state that the meeting between PECO Energy Company and USNRC staff was held on November 4, 1998. However, the date of the meeting that was referenced in the letter dated March 12, 1999, was November 18, 1998. Please concur that the date of the meeting between PECO Energy Company and the USNRC was November 18, 1998.

Page 7 of the SER restates a statement made in the March 13, 1998, letter about increasing the ADF for single conduits in box enclosures by two percentage points. However, during a meeting between PECO Energy Company and the USNRC on November 18,1998, and in our subsequent letter to the USNRC (Reference 2 letter) it was demonstrated that our model for the conduit in the box enclosures was conservative and therefore, increasing the ADF further by 2 percent would not be required. The NRC staff has acknowledged and accepted this approach by stating that, " the information provided by the meeting held on November 4, 1998, with the licensee's representatives and the licensee's submittal dated March 12, 1999, clarified the validation studies for the conduit ampacity derating analysis thereby resolving the staff's concerns."

We are requesting NRC to clearly acknowledge their acceptance of our approach of not increasing the ADF by 2% for conduit in a box enclosure as we have demonstrated that the model used for calculating ADF is sufficiently conservative.

Page 8 of the SER , under "Licensee's Response" restated PECO Energy Company's response contained in the March 13, 1998 letter, stating that, " None of the Peach Bottom configurations compared with the industry test configurations and therefore, no industry ampacity test values were used for Peach Bottom." The ADFs for PBAPS at the time of our March 13, 1998, response were based on our heat transfer model. Subsequently, some of the PBAPS 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 PBAPS which were similar to the cases previously described for LGS.

We request NRC to approve the use of industry ampacity derating values for both LGS and PBAPS as long as the tested configurations are representative of the installed configurations at LGS or PBAPS.

Should you need additional information or have any questions regarding the information contained in this letter please do not hesitate to contact us.

Sincerely,

James A. Hutton
Director - Licensing

Attachments

cc: H. J. Miller, Administrator, Region I, USNRC
A. L. Burritt, USNRC Senior Resident Inspector, LGS
A. C. McMurtray, USNRC Senior Resident Inspector, PBAPS

ATTACHMENT 1

Clarification to Safety Evaluation Report Addressing Thermo-Lag Related Ampacity Derating Issues

Raceways wrapped by Thermo-Lag material

ATTACHMENT 1
LGS AMPACITY DERATING OF CABLES IN THERMO-LAG 330-1 GUTTERS USING DIVERSITY MODEL

FBS #	Gutter ID	Height (in)	Width (in)	Gutter Area (in2)	Cable	No. of Cables	Gutter %Fill Actual	Gutter Power % Fill	Region Number	Cable Function	Cable OD. (in)	Cable Area (in2)	No. of Conductor	Cable Size	Icond or Icable (Amps)	Inom (Amps)	Thermo-Lag Configuration	ADF	Iprot (Amps)	%Margin (I_{prot} I_{cond})/I_{cond}*100
NA	1AG017	8.00	8.00	64.00	1AY10102A	1	46.96	0.38	1	POWER	0.55	0.24	2	10 AWG	10.33	36.4	Gutter, 3hr/1hr - Abandon	0.36	20.73	100.81
NA	1AG024	8.00	8.00	64.00	1AD16201A	1	29.90	1.19	1	POWER	0.70	0.38	2	8 AWG	0.72	52.0	Gutter, 3-hr - Abandon	0.36	29.02	3930.58
NA	1AG024	8.00	8.00	64.00	1AD16205A	1	29.90	1.19	1	POWER	0.70	0.38	2	8 AWG	0.72	52.0	Gutter, 3-hr - Abandon	0.36	29.02	3930.58
7-03	1AG035	6.00	6.00	36.00	1AY10108A	1	22.36	16.78	1	POWER	0.70	0.38	2	8 AWG	15.70	52.0	Gutter, 3-hr - Upgrade	0.00	18.20	15.92
7-03	1AG035	6.00	6.00	36.00	1AY10102A	1	22.36	16.78	1	POWER	0.55	0.24	2	10 AWG	10.33	36.4	Gutter, 3-hr - Upgrade	0.00	12.74	23.39
7-03	1AG035	6.00	6.00	36.00	1AY10106A	1	22.36	16.78	1	POWER	0.70	0.38	2	8 AWG	13.93	52.0	Gutter, 3-hr - Upgrade	0.00	18.20	30.66
7-03	1AG035	6.00	6.00	36.00	1AY10105A	1	22.36	16.78	2	POWER	0.55	0.24	2	10 AWG	3.42	36.4	Gutter, 3-hr - Upgrade	0.64	4.59	34.07
7-03	1AG035	6.00	6.00	36.00	1AY10107A	1	22.36	16.78	1	POWER	0.55	0.24	2	10 AWG	9.14	36.4	Gutter, 3-hr - Upgrade	0.00	12.74	39.36
7-03	1AG035	6.00	6.00	36.00	1AY10113A	1	22.36	16.78	1	POWER	0.55	0.24	2	10 AWG	6.10	36.4	Gutter, 3-hr - Upgrade	0.00	12.74	109.02
7-03	1AG035	6.00	6.00	36.00	1AY10133A	1	22.36	16.78	2	POWER	0.55	0.24	2	10 AWG	2.08	36.4	Gutter, 3-hr - Upgrade	0.64	4.59	120.15
7-03	1AG035	6.00	6.00	36.00	1AY10134A	1	22.36	16.78	2	POWER	0.55	0.24	2	10 AWG	2.01	36.4	Gutter, 3-hr - Upgrade	0.64	4.59	128.37
7-03	1AG035	6.00	6.00	36.00	1AY10131A	1	22.36	16.78	1	POWER	0.55	0.24	2	10 AWG	5.00	36.4	Gutter, 3-hr - Upgrade	0.00	12.74	154.80
7-03	1AG035	6.00	6.00	36.00	1AY10111A	1	22.36	16.78	2	POWER	0.55	0.24	2	10 AWG	1.76	36.4	Gutter, 3-hr - Upgrade	0.64	4.59	160.71
7-03	1AG035	6.00	6.00	36.00	1AY10117A	1	22.36	16.78	2	POWER	0.55	0.24	2	10 AWG	1.70	36.4	Gutter, 3-hr - Upgrade	0.64	4.59	169.79
7-03	1AG035	6.00	6.00	36.00	1AY10123A	1	22.36	16.78	2	POWER	0.55	0.24	2	10 AWG	1.51	36.4	Gutter, 3-hr - Upgrade	0.64	4.59	204.41
7-03	1AG035	6.00	6.00	36.00	1AY10114A	1	22.36	16.78	2	POWER	0.55	0.24	2	10 AWG	1.32	36.4	Gutter, 3-hr - Upgrade	0.64	4.59	246.80
7-03	1AG035	6.00	6.00	36.00	1AY10132A	1	22.36	16.78	2	POWER	0.55	0.24	2	10 AWG	1.06	36.4	Gutter, 3-hr - Upgrade	0.64	4.59	333.36
7-03	1AG035	6.00	6.00	36.00	1AY10122A	1	22.36	16.78	2	POWER	0.55	0.24	2	10 AWG	0.95	36.4	Gutter, 3-hr - Upgrade	0.64	4.59	382.36
7-03	1AG035	6.00	6.00	36.00	1AY10135A	1	22.36	16.78	2	POWER	0.55	0.24	2	10 AWG	0.93	36.4	Gutter, 3-hr - Upgrade	0.64	4.59	391.40
7-03	1AG035	6.00	6.00	36.00	1AY10101A	1	22.36	16.78	2	POWER	0.55	0.24	2	10 AWG	0.55	36.4	Gutter, 3-hr - Upgrade	0.64	4.59	733.89
7-03	1AG035	6.00	6.00	36.00	1AY10116A	1	22.36	16.78	2	POWER	0.55	0.24	2	10 AWG	0.50	36.4	Gutter, 3-hr - Upgrade	0.64	4.59	817.28
7-03	1AG035	6.00	6.00	36.00	1AY10109A	1	22.36	16.78	2	POWER	0.55	0.24	2	10 AWG	0.44	36.4	Gutter, 3-hr - Upgrade	0.64	4.59	946.33
7-03	1AG035	6.00	6.00	36.00	1AY10112A	1	22.36	16.78	2	POWER	0.55	0.24	2	10 AWG	0.37	36.4	Gutter, 3-hr - Upgrade	0.64	4.59	1125.76
7-03	1AG035	6.00	6.00	36.00	1AY10121A	1	22.36	16.78	2	POWER	0.55	0.24	2	10 AWG	0.25	36.4	Gutter, 3-hr - Upgrade	0.64	4.59	1734.56
7-03	1AG035	6.00	6.00	36.00	1AY10124A	1	22.36	16.78	2	POWER	0.55	0.24	2	10 AWG	0.20	36.4	Gutter, 3-hr - Upgrade	0.64	4.59	2193.20
7-03	1AG035	6.00	6.00	36.00	1AY10136A	1	22.36	16.78	2	POWER	0.55	0.24	2	10 AWG	0.18	36.4	Gutter, 3-hr - Upgrade	0.64	4.59	2401.67
7-03	1AG037	6.00	6.00	36.00	1AD10210A	1	38.88	12.22	2	POWER	0.70	0.38	2	8 AWG	3.03	52.0	Gutter, 3hr/1hr - Upgrade	0.82	3.33	9.97
7-03	1AG037	6.00	6.00	36.00	1AY10102A	1	38.88	12.22	1	POWER	0.55	0.24	2	10 AWG	10.33	36.4	Gutter, 3hr/1hr - Upgrade	0.00	12.96	25.51
7-03	1AG037	6.00	6.00	36.00	1AY10111A	1	38.88	12.22	2	POWER	0.55	0.24	2	10 AWG	1.76	36.4	Gutter, 3hr/1hr - Upgrade	0.82	2.33	32.59
7-03	1AG037	6.00	6.00	36.00	1AY10106A	1	38.88	12.22	1	POWER	0.70	0.38	2	8 AWG	13.93	52.0	Gutter, 3hr/1hr - Upgrade	0.00	18.51	32.90
7-03	1AG037	6.00	6.00	36.00	1AY10117A	1	38.88	12.22	2	POWER	0.55	0.24	2	10 AWG	1.70	36.4	Gutter, 3hr/1hr - Upgrade	0.82	2.33	37.21
7-03	1AG037	6.00	6.00	36.00	1AY10107A	1	38.88	12.22	1	POWER	0.55	0.24	2	10 AWG	9.14	36.4	Gutter, 3hr/1hr - Upgrade	0.00	12.96	41.75
7-03	1AG037	6.00	6.00	36.00	1AY10123A	1	38.88	12.22	2	POWER	0.55	0.24	2	10 AWG	1.51	36.4	Gutter, 3hr/1hr - Upgrade	0.82	2.33	54.81
7-03	1AG037	6.00	6.00	36.00	1AY10114A	1	38.88	12.22	2	POWER	0.55	0.24	2	10 AWG	1.32	36.4	Gutter, 3hr/1hr - Upgrade	0.82	2.33	76.37
7-03	1AG037	6.00	6.00	36.00	1AD10216A	1	38.88	12.22	1	POWER	0.55	0.24	2	10 AWG	7.11	36.4	Gutter, 3hr/1hr - Upgrade	0.00	12.96	82.38
7-03	1AG037	6.00	6.00	36.00	1AY10113A	1	38.88	12.22	1	POWER	0.55	0.24	2	10 AWG	6.10	36.4	Gutter, 3hr/1hr - Upgrade	0.00	12.96	112.61
7-03	1AG037	6.00	6.00	36.00	1AY10101A	1	38.88	12.22	2	POWER	0.55	0.24	2	10 AWG	0.55	36.4	Gutter, 3hr/1hr - Upgrade	0.82	2.33	324.09
7-03	1AG037	6.00	6.00	36.00	1AD16201A	1	38.88	12.22	2	POWER	0.70	0.38	2	8 AWG	0.72	52.0	Gutter, 3hr/1hr - Upgrade	0.82	3.33	362.80
7-03	1AG037	6.00	6.00	36.00	1AD16205A	1	38.88	12.22	2	POWER	0.70	0.38	2	8 AWG	0.72	52.0	Gutter, 3hr/1hr - Upgrade	0.82	3.33	362.80
7-03	1AG037	6.00	6.00	36.00	1AY10116A	1	38.88	12.22	2	POWER	0.55	0.24	2	10 AWG	0.50	36.4	Gutter, 3hr/1hr - Upgrade	0.82	2.33	366.50
7-03	1AG037	6.00	6.00	36.00	1AY10109A	1	38.88	12.22	2	POWER	0.55	0.24	2	10 AWG	0.44	36.4	Gutter, 3hr/1hr - Upgrade	0.82	2.33	432.13
7-03	1AG037	6.00	6.00	36.00	1AY10121A	1	38.88	12.22	2	POWER	0.55	0.24	2	10 AWG	0.25	36.4	Gutter, 3hr/1hr - Upgrade	0.82	2.33	833.00
NA	1BG033	6.00	6.00	36.00	1BY10218A	1	28.11	7.44	1	POWER	0.55	0.24	2	10 AWG	8.96	36.4	Gutter, 3-hour - Thermal Shor	0.36	11.65	30.01
NA	1BG033	6.00	6.00	36.00	1BY10215A	1	28.11	7.44	1	POWER	0.55	0.24	2	10 AWG	2.98	36.4	Gutter, 3-hour - Thermal Shor	0.36	11.65	291.53
NA	1BG033	6.00	6.00	36.00	1BY10206A	1	28.11	7.44	1	POWER	0.55	0.24	2	10 AWG	2.15	36.4	Gutter, 3-hour - Thermal Shor	0.36	11.65	442.19

ATTACHMENT 1
LGS AMPACITY DERATING OF CABLES IN THERMO-LAG 330-1 GUTTERS USING DIVERSITY MODEL

FBS #	Gutter ID	Height (in)	Width (in)	Gutter Area (in2)	Cable	No. of Cables	Gutter %Fill Actual	Gutter Power % Fill	Region Number	Cable Function	Cable OD. (in)	Cable Area (in2)	No. of Conductor	Cable Size	Icond or Icable (Amps)	Inom (Amps)	Thermo-Lag Configuration	ADF	Iprot (Amps)	%Margin (I_{prot} I_{cond})/I_{cond}*100
NA	1BG033	6.00	6.00	36.00	1BD10210A	1	28.11	7.44	1	POWER	0.70	0.38	2	8 AWG	3.03	52.0	Gutter, 3-hour - Thermal Shor	0.36	16.64	449.17
NA	1BG033	6.00	6.00	36.00	1BY10217A	1	28.11	7.44	1	POWER	0.55	0.24	2	10 AWG	1.70	36.4	Gutter, 3-hour - Thermal Shor	0.36	11.65	585.18
NA	1BG033	6.00	6.00	36.00	1BY10216A	1	28.11	7.44	1	POWER	0.55	0.24	2	10 AWG	1.13	36.4	Gutter, 3-hour - Thermal Shor	0.36	11.65	935.38
NA	1BG033	6.00	6.00	36.00	1BY10232A	1	28.11	7.44	1	POWER	0.55	0.24	2	10 AWG	1.06	36.4	Gutter, 3-hour - Thermal Shor	0.36	11.65	1000.60
NA	1BG033	6.00	6.00	36.00	1BY10235A	1	28.11	7.44	1	POWER	0.55	0.24	2	10 AWG	0.88	36.4	Gutter, 3-hour - Thermal Shor	0.36	11.65	1218.64
NA	1BG033	6.00	6.00	36.00	1BY10209A	1	28.11	7.44	1	POWER	0.55	0.24	2	10 AWG	0.44	36.4	Gutter, 3-hour - Thermal Shor	0.36	11.65	2557.34
NA	1BG033	6.00	6.00	36.00	1BD16202B	1	28.11	7.44	1	POWER	0.70	0.38	2	8 AWG	0.48	52.0	Gutter, 3-hour - Thermal Shor	0.36	16.64	3339.15
NA	1BG039	8.00	8.00	64.00	1BY10206A	1	14.89	2.75	1	POWER	0.55	0.24	2	10 AWG	2.15	36.4	Gutter, 3-hr - Abandon	0.36	12.70	490.98
NA	1BG039	8.00	8.00	64.00	1BD10210A	1	14.89	2.75	1	POWER	0.70	0.38	2	8 AWG	3.03	52.0	Gutter, 3-hr - Abandon	0.36	18.14	498.60
NA	1BG039	8.00	8.00	64.00	1BD10210C	1	14.89	2.75	1	POWER	0.70	0.38	2	8 AWG	3.03	52.0	Gutter, 3-hr - Abandon	0.36	18.14	498.60
NA	1BG039	8.00	8.00	64.00	1BY10206B	1	14.89	2.75	1	POWER	0.70	0.38	2	8 AWG	2.15	52.0	Gutter, 3-hr - Abandon	0.36	18.14	744.26
NA	1BG039	8.00	8.00	64.00	1BD10209B	1	14.89	2.75	1	POWER	0.70	0.38	2	8 AWG	0.48	52.0	Gutter, 3-hr - Abandon	0.36	18.14	3648.68
NA	1CG006	6.00	6.00	36.00	1CD10210A	1	32.25	4.22	1	POWER	0.70	0.38	2	8 AWG	3.03	52.0	Gutter, 3-hr - Abandon	0.36	23.30	668.84
NA	1CG006	6.00	6.00	36.00	1CY10306A	1	32.25	4.22	1	POWER	0.70	0.38	2	8 AWG	1.42	52.0	Gutter, 3-hr - Abandon	0.36	23.30	1536.72
NA	1CG006	6.00	6.00	36.00	2CD16201A	1	32.25	4.22	1	POWER	0.70	0.38	2	8 AWG	0.72	52.0	Gutter, 3-hr - Abandon	0.36	23.30	3135.56
NA	1CG006	6.00	6.00	36.00	2CD16205A	1	32.25	4.22	1	POWER	0.70	0.38	2	8 AWG	0.72	52.0	Gutter, 3-hr - Abandon	0.36	23.30	3135.56
NA	1CG012	8.00	8.00	64.00	1CY10315A	1	22.76	0.75	1	POWER	0.55	0.24	2	10 AWG	0.14	36.4	Gutter, 3-hour - Thermal Shor	0.36	20.31	14239.37
NA	1CG013	8.00	8.00	64.00	1CD10210A	1	39.03	3.13	1	POWER	0.70	0.38	2	8 AWG	3.03	52.0	Gutter, 3hr/1hr - Abandon	0.36	14.81	388.77
NA	1CG013	8.00	8.00	64.00	1CY10306A	1	39.03	3.13	1	POWER	0.70	0.38	2	8 AWG	1.42	52.0	Gutter, 3hr/1hr - Abandon	0.36	14.81	940.49
NA	1CG013	8.00	8.00	64.00	2CD16201A	1	39.03	3.13	1	POWER	0.70	0.38	2	8 AWG	0.72	52.0	Gutter, 3hr/1hr - Abandon	0.36	14.81	1956.89
NA	1CG013	8.00	8.00	64.00	2CD16205A	1	39.03	3.13	1	POWER	0.70	0.38	2	8 AWG	0.72	52.0	Gutter, 3hr/1hr - Abandon	0.36	14.81	1956.89
NA	1CG013	8.00	8.00	64.00	1CY10315A	1	39.03	3.13	1	POWER	0.55	0.24	2	10 AWG	0.14	36.4	Gutter, 3hr/1hr - Abandon	0.36	10.37	7217.68
NA	1CG014	8.00	8.00	64.00	1CD10207A	1	26.82	1.88	1	POWER	0.55	0.24	2	10 AWG	7.61	36.4	Gutter,1-hr - Abandon	0.36	10.37	36.27
NA	1CG014	8.00	8.00	64.00	1CY10307A	1	26.82	1.88	1	POWER	0.55	0.24	2	10 AWG	7.01	36.4	Gutter,1-hr - Abandon	0.36	10.37	47.96
NA	1CG014	8.00	8.00	64.00	1CD10203A	1	26.82	1.88	1	POWER	0.55	0.24	2	10 AWG	6.85	36.4	Gutter,1-hr - Abandon	0.36	10.37	51.44
NA	1CG014	8.00	8.00	64.00	1CD10205A	1	26.82	1.88	1	POWER	0.55	0.24	2	10 AWG	2.19	36.4	Gutter,1-hr - Abandon	0.36	10.37	374.18
NA	1CG014	8.00	8.00	64.00	1CY10321A	1	26.82	1.88	1	POWER	0.55	0.24	2	10 AWG	0.77	36.4	Gutter,1-hr - Abandon	0.36	10.37	1252.18
NA	20G056	8.00	8.00	64.00	20Y20126A	1	14.54	1.00	1	POWER	0.55	0.24	2	10 AWG	10.33	36.4	Gutter, 3-hour - Thermal Shor	0.36	20.31	96.59
NA	20G056	8.00	8.00	64.00	23Y20128A	1	14.54	1.00	1	POWER	0.70	0.38	2	8 AWG	2.55	52.0	Gutter, 3-hour - Thermal Shor	0.36	29.02	1038.05
NA	2AG017	8.00	8.00	64.00	2AY10122A	1	35.73	0.38	1	POWER	0.55	0.24	2	10 AWG	0.95	36.4	Gutter, 3-hour - Thermal Shor	0.36	25.39	2570.57
NA	2AG024	8.00	8.00	64.00	2AD10209A	1	34.79	2.69	1	POWER	0.70	0.38	2	8 AWG	13.24	52.0	Gutter, 3-hour - Thermal Shor	0.36	18.14	36.94
NA	2AG024	8.00	8.00	64.00	2AD16202A	1	34.79	2.69	1	POWER	0.70	0.38	2	8 AWG	6.22	52.0	Gutter, 3-hour - Thermal Shor	0.36	18.14	191.60
NA	2AG024	8.00	8.00	64.00	2AD10205A	1	34.79	2.69	1	POWER	0.55	0.24	2	10 AWG	3.42	36.4	Gutter, 3-hour - Thermal Shor	0.36	12.70	270.94
NA	2AG024	8.00	8.00	64.00	2AD10208A	1	34.79	2.69	1	POWER	0.55	0.24	2	10 AWG	1.40	36.4	Gutter, 3-hour - Thermal Shor	0.36	12.70	808.33
NA	2AG024	8.00	8.00	64.00	2AD10211A	1	34.79	2.69	1	POWER	0.55	0.24	2	10 AWG	0.96	36.4	Gutter, 3-hour - Thermal Shor	0.36	12.70	1220.60
NA	2AG024	8.00	8.00	64.00	2AD10212A	1	34.79	2.69	1	POWER	0.55	0.24	2	10 AWG	0.29	36.4	Gutter, 3-hour - Thermal Shor	0.36	12.70	4328.13
NA	2AG027	8.00	8.00	64.00	2AD10207A	1	45.35	4.56	1	POWER	0.55	0.24	2	10 AWG	9.04	36.4	Gutter, 3-hr - Abandon	0.36	12.70	40.40
NA	2AG027	8.00	8.00	64.00	2AY10106A	1	45.35	4.56	1	POWER	0.70	0.38	2	8 AWG	12.54	52.0	Gutter, 3-hr - Abandon	0.36	18.14	44.62
NA	2AG027	8.00	8.00	64.00	2AY10107A	1	45.35	4.56	1	POWER	0.55	0.24	2	10 AWG	8.49	36.4	Gutter, 3-hr - Abandon	0.36	12.70	49.52
NA	2AG027	8.00	8.00	64.00	2AD10220A	1	45.35	4.56	1	POWER	0.55	0.24	2	10 AWG	7.33	36.4	Gutter, 3-hr - Abandon	0.36	12.70	73.23
NA	2AG027	8.00	8.00	64.00	2AD10210A	1	45.35	4.56	1	POWER	0.70	0.38	2	8 AWG	4.99	52.0	Gutter, 3-hr - Abandon	0.36	18.14	263.55

ATTACHMENT 1
LGS AMPACITY DERATING OF CABLES IN THERMO-LAG 330-1 GUTTERS USING DIVERSITY MODEL

FBS #	Gutter ID	Height (in)	Width (in)	Gutter Area (in2)	Cable	No. of Cables	Gutter %Fill Actual	Gutter Power % Fill	Region Number	Cable Function	Cable OD. (in)	Cable Area (in2)	No. of Conductor	Cable Size	Icond or Icable (Amps)	Inom (Amps)	Thermo-Lag Configuration	ADF	Iprot (Amps)	%Margin (I_{prot} I_{cond})/I_{cond}*100
NA	2AG027	8.00	8.00	64.00	2AY10134A	1	45.35	4.56	1	POWER	0.55	0.24	2	10 AWG	2.01	36.4	Gutter, 3-hr - Abandon	0.36	12.70	532.18
NA	2AG027	8.00	8.00	64.00	2AY10123A	1	45.35	4.56	1	POWER	0.55	0.24	2	10 AWG	1.61	36.4	Gutter, 3-hr - Abandon	0.36	12.70	688.59
NA	2AG027	8.00	8.00	64.00	2AY10132A	1	45.35	4.56	1	POWER	0.55	0.24	2	10 AWG	1.06	36.4	Gutter, 3-hr - Abandon	0.36	12.70	1099.65
NA	2AG027	8.00	8.00	64.00	2AY10101A	1	45.35	4.56	1	POWER	0.55	0.24	2	10 AWG	0.55	36.4	Gutter, 3-hr - Abandon	0.36	12.70	2208.42
NA	2AG028	8.00	8.00	64.00	2AD10203A	1	22.51	0.38	1	POWER	0.55	0.24	2	10 AWG	2.78	36.4	Gutter, 3-hour - Thermal Shor	0.36	25.39	814.19
NA	2AG030	8.00	8.00	64.00	2AY10106A	1	44.23	3.81	1	POWER	0.70	0.38	2	8 AWG	12.54	52.0	Gutter, 3-hr - Abandon	0.36	18.14	44.62
NA	2AG030	8.00	8.00	64.00	2AY10107A	1	44.23	3.81	1	POWER	0.55	0.24	2	10 AWG	8.49	36.4	Gutter, 3-hr - Abandon	0.36	12.70	49.52
NA	2AG030	8.00	8.00	64.00	2AD10210A	1	44.23	3.81	1	POWER	0.70	0.38	2	8 AWG	4.99	52.0	Gutter, 3-hr - Abandon	0.36	18.14	263.55
NA	2AG030	8.00	8.00	64.00	2AY10134A	1	44.23	3.81	1	POWER	0.55	0.24	2	10 AWG	2.01	36.4	Gutter, 3-hr - Abandon	0.36	12.70	532.18
NA	2AG030	8.00	8.00	64.00	2AY10123A	1	44.23	3.81	1	POWER	0.55	0.24	2	10 AWG	1.61	36.4	Gutter, 3-hr - Abandon	0.36	12.70	688.59
NA	2AG030	8.00	8.00	64.00	2AY10132A	1	44.23	3.81	1	POWER	0.55	0.24	2	10 AWG	1.06	36.4	Gutter, 3-hr - Abandon	0.36	12.70	1099.65
NA	2AG030	8.00	8.00	64.00	2AY10101A	1	44.23	3.81	1	POWER	0.55	0.24	2	10 AWG	0.55	36.4	Gutter, 3-hr - Abandon	0.36	12.70	2208.42
NA	2AG033	8.00	8.00	64.00	2AY10106A	1	44.31	1.19	1	POWER	0.70	0.38	2	8 AWG	12.54	52.0	Gutter, 3-hr - Abandon	0.36	29.02	131.39
NA	2AG033	8.00	8.00	64.00	2AD10210A	1	44.31	1.19	1	POWER	0.70	0.38	2	8 AWG	4.99	52.0	Gutter, 3-hr - Abandon	0.36	29.02	481.69
NA	2AG034	8.00	8.00	64.00	2AY10107A	1	7.98	2.63	1	POWER	0.55	0.24	2	10 AWG	8.49	36.4	Gutter, 3-hr - Thermal Short	0.36	12.70	49.59
NA	2AG034	8.00	8.00	64.00	2AY10134A	1	7.98	2.63	1	POWER	0.55	0.24	2	10 AWG	2.01	36.4	Gutter, 3-hr - Thermal Short	0.36	12.70	531.84
NA	2AG034	8.00	8.00	64.00	2AY10123A	1	7.98	2.63	1	POWER	0.55	0.24	2	10 AWG	1.48	36.4	Gutter, 3-hr - Thermal Short	0.36	12.70	758.11
NA	2AG034	8.00	8.00	64.00	2AY10132A	1	7.98	2.63	1	POWER	0.55	0.24	2	10 AWG	1.06	36.4	Gutter, 3-hr - Thermal Short	0.36	12.70	1098.11
NA	2AG034	8.00	8.00	64.00	2AY10101A	1	7.98	2.63	1	POWER	0.55	0.24	2	10 AWG	0.55	36.4	Gutter, 3-hr - Thermal Short	0.36	12.70	2209.09
7-07	2AG037	6.00	6.00	36.00	2AY10102A	1	17.58	14.11	1	POWER	0.55	0.24	2	10 AWG	13.23	36.4	Gutter, 3-hr - Upgrade	0.00	14.56	10.09
7-07	2AG037	6.00	6.00	36.00	2AY10108A	1	17.58	14.11	1	POWER	0.70	0.38	2	8 AWG	15.70	52.0	Gutter, 3-hr - Upgrade	0.00	20.80	32.48
7-07	2AG037	6.00	6.00	36.00	2AY10133A	1	17.58	14.11	2	POWER	0.55	0.24	2	10 AWG	2.08	36.4	Gutter, 3-hr - Upgrade	0.79	3.06	46.76
7-07	2AG037	6.00	6.00	36.00	2AY10134A	1	17.58	14.11	2	POWER	0.55	0.24	2	10 AWG	2.01	36.4	Gutter, 3-hr - Upgrade	0.79	3.06	52.25
7-07	2AG037	6.00	6.00	36.00	2AY10106A	1	17.58	14.11	1	POWER	0.70	0.38	2	8 AWG	12.54	52.0	Gutter, 3-hr - Upgrade	0.00	20.80	65.85
7-07	2AG037	6.00	6.00	36.00	2AY10107A	1	17.58	14.11	1	POWER	0.55	0.24	2	10 AWG	8.49	36.4	Gutter, 3-hr - Upgrade	0.00	14.56	71.46
7-07	2AG037	6.00	6.00	36.00	2AY10111A	1	17.58	14.11	2	POWER	0.55	0.24	2	10 AWG	1.76	36.4	Gutter, 3-hr - Upgrade	0.79	3.06	73.81
7-07	2AG037	6.00	6.00	36.00	2AY10123A	1	17.58	14.11	2	POWER	0.55	0.24	2	10 AWG	1.61	36.4	Gutter, 3-hr - Upgrade	0.79	3.06	89.91
7-07	2AG037	6.00	6.00	36.00	2AY10105A	1	17.58	14.11	2	POWER	0.55	0.24	2	10 AWG	1.56	36.4	Gutter, 3-hr - Upgrade	0.79	3.06	96.63
7-07	2AG037	6.00	6.00	36.00	2AY10114A	1	17.58	14.11	2	POWER	0.55	0.24	2	10 AWG	1.32	36.4	Gutter, 3-hr - Upgrade	0.79	3.06	131.20
7-07	2AG037	6.00	6.00	36.00	2AY10113A	1	17.58	14.11	2	POWER	0.55	0.24	2	10 AWG	1.22	36.4	Gutter, 3-hr - Upgrade	0.79	3.06	151.31
7-07	2AG037	6.00	6.00	36.00	2AY10132A	1	17.58	14.11	2	POWER	0.55	0.24	2	10 AWG	1.06	36.4	Gutter, 3-hr - Upgrade	0.79	3.06	188.91
7-07	2AG037	6.00	6.00	36.00	2AY10122A	1	17.58	14.11	2	POWER	0.55	0.24	2	10 AWG	0.95	36.4	Gutter, 3-hr - Upgrade	0.79	3.06	221.57
7-07	2AG037	6.00	6.00	36.00	2AY10101A	1	17.58	14.11	2	POWER	0.55	0.24	2	10 AWG	0.55	36.4	Gutter, 3-hr - Upgrade	0.79	3.06	455.93
7-07	2AG037	6.00	6.00	36.00	2AY10116A	1	17.58	14.11	2	POWER	0.55	0.24	2	10 AWG	0.50	36.4	Gutter, 3-hr - Upgrade	0.79	3.06	511.52
7-07	2AG037	6.00	6.00	36.00	2AY10109A	1	17.58	14.11	2	POWER	0.55	0.24	2	10 AWG	0.44	36.4	Gutter, 3-hr - Upgrade	0.79	3.06	597.55
7-07	2AG037	6.00	6.00	36.00	2AY10112A	1	17.58	14.11	2	POWER	0.55	0.24	2	10 AWG	0.37	36.4	Gutter, 3-hr - Upgrade	0.79	3.06	717.18
7-07	2AG037	6.00	6.00	36.00	2AY10136A	1	17.58	14.11	2	POWER	0.55	0.24	2	10 AWG	0.18	36.4	Gutter, 3-hr - Upgrade	0.79	3.06	1567.78
7-07	2AG038	6.00	6.00	36.00	2AD10210A	1	44.97	21.00	2	POWER	0.70	0.38	2	8 AWG	4.99	52.0	Gutter, 3-hr - Upgrade	0.64	6.55	31.33
7-07	2AG038	6.00	6.00	36.00	2AD10205A	1	44.97	21.00	2	POWER	0.55	0.24	2	10 AWG	3.42	36.4	Gutter, 3-hr - Upgrade	0.64	4.59	34.00
7-07	2AG038	6.00	6.00	36.00	2AD10209A	1	44.97	21.00	1	POWER	0.70	0.38	2	8 AWG	13.24	52.0	Gutter, 3-hr - Upgrade	0.00	18.20	37.41
7-07	2AG038	6.00	6.00	36.00	2AD10207A	1	44.97	21.00	1	POWER	0.55	0.24	2	10 AWG	9.04	36.4	Gutter, 3-hr - Upgrade	0.00	12.74	40.88
7-07	2AG038	6.00	6.00	36.00	2AY10106A	1	44.97	21.00	1	POWER	0.70	0.38	2	8 AWG	12.54	52.0	Gutter, 3-hr - Upgrade	0.00	18.20	45.12
7-07	2AG038	6.00	6.00	36.00	2AY10117A	1	44.97	21.00	2	POWER	0.55	0.24	2	10 AWG	3.10	36.4	Gutter, 3-hr - Upgrade	0.64	4.59	47.95

ATTACHMENT 1
LGS AMPACITY DERATING OF CABLES IN THERMO-LAG 330-1 GUTTERS USING DIVERSITY MODEL

FBS #	Gutter ID	Height (in)	Width (in)	Gutter Area (in2)	Cable	No. of Cables	Gutter %Fill Actual	Gutter Power % Fill	Region Number	Cable Function	Cable OD. (in)	Cable Area (in2)	No. of Conductor	Cable Size	Icond or Icable (Amps)	Inom (Amps)	Thermo-Lag Configuration	ADF	Iprot (Amps)	%Margin (I_{prot} I_{cond})/I_{cond}*100
7-07	2AG038	6.00	6.00	36.00	2AY10107A	1	44.97	21.00	1	POWER	0.55	0.24	2	10 AWG	8.49	36.4	Gutter, 3-hr - Upgrade	0.00	12.74	50.03
7-07	2AG038	6.00	6.00	36.00	2AD10220A	1	44.97	21.00	1	POWER	0.55	0.24	2	10 AWG	7.33	36.4	Gutter, 3-hr - Upgrade	0.00	12.74	73.82
7-07	2AG038	6.00	6.00	36.00	2AD10216A	1	44.97	21.00	1	POWER	0.55	0.24	2	10 AWG	7.11	36.4	Gutter, 3-hr - Upgrade	0.00	12.74	79.30
7-07	2AG038	6.00	6.00	36.00	2AD10213A	1	44.97	21.00	2	POWER	0.55	0.24	2	10 AWG	2.31	36.4	Gutter, 3-hr - Upgrade	0.64	4.59	98.71
7-07	2AG038	6.00	6.00	36.00	2AD10218A	1	44.97	21.00	1	POWER	0.55	0.24	2	10 AWG	6.37	36.4	Gutter, 3-hr - Upgrade	0.00	12.74	99.98
7-07	2AG038	6.00	6.00	36.00	2AY10134A	1	44.97	21.00	2	POWER	0.55	0.24	2	10 AWG	2.01	36.4	Gutter, 3-hr - Upgrade	0.64	4.59	128.37
7-07	2AG038	6.00	6.00	36.00	2AY10111A	1	44.97	21.00	2	POWER	0.55	0.24	2	10 AWG	1.76	36.4	Gutter, 3-hr - Upgrade	0.64	4.59	160.71
7-07	2AG038	6.00	6.00	36.00	2AY10123A	1	44.97	21.00	2	POWER	0.55	0.24	2	10 AWG	1.61	36.4	Gutter, 3-hr - Upgrade	0.64	4.59	184.87
7-07	2AG038	6.00	6.00	36.00	2AD16202A	1	44.97	21.00	1	POWER	0.70	0.38	2	8 AWG	6.22	52.0	Gutter, 3-hr - Upgrade	0.00	18.20	192.60
7-07	2AG038	6.00	6.00	36.00	2AD10208A	1	44.97	21.00	2	POWER	0.55	0.24	2	10 AWG	1.40	36.4	Gutter, 3-hr - Upgrade	0.64	4.59	228.13
7-07	2AG038	6.00	6.00	36.00	2AY10114A	1	44.97	21.00	2	POWER	0.55	0.24	2	10 AWG	1.32	36.4	Gutter, 3-hr - Upgrade	0.64	4.59	246.80
7-07	2AG038	6.00	6.00	36.00	2AY10113A	1	44.97	21.00	2	POWER	0.55	0.24	2	10 AWG	1.22	36.4	Gutter, 3-hr - Upgrade	0.64	4.59	276.96
7-07	2AG038	6.00	6.00	36.00	2AY10132A	1	44.97	21.00	2	POWER	0.55	0.24	2	10 AWG	1.06	36.4	Gutter, 3-hr - Upgrade	0.64	4.59	333.36
7-07	2AG038	6.00	6.00	36.00	2AD10211A	1	44.97	21.00	2	POWER	0.55	0.24	2	10 AWG	0.96	36.4	Gutter, 3-hr - Upgrade	0.64	4.59	377.05
7-07	2AG038	6.00	6.00	36.00	2AY10101A	1	44.97	21.00	2	POWER	0.55	0.24	2	10 AWG	0.55	36.4	Gutter, 3-hr - Upgrade	0.64	4.59	733.89
7-07	2AG038	6.00	6.00	36.00	2AY10116A	1	44.97	21.00	2	POWER	0.55	0.24	2	10 AWG	0.50	36.4	Gutter, 3-hr - Upgrade	0.64	4.59	817.28
7-07	2AG038	6.00	6.00	36.00	2AY10109A	1	44.97	21.00	2	POWER	0.55	0.24	2	10 AWG	0.44	36.4	Gutter, 3-hr - Upgrade	0.64	4.59	946.33
7-07	2AG038	6.00	6.00	36.00	2AD10209B	1	44.97	21.00	2	POWER	0.70	0.38	2	8 AWG	0.48	52.0	Gutter, 3-hr - Upgrade	0.64	6.55	1254.17
7-07	2AG038	6.00	6.00	36.00	2AD16202B	1	44.97	21.00	2	POWER	0.70	0.38	2	8 AWG	0.48	52.0	Gutter, 3-hr - Upgrade	0.64	6.55	1254.17
7-07	2AG038	6.00	6.00	36.00	2AD10212A	1	44.97	21.00	2	POWER	0.55	0.24	2	10 AWG	0.29	36.4	Gutter, 3-hr - Upgrade	0.64	4.59	1499.61
NA	2BG018	6.00	6.00	36.00	2BD10209A	1	40.72	2.78	1	POWER	0.70	0.38	2	8 AWG	13.24	52.0	Gutter, 3-hour - Thermal Shor	0.36	29.02	119.11
NA	2BG018	6.00	6.00	36.00	2BD10210A	1	40.72	2.78	1	POWER	0.70	0.38	2	8 AWG	6.10	52.0	Gutter, 3-hour - Thermal Shor	0.36	29.02	375.74
NA	2BG018	6.00	6.00	36.00	2BY10206A	1	40.72	2.78	1	POWER	0.55	0.24	2	10 AWG	2.15	36.4	Gutter, 3-hour - Thermal Shor	0.36	20.31	845.58
NA	2BG027	8.00	8.00	64.00	2BY10201A	1	23.76	0.38	1	POWER	0.55	0.24	2	10 AWG	0.42	36.4	Gutter, 1-hr - Removed	0.36	20.63	4811.90
NA	2BG104	8.00	8.00	64.00	2BB21223A	1	24.95	1.98	1	POWER	1.00	0.79	3	4 AWG	18.04	91.0	Gutter, 3-hr - Abandon	0.36	36.28	101.10
NA	2BG104	8.00	8.00	64.00	2BY10214A	1	24.95	1.98	1	POWER	0.55	0.24	2	10 AWG	1.32	36.4	Gutter, 3-hr - Abandon	0.36	14.51	997.42
NA	2BG104	8.00	8.00	64.00	2BY10216A	1	24.95	1.98	1	POWER	0.55	0.24	2	10 AWG	1.13	36.4	Gutter, 3-hr - Abandon	0.36	14.51	1190.08
NA	2CG009	8.00	8.00	64.00	2CD10210A	1	41.78	1.94	1	POWER	0.70	0.38	2	8 AWG	4.99	52.0	Gutter, 1-hr - Abandon	0.36	25.39	408.98
NA	2CG009	8.00	8.00	64.00	2CY10306A	1	41.78	1.94	1	POWER	0.70	0.38	2	8 AWG	1.07	52.0	Gutter, 1-hr - Abandon	0.36	25.39	2263.94
NA	2CG009	8.00	8.00	64.00	2CY10315A	1	41.78	1.94	1	POWER	0.55	0.24	2	10 AWG	0.14	36.4	Gutter, 1-hr - Abandon	0.36	17.77	12446.95
NA	2CG011	6.00	6.00	36.00	2CD10210A	1	22.97	2.11	1	POWER	0.70	0.38	2	8 AWG	4.99	52.0	Gutter, 3-hr - Abandon	0.36	29.02	481.69
NA	2CG011	6.00	6.00	36.00	2CY10306A	1	22.97	2.11	1	POWER	0.70	0.38	2	8 AWG	1.07	52.0	Gutter, 3-hr - Abandon	0.36	29.02	2601.64
NA	2DG011	8.00	8.00	64.00	2DB21805A	1	38.00	3.11	1	POWER	1.00	0.79	3	4 AWG	19.49	91.0	Gutter, 1-hr - Abandon	0.36	25.92	32.97
NA	2DG011	8.00	8.00	64.00	2DY16402A	1	38.00	3.11	1	POWER	0.55	0.24	2	10 AWG	7.74	36.4	Gutter, 1-hr - Abandon	0.36	10.37	33.89
NA	2DG011	8.00	8.00	64.00	2DD10207A	1	38.00	3.11	1	POWER	0.55	0.24	2	10 AWG	6.93	36.4	Gutter, 1-hr - Abandon	0.36	10.37	49.61
NA	2DG011	8.00	8.00	64.00	2DD10205A	1	38.00	3.11	1	POWER	0.55	0.24	2	10 AWG	2.19	36.4	Gutter, 1-hr - Abandon	0.36	10.37	374.18
NA	2DG011	8.00	8.00	64.00	2DY10421A	1	38.00	3.11	1	POWER	0.55	0.24	2	10 AWG	0.77	36.4	Gutter, 1-hr - Abandon	0.36	10.37	1252.18
NA	2DG011	8.00	8.00	64.00	2DY10415A	1	38.00	3.11	1	POWER	0.55	0.24	2	10 AWG	0.14	36.4	Gutter, 1-hr - Abandon	0.36	10.37	7217.68
NA	2DG040	8.00	8.00	64.00	2DD10209A	1	33.42	3.59	1	POWER	0.55	0.24	2	10 AWG	8.34	36.4	Gutter, 1-hr - Abandon	0.36	10.37	24.26
NA	2DG040	8.00	8.00	64.00	2DB21805A	1	33.42	3.59	1	POWER	1.00	0.79	3	4 AWG	19.49	91.0	Gutter, 1-hr - Abandon	0.36	25.92	32.97
NA	2DG040	8.00	8.00	64.00	2DY16402A	1	33.42	3.59	1	POWER	0.55	0.24	2	10 AWG	7.74	36.4	Gutter, 1-hr - Abandon	0.36	10.37	33.89
NA	2DG040	8.00	8.00	64.00	2DB22421A	1	33.42	3.59	1	POWER	1.00	0.79	3	4 AWG	18.04	91.0	Gutter, 1-hr - Abandon	0.36	25.92	43.65

ATTACHMENT 1
LGS AMPACITY DERATING OF CABLES IN THERMO-LAG 330-1 GUTTERS USING DIVERSITY MODEL

FBS #	Gutter ID	Height (in)	Width (in)	Gutter Area (in2)	Cable	No. of Cables	Gutter %Fill Actual	Gutter Power % Fill	Region Number	Cable Function	Cable OD. (in)	Cable Area (in2)	No. of Conductor	Cable Size	Icond or Icable (Amps)	Inom (Amps)	Thermo-Lag Configuration	ADF	Iprot (Amps)	%Margin (I_{prot} I_{cond})/I_{cond}*100
NA	2DG040	8.00	8.00	64.00	2DY10414A	1	33.42	3.59	1	POWER	0.55	0.24	2	10 AWG	1.32	36.4	Gutter, 1-hr - Abandon	0.36	10.37	683.87
NA	2DG042	8.00	8.00	64.00	2DD10208A	1	21.17	2.97	1	POWER	0.55	0.24	2	10 AWG	4.49	36.4	Gutter, 1-hour - Thermal Shor	0.36	10.37	130.75
NA	2DG042	8.00	8.00	64.00	2DB22206A	1	21.17	2.97	1	POWER	0.62	0.31	3	10 AWG	1.21	36.4	Gutter, 1-hour - Thermal Shor	0.36	10.37	756.75
NA	2DG042	8.00	8.00	64.00	2DB21825A	1	21.17	2.97	1	POWER	0.62	0.31	3	10 AWG	0.45	36.4	Gutter, 1-hour - Thermal Shor	0.36	10.37	2203.72
NA	2DG042	8.00	8.00	64.00	2DB22205A	1	21.17	2.97	1	POWER	0.62	0.31	3	10 AWG	0.45	36.4	Gutter, 1-hour - Thermal Shor	0.36	10.37	2203.72
NA	2DG042	8.00	8.00	64.00	2DY10409A	1	21.17	2.97	1	POWER	0.55	0.24	2	10 AWG	0.22	36.4	Gutter, 1-hour - Thermal Shor	0.36	10.37	4630.06
																	MODEL CABLE DATA			
NOTES:																				
																	Cable Size	3/C #6 AWG		
1	Iprot = Inom * (1-ADF) * ATCF * MCCF																Cable Diameter (in)	0.74		
	ATCF & MCCF values are shown in the calculations																No. of Conductors per Cable	3		
																	Resistance (Ohm/1000 ft)	0.535		
2	Control cables and some of the power cables feeding the intermittent loads like Motor Operated Valves (MOVs) are not listed.																Cable Surface Emissivity	0.8		
3	Icond or Icable is the full load current value																Thermal Conductivity K_{bed}, (Btu/hr-ft- °F)	0.09		
																	FIRE BARRIER DATA			
																	Thermal Conductivity K_b, (Btu/hr-ft- °F)	0.122		
																	Emissivity	0.9		

ATTACHMENT 2

Clarification to Safety Evaluation Report Addressing Thermo-Lag Related Ampacity Derating Issues

Raceways wrapped by Darmatt material

ATTACHMENT 2
LGS AMPACITY DERATING OF CABLES IN DARMATT KM1RACEWAYS USING DIVERSITY MODEL

FBS #	Raceway ID	Raceway Size	% Fill	Fire Rating	Cable	Cable Code *	Full Load Current (FLC) Amps	I nominal (Amps)	ADF	Iprot (Amps)	'% Margin (Ip-FLC)/FLC*100	Remark
43-01 / 43-02	10CRA45	24" Tray	19.16	1 Hr	10B22530A	B08	10.00	22.0	0.24	15.00	50.00	
43-01 / 43-02	10CRA45	24" Tray	19.16	1 Hr	10B22616A	B13	19.90	48.4	0.24	33.10	66.30	
43-01 / 43-02	10CRA45	24" Tray	19.16	1 Hr	10MDR163A	B80	0.25	14.5	0.24	9.90	3860.00	
43-01 / 43-02	10CRA45	24" Tray	19.16	1 Hr	10MDR164A	B80	0.25	14.5	0.24	9.90	3860.00	
43-01 / 43-02	10CRA45	24" Tray	19.16	1 Hr	10MSU051H	B80	0.80	14.5	0.24	9.90	1137.00	
43-01 / 43-02	10CRA45	24" Tray	19.16	1 Hr	10Y20206A	B07	1.00	26.7	0.24	18.30	1730.00	
43-01 / 43-02	10CRA45	24" Tray	19.16	1 Hr	10Y20229A	B07	1.00	26.7	0.24	18.30	1730.00	
43-01 / 43-02	10CRA45	24" Tray	19.16	1 Hr	10Y20232A	B07	1.50	26.7	0.24	18.30	1120.00	
43-01 / 43-02	10CRA45	24" Tray	19.16	1 Hr	10Y20305A	B07	2.00	26.7	0.24	18.30	815.00	
43-01 / 43-02	10CRA45	24" Tray	19.16	1 Hr	10Y20306A	B07	2.00	26.7	0.24	18.30	815.00	
43-01 / 43-02	10CRA45	24" Tray	19.16	1 Hr	11D20102A	B22	120.00	371.6	0.24	254.20	111.80	
43-01 / 43-02	10CRA45	24" Tray	19.16	1 Hr	12B22624A	B11	15.80	34.0	0.24	23.30	47.50	
43-01 / 43-02	10CRA46	24" Tray	19.16	1 Hr	10B22530A	B08	10.00	22.0	0.24	15.00	50.00	
43-01 / 43-02	10CRA46	24" Tray	19.16	1 Hr	10B22616A	B13	19.90	48.4	0.24	33.10	66.30	
43-01 / 43-02	10CRA46	24" Tray	19.16	1 Hr	10MDR163A	B80	0.25	14.5	0.24	9.90	3860.00	
43-01 / 43-02	10CRA46	24" Tray	19.16	1 Hr	10MDR164A	B80	0.25	14.5	0.24	9.90	3860.00	
43-01 / 43-02	10CRA46	24" Tray	19.16	1 Hr	10MSU051H	B80	0.80	14.5	0.24	9.90	1137.00	
43-01 / 43-02	10CRA46	24" Tray	19.16	1 Hr	10Y20206A	B07	1.00	26.7	0.24	18.30	1730.00	
43-01 / 43-02	10CRA46	24" Tray	19.16	1 Hr	10Y20229A	B07	1.00	26.7	0.24	18.30	1730.00	
43-01 / 43-02	10CRA46	24" Tray	19.16	1 Hr	10Y20232A	B07	1.50	26.7	0.24	18.30	1120.00	
43-01 / 43-02	10CRA46	24" Tray	19.16	1 Hr	10Y20305A	B07	2.00	26.70	0.24	18.30	815.00	
43-01 / 43-02	10CRA46	24" Tray	19.16	1 Hr	10Y20306A	B07	2.00	26.70	0.24	18.30	815.00	
43-01 / 43-02	10CRA46	24" Tray	19.16	1 Hr	11D20102A	B22	120.00	371.60	0.24	254.20	111.80	
43-01 / 43-02	10CRA46	24" Tray	19.16	1 Hr	12B22624A	B11	15.80	34.00	0.24	23.30	47.50	
44-02	1AG037	6" X 6" Gutter	39.33	1 Hr	1AD10210A	B10	3.03	52.0	0.83	3.50	15.50	
44-02	1AG037	6" X 6" Gutter	39.33	1 Hr	1AD10216A	B07	7.11	36.0	0	14.30	101.10	
44-02	1AG037	6" X 6" Gutter	39.33	1 Hr	1AD16201A	B10	0.80	52.0	0.83	3.50	337.50	
44-02	1AG037	6" X 6" Gutter	39.33	1 Hr	1AD16205A	B10	0.80	52.0	0.83	3.50	337.50	
44-02	1AG037	6" X 6" Gutter	39.33	1 Hr	1AY10101A	B07	1.00	36.0	0.83	2.40	140.00	
44-02	1AG037	6" X 6" Gutter	39.33	1 Hr	1AY10102A	B07	10.50	36.0	0	14.30	36.20	
44-02	1AG037	6" X 6" Gutter	39.33	1 Hr	1AY10106A	B10	13.90	52.0	0	20.60	48.20	
44-02	1AG037	6" X 6" Gutter	39.33	1 Hr	1AY10107A	B07	9.10	36.0	0	14.30	57.10	
44-02	1AG037	6" X 6" Gutter	39.33	1 Hr	1AY10109A	B07	1.00	36.0	0.83	2.40	140.00	
44-02	1AG037	6" X 6" Gutter	39.33	1 Hr	1AY10111A	B07	1.80	36.0	0.83	2.40	33.30	
44-02	1AG037	6" X 6" Gutter	39.33	1 Hr	1AY10113A	B07	6.10	36.0	0	14.30	134.40	
44-02	1AG037	6" X 6" Gutter	39.33	1 Hr	1AY10114A	B07	1.30	36.0	0.83	2.40	84.60	
44-02	1AG037	6" X 6" Gutter	39.33	1 Hr	1AY10116A	B07	1.00	36.0	0.83	2.40	140.00	
44-02	1AG037	6" X 6" Gutter	39.33	1 Hr	1AY1A117A	B07	1.70	36.0	0.83	2.40	41.20	
44-02	1AG037	6" X 6" Gutter	39.33	1 Hr	1AY10121A	B07	1.00	36.0	0.83	2.40	140.00	
44-02	1AG037	6" X 6" Gutter	39.33	1 Hr	1AY10123A	B07	1.70	36.0	0.83	2.40	41.20	
45-04	1AG017	8" X 8" Gutter	46.96	1 Hr	1AY10102A	B07	10.45	36.0	0.22	28.10	168.90	
47-03	1ACXAO4	24" Tray	27.69	1 Hr	1AB21307A	B08	7.00	22.0	0.25	16.30	132.90	
47-03	1ACXAO4	24" Tray	27.69	1 Hr	1AB21510A	B08	0.45	22.0	0.25	16.30	3522.00	
47-03	1ACXAO4	24" Tray	27.69	1 Hr	1AD10210A	B10	3.03	41.4	0.25	30.70	916.50	
47-03	1ACXAO4	24" Tray	27.69	1 Hr	1AD10214A	B07	1.22	26.7	0.25	19.80	1531.00	

ATTACHMENT 2
LGS AMPACITY DERATING OF CABLES IN DARMATT KM1RACEWAYS USING DIVERSITY MODEL

FBS #	Raceway ID	Raceway Size	% Fill	Fire Rating	Cable	Cable Code *	Full Load Current (FLC) Amps	I nominal (Amps)	ADF	Iprot (Amps)	'% Margin (Ip-FLC)/FLC*100	Remark
47-03	1ACXAO4	24" Tray	27.69	1 Hr	1AD10216A	B07	7.11	26.7	0.25	19.80	179.90	
47-03	1ACXAO4	24" Tray	27.69	1 Hr	1AD16201A	B10	0.80	41.4	0.25	30.70	3750.00	
47-03	1ACXAO4	24" Tray	27.69	1 Hr	1AD16205A	B10	0.80	41.4	0.25	30.70	3750.00	
47-03	1ACXAO4	24" Tray	27.69	1 Hr	1AY10106A	B10	13.90	41.4	0.25	30.70	121.60	
47-03	1ACXA05	24" Tray	48.31	1 Hr	1AB21510A	B08	0.45	15.5	0.21	12.10	2589.00	
47-03	1ACXA05	24" Tray	48.31	1 Hr	1AD10205A	B07	3.42	18.9	0.21	14.80	332.70	
47-03	1ACXA05	24" Tray	48.31	1 Hr	1AD10210A	B10	3.03	30.0	0.21	23.50	675.60	
47-03	1ACXA05	24" Tray	48.31	1 Hr	1AD10214A	B07	1.22	18.9	0.21	14.80	1113.00	
47-03	1ACXA05	24" Tray	48.31	1 Hr	1AD10216A	B07	7.11	18.9	0.21	14.80	108.20	
47-03	1ACXA05	24" Tray	48.31	1 Hr	1AD10220A	B07	7.33	18.9	0.21	14.80	101.90	
47-03	1ACXA05	24" Tray	48.31	1 Hr	1AD16201A	B10	0.80	30.0	0.21	23.50	2837.00	
47-03	1ACXA05	24" Tray	48.31	1 Hr	1AD16205A	B10	0.80	30.0	0.21	23.50	2837.00	
47-03	1ACXA05	24" Tray	48.31	1 Hr	1AY10102A	B07	10.50	18.9	0.21	14.80	41.00	
47-03	1ACXA05	24" Tray	48.31	1 Hr	1AY10106A	B10	13.90	30.0	0.21	23.50	69.10	
47-03	1ACXA05	24" Tray	48.31	1 Hr	1AY10107A	B07	9.10	18.9	0.21	14.80	62.60	
47-03	1ACXA05	24" Tray	48.31	1 Hr	1AY10113A	B07	6.10	18.9	0.21	14.80	142.60	
47-03	1ACXA06	24" Tray	24.2	1 Hr	1AD10214A	B07	1.22	26.7	0.21	21.00	1621.00	
47-03	1ACXA06	24" Tray	24.2	1 Hr	1AD10220A	B07	7.33	26.7	0.21	21.00	186.50	
47-03	1ACXA06	24" Tray	24.2	1 Hr	1AD16201A	B10	0.80	41.4	0.21	32.50	3962.00	
47-03	1ACXA06	24" Tray	24.2	1 Hr	1AD16205A	B10	0.80	41.4	0.21	32.50	3962.00	
47-03	1ACXA06	24" Tray	24.2	1 Hr	1AY10106A	B10	13.90	41.4	0.21	32.50	133.80	
47-03	1ACXC04	24" Tray	29.8	1 Hr	1AB21138B	B08	1.2	22.00	0.13	18.9	1475.00	
47-03	1ACXC04	24" Tray	29.8	1 Hr	1AB21141A	B08	0.45	22.00	0.13	18.9	4100.00	
47-03	1ACXC04	24" Tray	29.8	1 Hr	1AB21510A	B08	0.45	22.00	0.13	18.9	4100.00	
47-03	1ACXC04	24" Tray	29.8	1 Hr	1AB21520A	B08	0.75	22.00	0.13	18.9	2420.00	
47-03	1ACXC04	24" Tray	29.8	1 Hr	1AB21521A	B08	0.75	22.00	0.13	18.9	2420.00	
47-03	1ACXC04	24" Tray	29.8	1 Hr	1AB21522A	B08	0.75	22.00	0.13	18.9	2420.00	
47-03	1ACXC04	24" Tray	29.8	1 Hr	1AB21523A	B08	0.75	22.00	0.13	18.9	2420.00	
47-03	1ACXC04	24" Tray	29.8	1 Hr	1AD10205A	B07	3.42	26.70	0.13	23.1	575.40	
47-03	1ACXC04	24" Tray	29.8	1 Hr	1AD10210A	B10	3.03	41.40	0.13	35.7	1078.00	
47-03	1ACXC04	24" Tray	29.8	1 Hr	1AD10216A	B07	7.11	26.70	0.13	23.1	224.90	
47-03	1ACXC04	24" Tray	29.8	1 Hr	1ASP0327A	B07	SPARE	26.70	0.13	23.1	N/A	
47-03	1ACXC04	24" Tray	29.8	1 Hr	1AY10101A	B07	1	26.70	0.13	23.1	2210.00	
47-03	1ACXC04	24" Tray	29.8	1 Hr	1AY10102A	B07	10.5	26.70	0.13	23.1	120.00	
47-03	1ACXC04	24" Tray	29.8	1 Hr	1AY10107A	B07	9.1	26.70	0.13	23.1	153.80	
47-03	1ACXC04	24" Tray	29.8	1 Hr	1AY10111A	B07	1.8	26.70	0.13	23.1	1183.00	
47-03	1ACXC04	24" Tray	29.8	1 Hr	1AY10113A	B07	6.1	26.70	0.13	23.1	278.70	
47-03	1ACXC04	24" Tray	29.8	1 Hr	1AY10123A	B07	1.7	26.70	0.13	23.1	1259.00	
47-03	1ACXC05	24" Tray	30	1 Hr	1AB21138B	B08	1.2	22.00	0.13	18.9	1475.00	
47-03	1ACXC05	24" Tray	30	1 Hr	1AB21141A	B08	0.45	22.00	0.13	18.9	4100.00	
47-03	1ACXC05	24" Tray	30	1 Hr	1AB21510A	B08	0.45	22.00	0.13	18.9	4100.00	
47-03	1ACXC05	24" Tray	30	1 Hr	1AB21520A	B08	0.75	22.00	0.13	18.9	2420.00	
47-03	1ACXC05	24" Tray	30	1 Hr	1AB21521A	B08	0.75	22.00	0.13	18.9	2420.00	
47-03	1ACXC05	24" Tray	30	1 Hr	1AB21522A	B08	0.75	22.00	0.13	18.9	2420.00	
47-03	1ACXC05	24" Tray	30	1 Hr	1AB21523A	B08	0.75	22.00	0.13	18.9	2420.00	
47-03	1ACXC05	24" Tray	30	1 Hr	1AD10205A	B07	3.42	26.70	0.13	23.1	575.40	
47-03	1ACXC05	24" Tray	30	1 Hr	1AD10210A	B10	3.03	41.40	0.13	35.7	1078.00	
47-03	1ACXC05	24" Tray	30	1 Hr	1AD10216A	B07	7.11	26.70	0.13	23.1	224.90	

ATTACHMENT 2
LGS AMPACITY DERATING OF CABLES IN DARMATT KM1RACEWAYS USING DIVERSITY MODEL

FBS #	Raceway ID	Raceway Size	% Fill	Fire Rating	Cable	Cable Code *	Full Load Current (FLC) Amps	I nominal (Amps)	ADF	Iprot (Amps)	'% Margin (Ip-FLC)/FLC*100	Remark
47-03	1ACXC05	24" Tray	30	1 Hr	1ASP0327A	B07	SPARE	26.70	0.13	23.1	N/A	
47-03	1ACXC05	24" Tray	30	1 Hr	1AY10101A	B07	1	26.70	0.13	23.1	2210.00	
47-03	1ACXC05	24" Tray	30	1 Hr	1AY10102A	B07	10.5	26.70	0.13	23.1	120.00	
47-03	1ACXC05	24" Tray	30	1 Hr	1AY10107A	B07	9.1	26.70	0.13	23.1	153.80	
47-03	1ACXC05	24" Tray	30	1 Hr	1AY10111A	B07	1.8	26.70	0.13	23.1	1183.00	
47-03	1ACXC05	24" Tray	30	1 Hr	1AY10113A	B07	6.1	26.70	0.13	23.1	278.70	
47-03	1ACXC05	24" Tray	30	1 Hr	1AY10123A	B07	1.7	26.70	0.13	23.1	1259.00	
47-03	1ACYA03	24" Tray	43.73	1 Hr	1AB21305A	B11	7	24.60	0.11	21.70	210.00	
47-03	1ACYA03	24" Tray	43.73	1 Hr	1AD10203A	B07	2.63	18.90	0.11	16.70	535.00	
47-03	1ACYA03	24" Tray	43.73	1 Hr	1AD10209A	B10	13.24	30.00	0.11	26.40	99.40	
47-03	1ACYA03	24" Tray	43.73	1 Hr	1AD10209B	B10	4.3	30.00	0.11	26.40	514.00	
47-03	1ACYA03	24" Tray	43.73	1 Hr	1AD16202A	B10	6.22	30.00	0.11	26.40	324.40	
47-03	1ACYA03	24" Tray	43.73	1 Hr	1AD16202B	B10	4	30.00	0.11	26.40	560.00	
47-03	1ACYA03	24" Tray	43.73	1 Hr	1AD16206A	B07	1.49	18.90	0.11	16.70	1021.00	
47-03	1ACYA03	24" Tray	43.73	1 Hr	1AY20602A	B07	7.8	18.90	0.11	16.70	114.10	
47-03	1ACYA03	24" Tray	43.73	1 Hr	1AY20607A	B12	8.53	41.80	0.11	36.80	331.40	
47-03	1ACYA04	24" Tray	24.87	1 Hr	1AB21301A	B08	0.75	22.00	0.09	19.80	2540.00	
47-03	1ACYA04	24" Tray	24.87	1 Hr	1AY20601A	B07	1	26.70	0.09	24.10	2310.00	
47-03	1ACYA04	24" Tray	24.87	1 Hr	1AY20608A	B07	1	26.70	0.09	24.10	2310.00	
47-03	1ACYA05	24" Tray	45.91	1 Hr	1AB21305A	B11	7	24.60	0.14	20.90	198.60	
47-03	1ACYA05	24" Tray	45.91	1 Hr	1AD10203A	B07	2.63	18.90	0.14	16.10	512.20	
47-03	1ACYA05	24" Tray	45.91	1 Hr	1AD10207A	B07	9.04	18.90	0.14	16.10	78.10	
47-03	1ACYA05	24" Tray	45.91	1 Hr	1AD10208A	B07	3.6	18.90	0.14	16.10	347.20	
47-03	1ACYA05	24" Tray	45.91	1 Hr	1AD10209A	B10	13.24	30.00	0.14	25.50	92.60	
47-03	1ACYA05	24" Tray	45.91	1 Hr	1AD10209B	B10	4.3	30.00	0.14	25.50	493.00	
47-03	1ACYA05	24" Tray	45.91	1 Hr	1AD10211A	B07	0.96	18.90	0.14	16.10	1577.00	
47-03	1ACYA05	24" Tray	45.91	1 Hr	1AD10212A	B07	0.4	18.90	0.14	16.10	3925.00	
47-03	1ACYA05	24" Tray	45.91	1 Hr	1AD16202A	B10	6.22	30.00	0.14	25.50	310.00	
47-03	1ACYA05	24" Tray	45.91	1 Hr	1AD16202B	B10	4	30.00	0.14	25.50	537.50	
47-03	1ACYA05	24" Tray	45.91	1 Hr	1AD16206A	B07	1.49	18.90	0.14	16.10	980.50	
47-03	1ACYA05	24" Tray	45.91	1 Hr	1AY10134A	B07	2	18.90	0.14	16.10	705.00	
47-03	1ACYA05	24" Tray	45.91	1 Hr	1AY20602A	B07	7.8	18.90	0.14	16.10	106.40	
47-03	1ACYA05	24" Tray	45.91	1 Hr	1AY20607A	B12	8.53	41.80	0.14	35.60	317.40	
47-03	1ACYC04	24" Tray	23.62	1 Hr	1AB21124B	B13	10.30	48.4	0.31	33.10	221.40	
47-03	1ACYC04	24" Tray	23.62	1 Hr	1AB21126B	B13	15.10	48.4	0.31	33.10	119.20	
47-03	1ACYC04	24" Tray	23.62	1 Hr	1AB21301A	B08	0.75	22.0	0.31	15.00	1900.00	
47-03	1ACYC04	24" Tray	23.62	1 Hr	1AB21307A	B08	7.00	22.0	0.31	15.00	114.30	
47-03	1ACYC04	24" Tray	23.62	1 Hr	1AB21311A	B08	11.40	22.0	0.31	15.00	31.60	
47-03	1ACYC04	24" Tray	23.62	1 Hr	1ASP0223A	B07	SPARE	26.7	0.31	18.20	N/A	
47-03	1ACYC04	24" Tray	23.62	1 Hr	1AY10121A	B07	1.00	26.7	0.31	18.20	1720.00	
47-03	1ACYC04	24" Tray	23.62	1 Hr	1AY10132A	B07	1.05	26.7	0.31	18.20	1633.00	
47-03	1ACYC04	24" Tray	23.62	1 Hr	1AY10135A	B07	1.53	26.7	0.31	18.20	1090.00	
47-03	1ACZA04	24" Tray	35.94	1 Hr	1AD10207A	B07	9.04	22.0	0.0	21.80	141.20	
47-03	1ACZA04	24" Tray	35.94	1 Hr	1AD10208A	B07	3.60	22.0	0.0	21.80	505.60	
47-03	1ACZA04	24" Tray	35.94	1 Hr	1AD10211A	B07	0.96	22.0	0.0	21.80	2171.00	
47-03	1ACZA04	24" Tray	35.94	1 Hr	1AD10212A	B07	0.40	22.0	0.0	21.80	5350.00	
47-03	1ACZA04	24" Tray	35.94	1 Hr	1AY10101A	B07	1.00	22.0	0.0	21.80	2080.00	
47-03	1ACZA04	24" Tray	35.94	1 Hr	1AY10121A	B07	1.00	22.0	0.0	21.80	2080.00	

ATTACHMENT 2
LGS AMPACITY DERATING OF CABLES IN DARMATT KM1RACEWAYS USING DIVERSITY MODEL

FBS #	Raceway ID	Raceway Size	% Fill	Fire Rating	Cable	Cable Code *	Full Load Current (FLC) Amps	I nominal (Amps)	ADF	Iprot (Amps)	"% Margin (Ip-FLC)/FLC*100	Remark
47-03	1ACZA04	24" Tray	35.94	1 Hr	1AY10134A	B07	2.00	22.0	0.0	21.80	990.00	
47-03	1ACZA04	24" Tray	35.94	1 Hr	1AY10135A	B07	1.53	22.0	0.0	21.80	1325.00	
47-03	1ACZA05	24" Tray	17.59	1 Hr	1AD10207A	B07	9.04	26.7	0.09	24.10	166.60	
47-03	1ACZA05	24" Tray	17.59	1 Hr	1AD10208A	B07	3.60	26.7	0.09	24.10	569.40	
47-03	1ACZA05	24" Tray	17.59	1 Hr	1AD10211A	B07	0.96	26.7	0.09	24.10	2410.00	
47-03	1ACZA05	24" Tray	17.59	1 Hr	1AD10212A	B07	0.40	26.7	0.09	24.10	5925.00	
47-03	1ACZA05	24" Tray	17.59	1 Hr	1AY10101A	B07	1.00	26.7	0.09	24.10	2310.00	
47-03	1ACZA05	24" Tray	17.59	1 Hr	1AY10121A	B07	1.00	26.7	0.09	24.10	2310.00	
47-03	1ACZA05	24" Tray	17.59	1 Hr	1AY10134A	B07	2.00	26.7	0.09	24.10	1105.00	
67-04	2AG038	6" X 6" Gutter	47.7	1 Hr	2AD10203A	B07	2.78	36.0	0.56	5.50	97.80	
67-04	2AG038	6" X 6" Gutter	47.7	1 Hr	2AD10205A	B07	3.42	36.0	0.56	5.50	60.80	
67-04	2AG038	6" X 6" Gutter	47.7	1 Hr	2AD10207A	B07	9.04	36.0	0.07	11.60	28.30	
67-04	2AG038	6" X 6" Gutter	47.7	1 Hr	2AD10208A	B07	3.60	36.0	0.56	5.50	52.80	
67-04	2AG038	6" X 6" Gutter	47.7	1 Hr	2AD10209A	B10	13.24	52.0	0.07	16.80	26.90	
67-04	2AG038	6" X 6" Gutter	47.7	1 Hr	2AD10209B	B10	4.30	52.0	0.56	7.90	83.70	
67-04	2AG038	6" X 6" Gutter	47.7	1 Hr	2AD10210A	B10	6.10	52.0	0.56	7.90	29.50	
67-04	2AG038	6" X 6" Gutter	47.7	1 Hr	2AD10211A	B07	0.96	36.0	0.56	5.50	472.90	
67-04	2AG038	6" X 6" Gutter	47.7	1 Hr	2AD10212A	B07	0.40	36.0	0.56	5.50	1275.00	
67-04	2AG038	6" X 6" Gutter	47.7	1 Hr	2AD10213A	B07	2.31	36.0	0.56	5.50	138.10	
67-04	2AG038	6" X 6" Gutter	47.7	1 Hr	2AD10216A	B07	0.10	36.0	0.07	11.60	11500.00	
67-04	2AG038	6" X 6" Gutter	47.7	1 Hr	2AD10218A	B07	6.37	36.0	0.07	11.60	82.1	
67-04	2AG038	6" X 6" Gutter	47.7	1 Hr	2AD10220A	B07	7.33	36.0	0.07	11.60	58.30	
67-04	2AG038	6" X 6" Gutter	47.7	1 Hr	2AD16202A	B10	6.70	52.0	0.56	7.90	17.90	
67-04	2AG038	6" X 6" Gutter	47.7	1 Hr	2AD16202B	B10	4.00	52.0	0.56	7.90	97.50	
67-04	2AG038	6" X 6" Gutter	47.7	1 Hr	2ASP0055A	B07	SPARE	36.0	0.56	5.50	n/a	
67-04	2AG038	6" X 6" Gutter	47.7	1 Hr	2ASP0172A	B07	SPARE	36.0	0.56	5.50	n/a	
67-04	2AG038	6" X 6" Gutter	47.7	1 Hr	2AY10101A	B07	1.00	36.0	0.56	5.50	450.00	
67-04	2AG038	6" X 6" Gutter	47.7	1 Hr	2AY10106A	B10	12.50	52.0	0.07	16.80	34.40	
67-04	2AG038	6" X 6" Gutter	47.7	1 Hr	2AY10107A	B07	8.50	36.0	0.07	11.60	36.50	
67-04	2AG038	6" X 6" Gutter	47.7	1 Hr	2AY10109A	B07	1.00	36.0	0.56	5.50	450.00	
67-04	2AG038	6" X 6" Gutter	47.7	1 Hr	2AY10111A	B07	1.76	36.0	0.56	5.50	212.50	
67-04	2AG038	6" X 6" Gutter	47.7	1 Hr	2AY10113A	B07	1.20	36.0	0.56	5.50	358.30	
67-04	2AG038	6" X 6" Gutter	47.7	1 Hr	2AY10114A	B07	1.30	36.0	0.56	5.50	323.10	
67-04	2AG038	6" X 6" Gutter	47.7	1 Hr	2AY10116A	B07	1.00	36.0	0.56	5.50	450.00	
67-04	2AG038	6" X 6" Gutter	47.7	1 Hr	2AY10117A	B07	3.10	36.0	0.56	5.50	77.40	
67-04	2AG038	6" X 6" Gutter	47.7	1 Hr	2AY10123A	B07	2.50	36.0	0.56	5.50	120.00	
67-04	2AG038	6" X 6" Gutter	47.7	1 Hr	2AY10132A	B07	1.00	36.0	0.56	5.50	450.00	
67-04	2AG038	6" X 6" Gutter	47.7	1 Hr	2AY10134A	B07	2.00	36.0	0.56	5.50	175.00	
67-04	2BG034	6" X 6" Gutter	47.7	1 Hr	2BB21223A	B15	19.80	91.0	0	45.00	127.30	
67-04	2BG034	6" X 6" Gutter	47.7	1 Hr	2BY10201A	B07	1.00	36.0	0.7	5.30	430.00	
67-04	2BG034	6" X 6" Gutter	47.7	1 Hr	2BY10206A	B07	2.20	36.0	0.7	5.30	140.90	
67-04	2BG034	6" X 6" Gutter	47.7	1 Hr	2BY10209A	B07	1.00	36.0	0.7	5.30	430.00	
67-04	2BG034	6" X 6" Gutter	47.7	1 Hr	2BY10210A	B07	4.00	36.0	0.7	5.30	32.50	
67-04	2BG034	6" X 6" Gutter	47.7	1 Hr	2BY10211A	B07	1.80	36.0	0.7	5.30	194.40	
67-04	2BG034	6" X 6" Gutter	47.7	1 Hr	2BY10213A	B07	1.20	36.0	0.7	5.30	341.70	
67-04	2BG034	6" X 6" Gutter	47.7	1 Hr	2BY10214A	B07	1.30	36.0	0.7	5.30	307.70	
67-04	2BG034	6" X 6" Gutter	47.7	1 Hr	2BY10216A	B07	1.10	36.0	0.7	5.30	381.80	
67-04	2BG104	8" X 8" Gutter	26.45	1 Hr	2BB21223A	B15	19.8	91.00	0.36	40.40	104.00	

ATTACHMENT 2
LGS AMPACITY DERATING OF CABLES IN DARMATT KM1RACEWAYS USING DIVERSITY MODEL

FBS #	Raceway ID	Raceway Size	% Fill	Fire Rating	Cable	Cable Code *	Full Load Current (FLC) Amps	I nominal (Amps)	ADF	Iprot (Amps)	'% Margin (Ip-FLC)/FLC*100	Remark
67-04	2BG104	8" X 8" Gutter	26.45	1 Hr	2BY10214A	B07	1.3	36.00	0.36	16.00	1131.00	
67-04	2BG104	8" X 8" Gutter	26.45	1 Hr	2BY10216A	B07	1.1	36.00	0.36	16.00	1355.00	
67-04	2BCUA46	30" Tray	30.46	1 Hr	2BB21610A	B08	2.80	18.1	0.01	17.70	532.10	
67-04	2BCUA46	30" Tray	30.46	1 Hr	2BD10209B	B10	11.58	34.3	0.01	33.60	190.20	
67-04	2BCUA46	30" Tray	30.46	1 Hr	2BD10210A	B10	3.00	34.3	0.01	33.60	1020.00	
67-04	2BCUA46	30" Tray	30.46	1 Hr	2BD10213A	B07	2.44	22.0	0.01	21.60	785.20	
67-04	2BCUA46	30" Tray	30.46	1 Hr	2BD10214A	B07	2.31	22.0	0.01	21.60	835.10	
67-04	2BCUA46	30" Tray	30.46	1 Hr	2BD10216A	B07	7.11	22.0	0.01	21.60	203.80	
67-04	2BCUA46	30" Tray	30.46	1 Hr	2BD10218A	B07	4.44	22.0	0.01	21.60	386.50	
67-04	2BCUA46	30" Tray	30.46	1 Hr	2BSP0025A	B07	SPARE	22.0	0.01	21.60	N/A	
67-04	2BCUA46	30" Tray	30.46	1 Hr	2BY10209A	B07	1.00	22.0	0.01	21.60	2060.00	
67-04	2BCWA46	30" Tray	22.8	1 Hr	2BD10210A	B10	3.00	41.4	0.03	39.90	1230.00	
67-04	2BCWA46	30" Tray	22.8	1 Hr	2BD10214A	B07	2.31	26.7	0.03	25.70	1013.00	
67-04	2BCWA46	30" Tray	22.8	1 Hr	2BD10216A	B07	7.11	26.7	0.03	25.70	261.50	
67-04	2BCWA46	30" Tray	22.8	1 Hr	2BY10201A	B07	1.00	26.7	0.03	25.70	2470.00	
67-04	2BCWA46	30" Tray	22.8	1 Hr	2BY10206A	B07	2.20	26.7	0.03	25.70	1068.00	
67-04	2BCWA46	30" Tray	22.8	1 Hr	2BY10209A	B07	1.00	26.7	0.03	25.70	2470.00	
67-04	2BCWA46	30" Tray	22.8	1 Hr	2BY10210A	B07	4.00	26.7	0.03	25.70	542.50	
67-04	2BCWA46	30" Tray	22.8	1 Hr	2BY102211A	B07	1.80	26.7	0.03	25.70	1328.00	
67-04	2BCWA46	30" Tray	22.8	1 Hr	2BY10213A	B07	1.20	26.7	0.03	25.70	2042.00	
67-04	2BCWA46	30" Tray	22.8	1 Hr	2BY10214A	B07	1.30	26.7	0.03	25.70	1877.00	
67-04	2BCWA46	30" Tray	22.8	1 Hr	2BY102216A	B07	1.10	26.7	0.03	25.70	2236.00	
67-04	2ACZA37	24" Tray	38.23	1Hr	2AB21108B	B17	35.80	84.4	0.36	53.50	49.40	
67-04	2ACZA37	24" Tray	38.23	1Hr	2AB21109A	B17	35.80	84.4	0.36	53.50	49.40	
67-04	2ACZA37	24" Tray	38.23	1Hr	2AB21110B	B17	35.80	84.4	0.36	53.50	49.40	
67-04	2ACZA37	24" Tray	38.23	1Hr	2AB2111B	B17	35.80	84.4	0.36	53.50	49.40	
67-04	2ACZA37	24" Tray	38.23	1Hr	2AB21138B	B08	2.80	18.1	0.36	11.50	310.70	
67-04	2ACZA37	24" Tray	38.23	1Hr	2AB21141A	B08	0.45	18.1	0.36	11.50	2456.00	
67-04	2ACZA37	24" Tray	38.23	1Hr	2AB21510A	B08	0.45	18.1	0.36	11.50	2456.00	
67-04	2ACZA37	24" Tray	38.23	1Hr	2AY10113A	B07	1.21	22.0	0.36	13.90	1049.00	
67-04	2ACXA37	24" Tray	43.15	1Hr	2AB21126B	B13	11.40	34.2	0.33	22.70	99.10	
67-04	2ACXA37	24" Tray	43.15	1Hr	2AD10203A	B07	2.78	18.9	0.33	12.50	349.60	
67-04	2ACXA37	24" Tray	43.15	1Hr	2AD10205A	B07	3.42	18.9	0.33	12.50	265.50	
67-04	2ACXA37	24" Tray	43.15	1Hr	2AD10207A	B07	9.04	18.9	0.33	12.50	38.30	
67-04	2ACXA37	24" Tray	43.15	1Hr	2AD10208A	B07	3.60	18.9	0.33	12.50	247.20	
67-04	2ACXA37	24" Tray	43.15	1Hr	2AD10209A	B10	13.24	30.0	0.33	19.90	50.30	
67-04	2ACXA37	24" Tray	43.15	1Hr	2AD10209B	B10	4.30	30.0	0.33	19.90	362.80	
67-04	2ACXA37	24" Tray	43.15	1Hr	2AD10210A	B10	6.10	30.0	0.33	19.90	226.20	
67-04	2ACXA37	24" Tray	43.15	1Hr	2AD10211A	B07	0.96	18.9	0.33	12.50	1202.00	
67-04	2ACXA37	24" Tray	43.15	1Hr	2AD10212A	B07	0.40	18.9	0.33	12.50	3025.00	
67-04	2ACXA37	24" Tray	43.15	1Hr	2AD10213A	B07	2.31	18.9	0.33	12.50	441.10	
67-04	2ACXA37	24" Tray	43.15	1Hr	2AD10216A	B07	0.10	18.9	0.33	12.50	12400.00	
67-04	2ACXA37	24" Tray	43.15	1Hr	2AD10218A	B07	6.37	18.9	0.33	12.50	96.20	
67-04	2ACXA37	24" Tray	43.15	1Hr	2AD10220A	B07	7.33	18.9	0.33	12.50	70.50	
67-04	2ACXA37	24" Tray	43.15	1Hr	2AD16202A	B10	6.70	30.0	0.33	19.90	197.00	
67-04	2ACXA37	24" Tray	43.15	1Hr	2AD16202B	B10	4.00	30.0	0.33	19.90	397.50	
67-04	2ACXA37	24" Tray	43.15	1Hr	2ASP0055A	B07	SPARE	18.9	0.33	12.50	N/A	
67-04	2ACXA37	24" Tray	43.15	1Hr	2ASP0106A	B07	SPARE	18.9	0.33	12.50	N/A	

ATTACHMENT 2
LGS AMPACITY DERATING OF CABLES IN DARMATT KM1RACEWAYS USING DIVERSITY MODEL

FBS #	Raceway ID	Raceway Size	% Fill	Fire Rating	Cable	Cable Code *	Full Load Current (FLC) Amps	I nominal (Amps)	ADF	Iprot (Amps)	'% Margin (Ip-FLC)/FLC*100	Remark
67-04	2ACXA37	24" Tray	43.15	1Hr	2ASP0172A	B07	SPARE	18.9	0.33	12.50	N/A	
67-04	2ACXA37	24" Tray	43.15	1Hr	2AY10101A	B07	1.00	18.9	0.33	12.50	1150.00	
67-04	2ACXA37	24" Tray	43.15	1Hr	2AY10106A	B10	12.50	30.0	0.33	19.90	59.20	
67-04	2ACXA37	24" Tray	43.15	1Hr	2AY10107A	B07	8.50	18.9	0.33	12.50	47.10	
67-04	2ACXA37	24" Tray	43.15	1Hr	2AY10109A	B07	1.00	18.9	0.33	12.50	1150.00	
67-04	2ACXA37	24" Tray	43.15	1Hr	2AY10111A	B07	1.00	18.9	0.33	12.50	1150.00	
67-04	2ACXA37	24" Tray	43.15	1Hr	2AY10114A	B07	1.30	18.9	0.33	12.50	861.50	
67-04	2ACXA37	24" Tray	43.15	1Hr	2AY10116A	B07	1.00	18.9	0.33	12.50	1150.00	
67-04	2ACXA37	24" Tray	43.15	1Hr	2AY10123A	B07	2.50	18.9	0.33	12.50	400.00	
67-04	2ACXA37	24" Tray	43.15	1Hr	2AY10132A	B07	1.00	18.9	0.33	12.50	1150.00	
67-04	2ACXA37	24" Tray	43.15	1Hr	2AY10134A	B07	2.00	18.9	0.33	12.50	525.00	
67-04	2ACXA37	24" Tray	43.15	1Hr	2ASP0173A	B10	SPARE	30.0	0.33	19.90	N/A	
68-01	2AG017	8" X 8" Gutter	35.74	1Hr	2AY10122A	B07	1.00	36.0	0.18	29.20	2820.00	
68-01	2AG025	8" X 8" Gutter	35.39	1Hr	2AD10205A	B07	3.42	36.0	0.39	10.90	218.70	
68-01	2AG025	8" X 8" Gutter	35.39	1Hr	2AD10208A	B07	3.60	36.0	0.39	10.90	202.80	
68-01	2AG025	8" X 8" Gutter	35.39	1Hr	2AD10209A	B10	13.24	52.0	0.39	15.70	18.60	
68-01	2AG025	8" X 8" Gutter	35.39	1Hr	2AD10211A	B07	0.96	36.0	0.39	10.90	1035.00	
68-01	2AG025	8" X 8" Gutter	35.39	1Hr	2AD10212A	B07	0.40	36.0	0.39	10.90	2625.00	
68-01	2AG025	8" X 8" Gutter	35.39	1Hr	2AD16202A	B10	6.70	52.0	0.39	15.70	134.30	
68-01	2AG025	8" X 8" Gutter	35.39	1Hr	2AD16202B	B10	4.00	52.0	0.39	15.70	292.50	
68-01	2AG025	8" X 8" Gutter	35.39	1Hr	2AY10113A	B07	1.20	36.0	0.39	10.90	808.30	
68-01	2AG031	8" X 8" Gutter	35.57	1Hr	2AD10207A	B07	9.04	36.0	0.37	11.20	23.90	
68-01	2AG031	8" X 8" Gutter	35.57	1Hr	2AD10210A	B10	6.10	52.0	0.37	16.20	165.60	
68-01	2AG031	8" X 8" Gutter	35.57	1Hr	2AD10220A	B07	7.33	36.0	0.37	11.20	52.80	
68-01	2AG031	8" X 8" Gutter	35.57	1Hr	2ASP0055A	B07	SPARE	36.0	0.83	3.00	N/A	
68-01	2AG031	8" X 8" Gutter	35.57	1Hr	2ASP0172A	B07	SPARE	36.0	N/A	N/A	N/A	
68-01	2AG031	8" X 8" Gutter	35.57	1Hr	2AY10101A	B07	1.00	36.0	0.83	3.00	200.00	
68-01	2AG031	8" X 8" Gutter	35.57	1Hr	2AY10106A	B10	12.54	52.0	0.37	16.20	29.20	
68-01	2AG031	8" X 8" Gutter	35.57	1Hr	2AY10107A	B07	8.49	36.0	0.37	11.20	31.90	
68-01	2AG031	8" X 8" Gutter	35.57	1Hr	2AY10123A	B07	2.50	36.0	0.83	3.00	20.00	
68-01	2AG031	8" X 8" Gutter	35.57	1Hr	2AY10132A	B07	1.00	36.0	0.83	3.00	200.00	
68-01	2AG031	8" X 8" Gutter	35.57	1Hr	2AY10134A	B07	2.00	36.0	0.83	3.00	50.00	
68-01	2AG031	8" X 8" Gutter	35.57	1Hr	2AY20602A	B07	7.74	36.0	0.37	11.20	44.70	
68-01	2AG031	8" X 8" Gutter	35.57	1Hr	2ASP0173A	B10	SPARE	52.0	N/A	N/A	N/A	
68-01	2AG032	8" X 8" Gutter	30.12	1Hr	2AB21108B	B17	35.80	123.0	0.3	42.60	19.00	
68-01	2AG032	8" X 8" Gutter	30.12	1Hr	2AB21109B	B17	35.80	123.0	0.3	42.60	19.00	
68-01	2AG032	8" X 8" Gutter	30.12	1Hr	2AB21110B	B17	35.80	123.0	0.3	42.60	19.00	
68-01	2AG032	8" X 8" Gutter	30.12	1Hr	2AB21111B	B17	35.80	123.0	0.3	42.60	19.00	
68-01	2AG032	8" X 8" Gutter	30.12	1Hr	2AD10203A	B07	2.78	36.0	0.3	12.50	349.60	
68-01	2AG032	8" X 8" Gutter	30.12	1Hr	2AD10216A	B07	0.10	36.0	0.99	0.18	80.00	
68-01	2AG032	8" X 8" Gutter	30.12	1Hr	2ASP0106A	B07	SPARE	36.0	0.99	0.18	N/A	
68-01	2AG042	8" X 8" Gutter	30.78	1Hr	2AY10111A	B07	1.00	36.0	0.2	28.50	2750.00	
68-01	2ACXA40	24" Tray	52.16	1Hr	2AD10203A	B07	2.78	18.9	0.31	12.90	364.00	
68-01	2ACXA40	24" Tray	52.16	1Hr	2AD10205A	B07	3.42	18.9	0.31	12.90	277.20	
68-01	2ACXA40	24" Tray	52.16	1Hr	2AD10207A	B07	9.04	18.9	0.31	12.90	42.70	
68-01	2ACXA40	24" Tray	52.16	1Hr	2AD10208A	B07	3.60	18.9	0.31	12.90	258.30	
68-01	2ACXA40	24" Tray	52.16	1Hr	2AD10209A	B10	13.24	27.2	0.31	18.60	40.50	
68-01	2ACXA40	24" Tray	52.16	1Hr	2AD10209B	B10	4.30	27.2	0.31	18.60	332.60	

ATTACHMENT 2
LGS AMPACITY DERATING OF CABLES IN DARMATT KM1RACEWAYS USING DIVERSITY MODEL

FBS #	Raceway ID	Raceway Size	% Fill	Fire Rating	Cable	Cable Code *	Full Load Current (FLC) Amps	I nominal (Amps)	ADF	Iprot (Amps)	'% Margin (Ip-FLC)/FLC*100	Remark
68-01	2ACXA40	24" Tray	52.16	1Hr	2AD10210A	B10	6.10	27.2	0.31	18.60	204.90	
68-01	2ACXA40	24" Tray	52.16	1Hr	2AD10210B	PJ6	6.80	45.3	0.31	30.90	354.40	
68-01	2ACXA40	24" Tray	52.16	1Hr	2AB21126B	B13	11.40	31.9	0.31	21.80	91.20	
68-01	2ACXA40	24" Tray	52.16	1Hr	2AD10211A	B07	0.96	18.9	0.31	12.90	1244.00	
68-01	2ACXA40	24" Tray	52.16	1Hr	2AD10212A	B07	0.40	18.9	0.31	12.90	3125.00	
68-01	2ACXA40	24" Tray	52.16	1Hr	2AD10220A	B07	7.33	18.9	0.31	12.90	76.00	
68-01	2ACXA40	24" Tray	52.16	1Hr	2AD16202A	B10	6.70	27.2	0.31	18.60	177.60	
68-01	2ACXA40	24" Tray	52.16	1Hr	2AD16202B	B10	4.00	27.2	0.31	18.60	365.00	
68-01	2ACXA40	24" Tray	52.16	1Hr	2ASP0055A	B07	SPARE	18.9	0.31	12.90	N/A	
68-01	2ACXA40	24" Tray	52.16	1Hr	2ASP0106A	B07	SPARE	18.9	0.31	12.90	N/A	
68-01	2ACXA40	24" Tray	52.16	1Hr	2ASP0172A	B07	SPARE	18.9	0.31	12.90	N/A	
68-01	2ACXA40	24" Tray	52.16	1Hr	2AY10101A	B07	1.00	18.9	0.31	12.90	1190.00	
68-01	2ACXA40	24" Tray	52.16	1Hr	2AY10106A	B10	12.50	27.2	0.31	18.60	48.80	
68-01	2ACXA40	24" Tray	52.16	1Hr	2AY10107A	B07	8.50	18.9	0.31	12.90	51.80	
68-01	2ACXA40	24" Tray	52.16	1Hr	2AY10111A	B07	1.00	18.9	0.31	12.90	1190.00	
68-01	2ACXA40	24" Tray	52.16	1Hr	2AY10123A	B07	2.50	18.9	0.31	12.90	416.00	
68-01	2ACXA40	24" Tray	52.16	1Hr	2AY10132A	B07	1.00	18.9	0.31	12.90	1190.00	
68-01	2ACXA40	24" Tray	52.16	1Hr	2AY10134A	B07	2.00	18.9	0.31	12.90	545.00	
68-01	2ACXA38	24" Tray	35.55	1Hr	2AB21126B	B13	11.40	40.1	0.31	27.40	140.40	
68-01	2ACXA38	24" Tray	35.55	1Hr	2AD10203A	B07	2.78	22.0	0.31	15.00	439.60	
68-01	2ACXA38	24" Tray	35.55	1Hr	2AD10205A	B07	3.42	22.0	0.31	15.00	338.60	
68-01	2ACXA38	24" Tray	35.55	1Hr	2AD10207A	B07	9.04	22.0	0.31	15.00	65.90	
68-01	2ACXA38	24" Tray	35.55	1Hr	2AD10208A	B07	3.60	22.0	0.31	15.00	316.70	
68-01	2ACXA38	24" Tray	35.55	1Hr	2AD10209A	B10	13.24	34.3	0.31	23.40	76.70	
68-01	2ACXA38	24" Tray	35.55	1Hr	2AD10209B	B10	4.30	34.3	0.31	23.40	444.20	
68-01	2ACXA38	24" Tray	35.55	1Hr	2AD10210A	B10	6.10	34.3	0.31	23.40	283.60	
68-01	2ACXA38	24" Tray	35.55	1Hr	2AD10210B	PJ6	6.10	55.5	0.31	37.90	521.30	
68-01	2ACXA38	24" Tray	35.55	1Hr	2AD10211A	B07	0.96	22.0	0.31	15.00	1462.00	
68-01	2ACXA38	24" Tray	35.55	1Hr	2AD10212A	B07	0.40	22.0	0.31	15.00	3650.00	
68-01	2ACXA38	24" Tray	35.55	1Hr	2AD10216A	B07	0.10	22.0	0.31	15.00	14900.00	
68-01	2ACXA38	24" Tray	35.55	1Hr	2AD10220A	B07	7.33	22.0	0.31	15.00	104.60	
68-01	2ACXA38	24" Tray	35.55	1Hr	2AD16202A	B10	6.70	34.3	0.31	23.40	249.30	
68-01	2ACXA38	24" Tray	35.55	1Hr	2AD16202B	B10	4.00	34.3	0.31	23.40	485.00	
68-01	2ACXA38	24" Tray	35.55	1Hr	2ASP0055A	B07	SPARE	22.0	0.31	15.00	N/A	
68-01	2ACXA38	24" Tray	35.55	1Hr	2ASP0106A	B07	SPARE	22.0	0.31	15.00	N/A	
68-01	2ACXA38	24" Tray	35.55	1Hr	2ASP0172A	B07	SPARE	22.0	0.31	15.00	N/A	
68-01	2ACXA38	24" Tray	35.55	1Hr	2ASP0173A	B10	SPARE	34.3	0.31	23.40	N/A	
68-01	2ACXA38	24" Tray	35.55	1Hr	2AY10101A	B07	1.00	22.0	0.31	15.00	1400.00	
68-01	2ACXA38	24" Tray	35.55	1Hr	2AY10106A	B10	12.50	34.3	0.31	23.40	87.20	
68-01	2ACXA38	24" Tray	35.55	1Hr	2AY10107A	B07	8.50	22.0	0.31	15.00	76.50	
68-01	2ACXA38	24" Tray	35.55	1Hr	2AY10111A	B07	1.00	22.0	0.31	15.00	1400.00	
68-01	2ACXA38	24" Tray	35.55	1Hr	2AY10123A	B07	2.50	22.0	0.31	15.00	500.00	
68-01	2ACXA38	24" Tray	35.55	1Hr	2AY10132A	B07	1.00	22.0	0.31	15.00	1400.00	
68-01	2ACXA38	24" Tray	35.55	1Hr	2AY10134A	B07	2.00	22.0	0.31	15.00	650.00	
68-01	2ACXA39	24" Tray	15.61	1Hr	2AY10111A	B07	1.00	26.7	0.31	18.20	1720.00	
68-01	2ACXA39	24" Tray	15.61	1Hr	2AD10210B	PJ6	6.10	66.8	0.31	45.60	647.50	
68-2	2BG008	8" X 8" Gutter	39.17	1Hr	2BD10205A	B07	2.50	36.0	0.41	10.5	320.00	
68-2	2BG008	8" X 8" Gutter	39.17	1Hr	2BD10207A	B07	8.30	36.0	0.41	10.5	26.50	

ATTACHMENT 2
LGS AMPACITY DERATING OF CABLES IN DARMATT KM1RACEWAYS USING DIVERSITY MODEL

FBS #	Raceway ID	Raceway Size	% Fill	Fire Rating	Cable	Cable Code *	Full Load Current (FLC) Amps	I nominal (Amps)	ADF	Iprot (Amps)	'% Margin (Ip-FLC)/FLC*100	Remark
68-2	2BG008	8" X 8" Gutter	39.17	1Hr	2BD10208A	B07	1.24	36.0	0.41	10.5	746.80	
68-2	2BG008	8" X 8" Gutter	39.17	1Hr	2BD10209A	B10	4.30	52.0	0.41	15.2	253.50	
68-2	2BG008	8" X 8" Gutter	39.17	1Hr	2BD10211A	B07	0.71	36.0	0.41	10.5	1379.00	
68-2	2BG008	8" X 8" Gutter	39.17	1Hr	2BD10212A	B07	0.21	36.0	0.41	10.5	4900.00	
68-2	2BG008	8" X 8" Gutter	39.17	1Hr	2BD16202A	B10	6.41	52.0	0.41	15.2	137.10	
70-03	2BG008	8" X 8" Gutter	39.17	1Hr	2BD10205A	B07	2.50	36.0	0.41	9.60	284.00	
70-03	2BG008	8" X 8" Gutter	39.17	1Hr	2BD10207A	B07	8.30	36.0	0.41	9.60	15.70	
70-03	2BG008	8" X 8" Gutter	39.17	1Hr	2BD10208A	B07	1.24	36.0	0.41	9.60	674.20	
70-03	2BG008	8" X 8" Gutter	39.17	1Hr	2BD10209A	B10	4.30	52.0	0.41	13.80	220.90	
70-03	2BG008	8" X 8" Gutter	39.17	1Hr	2BD10211A	B07	0.71	36.0	0.41	9.60	1252.00	
70-03	2BG008	8" X 8" Gutter	39.17	1Hr	2BD10212A	B07	0.21	36.0	0.41	9.60	4471.00	
70-03	2BG008	8" X 8" Gutter	39.17	1Hr	2BD16202A	B10	6.41	52.0	0.41	13.80	115.30	
70-03	2BG028	8" X 8" Gutter	37.76	1Hr	2BD10210A	B10	3.00	52.0	0.41	13.80	360.00	
70-03	2BG028	8" X 8" Gutter	37.76	1Hr	2BSP0024A	B07	SPARE	36.0	0.41	9.60	N/A	
70-03	2BG028	8" X 8" Gutter	37.76	1Hr	2BY10206A	B07	2.15	36.0	0.41	9.60	346.50	
70-03	2BG028	8" X 8" Gutter	37.76	1Hr	2BY10207A	B07	6.55	36.0	0.41	9.60	46.60	
70-03	2BG028	8" X 8" Gutter	37.76	1Hr	2BY10215A	B07	7.82	36.0	0.41	9.60	22.80	
70-03	2BG028	8" X 8" Gutter	37.76	1Hr	2BY10223A	B07	1.39	36.0	0.41	9.60	590.60	
70-03	2BG028	8" X 8" Gutter	37.76	1Hr	2BY10232A	B07	1.06	36.0	0.41	9.60	805.70	
70-03	2BG028	8" X 8" Gutter	37.76	1Hr	2BY10234A	B07	2.00	36.0	0.41	9.60	380.00	
												* B08-3/C # 10 AWG
MODEL CABLE DATA												* B13-3/C # 6 AWG
												* B07-2/C # 10 AWG
Cable Size	3/C #6 AWG											* B80-3/C # 12 AWG
Cable Diameter (in)	0.74											* B11-3/C # 8 AWG
No. of Conductors per Cable	3											* B22-1/C # 350KCM
Resistance (Ohm/1000 ft)	0.535											* B10-2/C # 8 AWG
Cable Surface Emissivity	0.8											* B12-2/C # 6 AWG
Thermal Conductivity K_{bed}, (Btu/hr-ft- °F)	0.09											* B15-3/C # 4 AWG
												* B17-3/C # 2 AWG
FIRE BARRIER DATA												
Thermal Conductivity K_b, (Btu/hr-ft- °F)	0.0653											
Emissivity	0.7											
NOTES:												
1	Iprot = Inom * (1-ADF) * ATCF * MCCF											
	ATCF & MCCF values are shown in the calculations											
2	Control cables and some of the power cables feeding the intermittent loads like Motor Operated Valves (MOVs) are not listed.											

ATTACHMENT 3

Clarification to Safety Evaluation Report Addressing Thermo-Lag Related Ampacity Derating Issues

Raceways using a combination of Thermo-Lag 330-1 and Thermo-Lag 770-1

ATTACHMENT 3
LGS AMPACITY DERATING OF CABLES IN THERMO-LAG 330/770 RACEWAYS USING DIVERSITY MODEL

FBS #	Raceway ID	Raceway Size	% Fill	Fire Rating	Cable	Cable Code *	Full Load Current (FLC) Amps	I nominal (Amps)	ADF	Iprot (Amps)	% Margin (Ip-FLC)/FLC*100	Remark
25-01	1AG053	6" x 6" Gutter	48.63%	3 Hr	1AD10210A	B10	3.03	52.0	0.35	28.40	837.10	
25-01	1AG053	6" x 6" Gutter	48.63%	3 Hr	1AY10106A	B10	13.93	52.0	0.35	28.40	103.90	
25-01	1AG054	6" x 6" Gutter	47.66%	3 Hr	1AD16201A	B10	0.80	52.0	0.35	28.40	3450.00	
25-01	1AG054	6" x 6" Gutter	47.66%	3 Hr	1AD16205A	B10	0.80	52.0	0.35	28.40	3450.00	
												*B10-2/C #8AWG
MODEL CABLE DATA												
Cable Size	3/C #6 AWG		**NOTES:**									
Cable Diameter (in)	0.74											
No. of Conductors per Cable	3		1	Iprot = Inom * (1-ADF) * ATCF * MCCF								
Resistance (Ohm/1000 ft)	0.535			ATCF & MCCF values are shown in the calculations								
Cable Surface Emissivity	0.8											
Thermal Conductivity K_{bed}, (Btu/hr-ft- °F)	0.09		2	Control cables and some of the power cables feeding the intermittent loads like Motor Operated Valves (MOVs) are not listed.								
FIRE BARRIER DATA (Thermo-Lag 330/770)												
Thermal Conductivity K_b, (Btu/hr-ft- °F)	0.122											
Emissivity	0.9											