



ENTERGY

CALCULATION TITLE PAGE ENGINEERING DEPARTMENT

ENTERGY OPERATIONS INCORP.

1. CALCULATION NUMBER REV OR ADD

E-218

-0P

JBI NO. G13.3

PAGE 1 OF 4

2. CALCULATION TITLE: *Capacity Verification of Cables within Raceways wrapped with Appendix R Fire Protection Barrier*

3. SUPERCEDES:

SUPPLEMENTS: *E-218, Rev. 0*

4. OBJECTIVE OF CALCULATION

Verify that cables added to wrapped raceway for HVK chiller trip monitoring are adequately sized.

5. CALCULATION METHOD/ASSUMPTIONS:

Per Calc. E-218, Rev. 0

6. SOURCES OF DATA/EQUATIONS (REFERENCES):

Per Calc. E-218, Rev. 0

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DEC 5 1994

SDC

DESIGN ENGINEERING
CONTROL COPY
SDC

7. CONCLUSIONS:

The cables evaluated in this Addendum are adequately sized.

8. REASON FOR REVISION (IF APPLICABLE):

Document the addition of cables to wrapped tray ITC047B.

9. RELATED DOCUMENTS:

MM 93-0137

10. Q-CLASS

1-NUCLEAR SAFETY RELATED

2

3

QAPA ? Y N

11.

PREPARER

KCN DATE

D J Hamitt 4900 11/10/94

12.

CHECKER/REVIEWER

DATE

*2995
M Carter 11/10/94*

13.

INDEPENDENT REVIEWER

DATE

*2995
M Anderson 11/10/94*

14. DATA REQUIRING CONFIRMATION:

None

9511170217 951109
PDR ADOCK 0500045B
P PDR

DATA CONFIRMED BY:

DATE

15. APPROVED:

Michael A Ham 1013 11/10/94
SIGNATURE KCN DATE



ENTERGY OPERATIONS INCORPORATED
RIVER BEND STATION

3/94

DESIGN DOCUMENT
NO.

E-218 Rev 0D
PAGE 3

DESIGN REVIEW CHECKLIST (REF. EDP-AA-58)

| | YES | NO | N/A |
|--|-------------------------------------|--------------------------|-------------------------------------|
| 1. Were the inputs correctly selected and incorporated into the design?..... | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Are the assumptions necessary to perform the design activity adequately described and reasonable? Where necessary, are the assumptions identified for subsequent reverifications when the detailed design activities are completed? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Are the appropriate quality and quality assurance requirements specified? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
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| 6. Have the design interface requirements been satisfied?..... | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 7. Was an appropriate design method used? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. Is the output reasonable compared to inputs? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
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| 10. Are the specified materials compatible with each other and with the design environmental conditions to which the material will be exposed?..... | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
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| 12. Are accessibility and other design provisions adequate for the performance of needed maintenance and repair? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 13. Has adequate accessibility been provided to perform the in-service inspection expected to be performed during the plant life?..... | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 14. Has the design properly considered radiation exposure to the public and to plant personnel?..... | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 15. Are the acceptance criteria incorporated in the design documents sufficient to allow verification that design requirements have been satisfactorily accomplished?..... | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 16. Have adequate pre-operational and subsequent periodic test requirements been appropriately specified? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 17. Are adequate handling, storage, cleaning and shipping requirements specified? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 18. Are adequate identification requirements specified?..... | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 19. Are requirements for record preparation, review, approval, retention, etc. adequately specified?..... | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 20. Have environmental, safety, and seismic adequacy been considered? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 21. Have recommended spare parts been specified?..... | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 22. Have fire hazard analysis impacts been considered?..... | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 23. Have all affected Design Documents been considered (e.g. LSK's)?..... | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 24. Has adverse impact to peripheral components and systems been considered? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

DESIGN VERIFIED

[Signature]
Verifying Engineer

2995 11/10/94
KCN DATE

F00000B0



CALCULATION REVIEW SHEET

ENTERGY ENERGY OPERATIONS INCORP 8/94

| | |
|-----------------------|------------|
| 1. CALCULATION NUMBER | REV OR ADD |
| E-218 | -00 |
| JBI NO. G13-3 | |
| PAGE 4 OF 4 | |

| ITEM | CALC PAGE | COMMENT | RESPONSE/RESOLUTION |
|------|-----------|-------------|---------------------|
| | | No COMMENTS | |
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| COMMENTS PROVIDED BY | COMMENTS RESOLVED | RESOLUTION ACCEPTED |
| REVIEWER 2995 11/10/94 KCN DATE | PREPARER <u>N/A</u> KCN DATE | REVIEWER 2995 11/10/94 KCN DATE |

CALCULATION TITLE PAGE ENGINEERING DEPARTMENT

| | |
|-----------------------|--------------------------|
| 7. CALCULATION NUMBER | REV |
| G13.3 | E-218-0A ¹ LC |
| JOB NO. | |
| PAGE 1 | OF 4 |

2. CALCULATION TITLE *Ampacity Verification of Cables Within Raceways Wrapped With Appendix R Fire Protection Barrier*

3. SUPERSEDES CALC. OR REVISION NO.
NA

4. OBJECTIVE OF CALCULATION:

Per Calc. E-218, Rev. 0

5. CALCULATION METHOD/ASSUMPTIONS:

Per Calc. E-218, Rev. 0

DESIGN ENGINEERING
CONTROL COPY

SDC

6. SOURCES OF DATA/EQUATIONS (REFERENCES):

1. Calc. E218, Rev. 0
2. Criteria 240.201A

AUG 17 1994

7. CONCLUSIONS:

The cables contained in conduit ICC602RF are adequately sized when additional derating for installation in a fire barrier is applied.

8. REASON FOR REVISION (IF APPLICABLE):

Conduit ICC602RF is wrapped as required by Criterion 240.201A. The cables contained in this conduit were previously evaluated since they are in "C" level tray where the derating is much more severe. This conduit is added for documentation purposes only.

9. RELATED DOCUMENTS:

10. QA CATEGORY:
 I - NUCLEAR SAFETY RELATED II III

11. *R. J. Smith* ⁴⁴⁰⁰
 PREPARED 7/25/94
 DATE

12. *J. W. Carter* ¹⁰⁹⁷
 CHECKED/REVIEWER 8/11/94
 DATE

13. *J. W. Carter* ¹⁰⁹⁷
 INDEPENDENT REVIEWER 8/11/94
 DATE

14. DATA REQUIRING CONFIRMATION:

None

N/A
 DATA CONFIRMED BY: _____ DATE _____

RBSF-0003



ENTERGY OPERATIONS INCORPORATED
RIVER BEND STATION

DESIGN DOCUMENT
NO. *Page 4 of 4*

Calc. E-218, Rev 0, Add'l

3/94

DESIGN REVIEW CHECKLIST (REF. EDP-AA-58)

| | YES | NO | N/A |
|--|-------------------------------------|--------------------------|-------------------------------------|
| 1. Were the inputs correctly selected and incorporated into the design?..... | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Are the assumptions necessary to perform the design activity adequately described and reasonable? Where necessary, are the assumptions identified for subsequent reverifications when the detailed design activities are completed? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Are the appropriate quality and quality assurance requirements specified? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Are the applicable codes, standards, and regulatory requirements, including issue and addenda, properly identified and are their requirements for design met? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Have applicable construction and operating experience been considered? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Have the design interface requirements been satisfied?..... | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 7. Was an appropriate design method used? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. Is the output reasonable compared to inputs? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. Are the specified parts, equipment, and processes suitable for the required application? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 10. Are the specified materials compatible with each other and with the design environmental conditions to which the material will be exposed?..... | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 11. Have adequate maintenance features and requirements been specified?.. | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 12. Are accessibility and other design provisions adequate for the performance of needed maintenance and repair? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 13. Has adequate accessibility been provided to perform the in-service inspection expected to be performed during the plant life?..... | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 14. Has the design properly considered radiation exposure to the public and to plant personnel?..... | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 15. Are the acceptance criteria incorporated in the design documents sufficient to allow verification that design requirements have been satisfactorily accomplished?..... | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 16. Have adequate pre-operational and subsequent periodic test requirements been appropriately specified? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 17. Are adequate handling, storage, cleaning and shipping requirements specified? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 18. Are adequate identification requirements specified?..... | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 19. Are requirements for record preparation, review, approval, retention, etc. adequately specified?..... | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 20. Have environmental safety, and seismic adequacy been considered? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 21. Have recommended spare parts been specified?..... | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 22. Have fire hazard analysis impacts been considered?..... | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 23. Have all affected Design Documents been considered (e.g. LSK's)?..... | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 24. Has adverse impact to peripheral components and systems been considered? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

DESIGN VERIFIED

Salvador Lopez
Verifying Engineer

1097 8/1/94
KCN DATE

613.3

CALCULATION TITLE PAGE ENGINEERING DEPARTMENT

| | | |
|-----------------------|--------|-----|
| 1. CALCULATION NUMBER | | REV |
| G48-18.E-218 | -ADD B | 0 |
| JBI NO. | | |
| PAGE 1 OF 15 | | |

2. CALCULATION TITLE
AMPACITY VERIFICATION OF CABLES WITHIN RACEWAYS WRAPPED WITH
APPENDIX R FIRE PROTECTION BARRIER

3. SUPERSEDES CALC. OR REVISION NO:
N/A

4. OBJECTIVE OF CALCULATION:

EVALUATE THE AMPACITY OF NEW FUEL PUMP 1SFC*P1A AND 1SFC*PIB CONTROL CABLES ROUTED WITHIN CONDUITS THAT ARE WRAPPED WITH APPENDIX R FIRE PROTECTION BARRIER

5. CALCULATION METHOD/ASSUMPTIONS:

SAME AS IN ORIGINAL CALCULATION E-218, REV. 0. REFER TO PAGE 3 FOR DETAILS

RECEIVED
APR 26 1994

6. SOURCES OF DATA/EQUATIONS (REFERENCES):

- 1 MR 92-0038
- 2 CALCULATION E-218, REV.0
- 3 AGASTAT RELAY BULLETIN FROM MR 92-0038

[Signature] 4/15/94
GSU REVIEWED / DATE

7. CONCLUSION:

THE CABLES EVALUATED IN THIS ADDENDUM ARE ADEQUATELY SIZED WHEN ADDITIONAL DERATING FOR INSTALLATION IN A FIRE BARRIER IS APPLIED. SEE ALSO PAGE 2

8. REASON FOR REVISION (IF APPLICABLE):

UPDATE REVISION 0 TO INCLUDE NEW WRAPPED RACEWAYS PER PAGE 3.

9. RELATED DOCUMENTS

MR 92-0038

R. Vidal

10. QA CATEGORY:

I- NUCLEAR II
SAFETY RELATED III

Lidel S. Priets

| | | |
|--|---|---|
| 11. <i>R. Vidal</i> 3/17/94 PREPARER DATE | 12. <i>Lidel S. Priets</i> 3/17/94 CHECKER/REVIEWER DATE | 13. <i>Lidel S. Priets</i> 3/17/94 INDEPENDENT REVIEWER DATE |
|--|---|---|

14. DATA REQUIRING CONFIRMATION:

NONE

N/A
DATA CONFIRMED BY DATE

DESIGN ENGINEERING
CONTROL COPY
SDC

CALCULATION WORK SHEET

| | | |
|-----------------------|--------|-----|
| 1. CALCULATION NUMBER | | REV |
| G43-48.E-218 | -ADD B | -0 |
| JBI NO. | | |
| PAGE 2 OF 15 | | |

2/C # 14 AWG CU CABLES 1SFCARC203 AND 1SFCBBC203 WILL BE ROUTED IN THE FOLLOWING WRAPPED RACEWAYS WITH 3 HOUR FIRE BARRIER MATERIAL PER REFERENCE 1:

| <u>CABLE*</u> | <u>CONDUIT*</u> | <u>AMB. TEMP**</u> | <u>FIRE AREA/ZONE**</u> |
|---------------|-----------------|--------------------|-------------------------|
| 1SFCARC203 | 1CC800RC | 50 ° C | FB1 / Z1 |
| | 1CC800RC1 | 50 ° C | FB1 / Z1 |
| | 1CC800RC2 | 50 ° C | FB1 / Z1 |
| 1SFCBBC203 | 1CC800BB1 | 50 ° C | FB1 / Z1 |

* FROM REFERENCE 1

** FROM REFERENCE 2, APP. A (PAGE 10 OF ATTACHMENT 1)

EACH OF THESE CABLES WILL ENERGIZE ONE 125V AGASTAT RELAY, RESPECTIVELY, WITH THE FOLLOWING CHARACTERISTICS:

AGASTAT RELAY DATA:

| | |
|---------|----------------------------|
| POWER | 8 WATTS = 8 VA FOR DC COIL |
| CURRENT | 8/125 = 0.06 AMPS @ 125VDC |

AMPACITY OF 2/C #14 AWG CU CABLE, AT 50 ° C, IN WRAPPED CONDUIT IS 15 AMPS

CONCLUSION: THE LOAD AMPS IS LOWER THAN THE DERATED AMPACITY OF THE CABLE, THEREFORE THE ABOVE 2/C # 14 CABLE IS ADEQUATE FOR THIS APPLICATION.

| | |
|-----|------|
| REF | PAGE |
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CALCULATION WORK SHEET

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|-----------------------|--------|-----|
| 1. CALCULATION NUMBER | | RFV |
| G42-48.E-218 | -ADD B | -0 |
| JBI NO. | | |
| PAGE 3 OF 15 | | |

CALC E-218, RØ
ATTACHMENT 1

CABLE DERATING SUMMARY
AMBIENT TEMP 50 °C

ADD

FIRE WRAP 1 HR
RATING 5 HR

FIRE AREA 100/21

PAGE 1 OF 1

| RACEWAY | CABLE NO. | CABLE SIZE | SERVICE VOLTAGE | LOAD / FLA | CONNECTED DEVICE | CIRCUIT NO. | CB0/ESK | C/I | DCA | REMARK |
|------------|------------|------------|-----------------|------------|------------------|-------------|---------|-----|-----|------------|
| ICC600 RC | 1SFCARC203 | 2/#14 | 125VDC | BW/0.06A | 1SFC*TS12A | 1SFCAD1 | 6SFC01 | C | 15 | MR 92-0038 |
| ICC600 RC1 | 1SFCARC203 | 2/#14 | 125VDC | BW/0.06A | 1SFC*TS12A | 1SFCAD1 | 6SFC01 | C | 15 | MR 92-0038 |
| ICC600 RC2 | 1SFCARC203 | 2/#14 | 125VDC | BW/0.06A | 1SFC*TS12A | 1SFCAD1 | 6SFC01 | C | 15 | MR 92-0038 |
| ICC600 BB2 | 1SFCBBC203 | 2/#14 | 125VDC | BW/0.06A | 1SFC*TS12B | 1SFCB01 | 6SFC02 | C | 15 | MR 92-0038 |

CALCULATION RIVIEW SHEET

1. CALCULATION NUMBER

REV

G43-48.E-218

-ADD B

-0

JBI NO.

PAGE 4 OF *N5*

| ITEM | CALC PAGE | COMMENTS | RESPONSE/RESOLUTION |
|------|-----------|-------------|---------------------|
| | | <i>NONE</i> | |
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| COMMENTS PROVIDED BY | | COMMENTS RESOLVED | | RESOLUTION ACCEPTED | |
| <i>Liddell & Roub</i> | <i>3/17/47</i> | | | | |
| REVIEWER | DATE | PREPARER | DATE | REVIEWER | DATE |



ENTERGY OPERATIONS INCORPORATED
RIVER BEND STATION

3/94

DESIGN DOCUMENT NO.

E-218, Add B
SH. 50F5

DESIGN REVIEW CHECKLIST (REF. EDP-AA-58)

| | YES | NO | N/A |
|--|-------------------------------------|--------------------------|-------------------------------------|
| 1. Were the inputs correctly selected and incorporated into the design?.... | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
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| 14. Has the design properly considered radiation exposure to the public and to plant personnel?..... | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
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| 16. Have adequate pre-operational and subsequent periodic test requirements been appropriately specified?..... | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
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| 22. Have fire hazard analysis impacts been considered?..... | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
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DESIGN VERIFIED

L. J. Kirt
Verifying Engineer

3/17/94
KCN DATE



CALCULATION TITLE PAGE
ENGINEERING DEPARTMENT

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|-----------------------|---------|
| 1. CALCULATION NUMBER | REV |
| E-218 | 0, Addn |
| G133 JOB NO. | |
| PAGE 1 | OF 60 |

2. CALCULATION TITLE *Capacity Verification of Cable Within Raceways Wrapped with Appendix E Fire Protection Barrier*

3. SUPERSEDES CALC. OR REVISION NO.

4. OBJECTIVE OF CALCULATION:

Per Ref. 1

5. CALCULATION METHOD/ASSUMPTIONS:

Per Ref. 1

RECEIVED

JUN 08 1993

6. SOURCES OF DATA/EQUATIONS (REFERENCES):

- Calc. E-218, Rev. 0*
- STP-000-3602, Rev 8 "Fire Barrier Visual Inspection"*
- CR 92-0250*

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7. CONCLUSIONS:

All cables considered in this Addendum are adequately sized when additional derating for installation in a fire barrier is applied.

8. REASON FOR REVISION (IF APPLICABLE):

A number of wrapped raceways and the contained cables were not evaluated in E-218, Rev. 0. They were ident. & eval via CR 92-0250 after comparison of E-218, Rev. 0 with STP 000-3602, Rev 8.

9. RELATED DOCUMENTS:

CR 92-0250

10. QA CATEGORY:

I - NUCLEAR SAFETY RELATED II III

11. *KCN4900*
R.J. Smith 8/18/92
PREPARED DATE

12. *2995*
M. D. ... 8/18/92
CHECKER/REVIEWER DATE

13. *2995*
M. D. ... 8/18/92
INDEPENDENT REVIEWER DATE

14. DATA REQUIRING CONFIRMATION:

NONE

N/A
DATA CONFIRMED BY: DATE

RBSF0003

A 2018.03

| CALCULATION IDENTIFICATION NUMBER | | | | PAGE <u>10</u> OF <u>35</u> |
|-----------------------------------|---------------------------------------|---------------------------------|----------------------------------|--------------------------------|
| J.O. OR W.O. NO. <u>12210</u> | DIVISION & GROUP <u>ELECTRICAL</u> | CALCULATION NO. <u>E-218</u> | OPTIONAL TASK CODE <u>N/A</u> | |

III. METHOD

A. THE CABLE SIZE IS BASED ON THREE FACTORS IN THE FOLLOWING ORDER.

1. AMPACITY
2. SHORT CIRCUIT LIMITATIONS
3. VOLTAGE DROP LIMITATIONS

WHICH IS SHOWN IN CALCULATION E-137, E-156, E-167, AND E-126. NOTE THAT THIS CALCULATION WILL CHECK FOR CABLE AMPACITY ONLY.

B. PROCEDURES - REFER TO ATTACHMENT 1

FOR THE LISTING OF CABLES.

THE DATA SHOWN IN ATTACHMENT WAS COLLECTED AS DESCRIBED BELOW:

1. LIST ALL RACEWAYS THAT ARE BEING PROTECTED WITH 1 HOUR & 3 HOUR BARRIER MATERIAL AS OUTLINED IN THE APPENDIX R DATA MANAGEMENT SYSTEM AND INSULATION RELEASE FORMS (ATTACHMENT 10)
2. FROM THE LIST OF RACEWAYS FIND ALL THE CABLES WITHIN EACH RACEWAY BY USE OF THE "ECSIS" REPORT NO EC-6.

BA
and STP-000-360C

Rev 9
 CALC E-2181 ADDENDUM A
 ATTACHMENT 1

CABLE DERATING SUMMARY
 AMBIENT TEMP 50 °C
 PAGE 3 OF 3

FIRE AREA B24/27 FIRE-WRAP RATING 1 HR (2 HR)

| RACEWAY | CABLE NO. | CABLE / SERVICE SIZE / VOLTAGE | LOAD / FLA | CONNECTED DEVICE | CIRCUIT NO. | CBD / ESK | C/I | D.C.A. | REMARKS |
|------------|----------------|--------------------------------|----------------------------|-------------------------------|-------------|---------------------------|-----|--------|---------|
| ITC 500R | 1ADSARC601 | 24/12/125 Vdc | 10AFU / 61W / 0.5A | 1BE1 * RVFO41B ^{SVA} | 1ADS A01 | BS1E225AA ^{SM11} | C | 7.3 | |
| | 1ADSARC603 | 24/12/125 Vdc | 10AFU / 61W / 0.5A | 1BE1 * RVFO41A ^{SVA} | 1ADS A02 | BS1E225AA ^{SM13} | C | 7.3 | |
| | 1ADSARC605 | 24/12/125 Vdc | 10AFU / 61W / 0.5A | 1BE1 * RVFO41G ^{SVA} | 1ADS A03 | BS1E225AA ^{SM13} | C | 7.3 | |
| | 1ADSARC607 | 24/12/125 Vdc | 10AFU / 61W / 0.5A | 1BE1 * RVFO41C ^{SVA} | 1ADS B01 | BS1E225AA ^{SM11} | C | 7.3 | |
| | 1ADSARC609 | 24/12/125 Vdc | 10AFU / 61W / 0.5A | 1BE1 * RVFO41K ^{SVA} | 1ADS B02 | BS1E225AA ^{SM13} | C | 7.3 | |
| | 1ADSARC611 | 24/12/125 Vdc | 10AFU / 61W / 0.5A | 1BE1 * RVFO51B ^{SVA} | 1ADS B03 | BS1E225AA ^{SM13} | C | 7.3 | |
| | 1ADSARC613 | 24/12/125 Vdc | 10AFU / 61W / 0.5A | 1BE1 * RVFO51D ^{SVA} | 1ADS C03 | 242415047 ^{SM11} | C | 7.3 | |
| | 1ADSARC615 | 24/12/125 Vdc | 10AFU / 61W / 0.5A | 1BE1 * RVFO41D ^{SVA} | 1ADS C01 | BS1E225AA ^{SM13} | C | 7.3 | |
| | 1ADSARC617 | 24/12/125 Vdc | 10AFU / 61W / 0.5A | 1BE1 * RVFO41B ^{SVA} | 1ADS C02 | BS1E225AA ^{SM13} | C | 7.3 | |
| | 1ADSARC619 | 24/12/125 Vdc | 10AFU / 61W / 0.5A | 1BE1 * RVFO41F ^{SVA} | 1ADS D01 | BS1E225AA ^{SM11} | C | 7.3 | |
| | 1ADSARC621 | 24/12/125 Vdc | 10AFU / 61W / 0.5A | 1BE1 * RVFO41D ^{SVA} | 1ADS D02 | BS1E225AA ^{SM13} | C | 7.3 | |
| | 1ADSARC623 | 24/12/125 Vdc | 10AFU / 61W / 0.5A | 1BE1 * RVFO41F ^{SVA} | 1ADS E01 | BS1E225AA ^{SM13} | C | 7.3 | |
| | 1ADSARC625 | 24/12/125 Vdc | 10AFU / 61W / 0.5A | 1BE1 * RVFO41G ^{SVA} | 1ADS E02 | BS1E225AA ^{SM13} | C | 7.3 | |
| | 1ADSARC627 | 24/12/125 Vdc | 10AFU / 61W / 0.5A | 1BE1 * RVFO51C ^{SVA} | 1ADS F02 | 242415047 ^{SM11} | C | 7.3 | |
| | 1ADSARC629 | 24/12/125 Vdc | 10AFU / 61W / 0.5A | 1BE1 * RVFO41C ^{SVA} | 1ADS F01 | BS1E225AA ^{SM11} | C | 7.3 | |
| | 1ADSARC631 | 24/12/125 Vdc | 10AFU / 61W / 0.5A | 1BE1 * RVFO51B ^{SVA} | 1ADS G01 | BS1E225AA ^{SM11} | C | 7.3 | |
| | 1CCPARC011 | 50/12/120 Vac | 3AFU | 1CCP * NOV142 | 1CCPA07 | 60CP10 | C | 6.1 | |
| 1CCPARC011 | 50/12/120 Vac | 3AFU | 1CCP * NOV143 | 1CCPA07 | 60CP10 | C | 6.1 | | |
| 1CCPARC508 | 25/12/120 Vac | 3AFU | 1CCP * NOV142 | 1CCPN04 | 70CP05 | C | 7.3 | | |
| 1CMSARC522 | 50/12/120 Vac | 3AFU | 1CMS * NOV142 ⁹ | 1CMS A03 | 7CMS03 | C | 6.1 | | |
| 1CMSARC523 | 120/12/120 Vac | 3AFU | 1CMS * NOV142 ⁹ | 1CMS A03 | 7CMS03 | C | 5.5 | | |
| 1CMSARC537 | 70/12/120 Vac | 3AFU | 1CMS * NOV142 ⁹ | 1CMS A04 | 7CMS04 | C | 5.6 | | |

105% of F.II

Rev'd,
CALC E-218/ADDENDUM A
ATTACHMENT 1

CABLE DERATING SUMMARY

FIRE AREA RC/37 FIRE-WRAP RATING } 1 HR
 } 5 HR

AMBIENT TEMP 50°C

PAGE 4 OF

| RACEWAY | CABLE NO. | CABLE/SERVICE SIZE/VOLTAGE | LOAD / FLA | CONNECTED DEVICE | CIRCUIT NO. | CBD/ESK | C/I | D.C.A. | REMARKS |
|--------------------|---------------|----------------------------|---------------|--------------------------------|-----------------------|------------------------|-----|-----------------------|---------|
| TC500R (cont'd) | ICMSARC538 | 12/12/120Vac | 3A FU | KMS#50V33W, Y | ICMSA04 | 7CMS04 | C | 5.5 | |
| | ICMSARC543 | 5c/14/120Vac | 3A FU | ICMS#50V33S | ICMSA04 | 7CMS04 | C | 4.4 | |
| | ICMSARC549 | 5c/14/120Vac | 3A FU | ICMS#50V33W | ICMSA04 | 7CMS04 | C | 4.4 | |
| | ICMSARC555 | 7c/12/120Vac | 3A FU | ICMS#50V33AA ICMS#50V33AC | ICMSA05 | 7CMS05 | C | 5.6 | |
| | ICMSARC556 | 12c/12/120Vac | 3A FU | ICMS#50V33AA ICMS#50V33A, C | KMSA05 | 7CMS05 | C | 5.5 | |
| | ICMSARC558 | 5c/14/120Vac | 3A FU | ICMS#50V33AA | ICMSA05 | 7CMS05 | C | 4.4 | |
| | ICMSNRC507 | 2c/12/120Vac | 1534W/12.8A | ICMS#CCT1A | INTS#PML2M ICMSK1A | EE-9VF 21161971492 | I | 19 | |
| | ICMSNRC508 | 2c/12/120Vac | 1202W/10A | ICMS#CCT2A | INTS#PML3M ICMSK2A | EE-9VF 21161971492 | I | 19 | |
| | ICMSNRC509 | 2c/12/120Vac | 1202W/10A | ICMS#CCT3A | INTS#PML3M ICMSK3A | EE-9VF 21161971492 | I | 19 | |
| | ICMSNRC510 | 2c/12/120Vac | 1581W/17.2A | ICMS#CCT4A | INTS#PML2M ICMSK4A | EE-9VF 21161971492 | I | 19 | |
| | ICMSNRC512 | 2c/12/120Vac | Not used | ICMS#CCT7A | — | EE-308H EE-9VF, 9VE | — | 7.3 | |
| | ICMSNRC515 | 2c/12/120Vac | Not used | ICMS#CCT8A | — | EE-308H EE-9VF, 9VE | — | 7.3 | |
| | ICMSNRC518 | 2c/12/120Vac | Not used | ICMS#CCT9A | — | EE-308H EE-9VF, 9VE | — | 7.3 | |
| | ICMSARC506 | 12c/12/120Vac | 5A FU | ICMS#50VA, G | ICMSA09 | 7CMS14 | C | 5.5 | |
| | ICPMARCO03 | 2c/12/120Vac | 3A FU | ICPM#FN1A | ICPMA01 | 6CPM01 | C | 7.3 | |
| | ICPMARCO08 | 5c/12/120Vac | 3A FU | ICPM#MOV2A | ICPMA02 | 6CPM02 | C | 6.1 | |
| | ICPMARCO24 | 5c/12/120Vac | 3A FU | ICPM#MOV1A | ICPMA03 | 6CPM04 | C | 6.1 | |
| | ICPMARCO57 | 2c/10/120Vac | 1A FU | ICPM#FN1A | ICPMA07 | 7CPM01 | C | 10.9 | |
| | ICPMARCO58 | 2c/12 | SPARE | SPARE | — | — | — | — | |
| | ICPMCRCO03 | 5c/12/120Vac | 3A FU | ICPM#MOV4A | KPMCO2 | 6CPM02 | C | 6.1 | |
| ICPMCRCO06 | 5c/12/120Vac | 3A FU | ICPM#MOV3A | ICPMCO3 | 6CPM04 | C | 6.1 | | |
| ICSLNRC501 | 12c/12/120Vac | 10A FU/0.41 | IE21#A0V F006 | KSLNOT | BZBES34A | C | 5.6 | SEE ATTACH. 2- CALC L | |

Rev 0,
CALC E-218/ADDENDUM A
ATTACHMENT 1

CABLE DERATING SUMMARY

FIRE AREA PC4/27 FIRE-WRAP RATING 1 HR
5 HR

AMBIENT TEMP 50 °C

PAGE 5 OF 5

| RACEWAY | CABLE NO. | CABLE / SERVICE SIZE / VOLTAGE | LOAD / FLA | CONNECTED DEVICE | CIRCUIT NO. | CBD/ESK | C/I | D.C.A. | REMARKS |
|---------------------|------------|--------------------------------|----------------------|--------------------|-------------|------------------|-----|--------|--|
| ITC500R (Cont'd) | 1CSLNRC503 | 3c/12/120Vac | 1A FU | 1E21 * F007 | 1CSLN05 | 247 828532EAA | C | 6.3 | Temp. signal to correct T/A readings 1 amp/ign. for per 21161-997-078A page 5 |
| | 1HCSARC401 | 4c/10/120Vac | No load - 3 ignitors | 1HCS * JBLA | 1HCSA02 | AWD27-13.1 | C | 9.4 | |
| | 1HCSARC532 | 2c/12/120Vac | 6A | 1KJB5475 (Ignitor) | --- | HCS7A | C | 7.3 | |
| | 1HCSARC536 | 2c/12/120Vac | 3A | 1KJB5475 (Ignitor) | --- | HCS7A | C | 7.3 | |
| | 1HCSARC544 | 2c/12/120Vac | 1A | 1HCS * IGN22A | --- | HCS2A | C | 7.3 | |
| | 1HCSARC550 | 2c/12/120Vac | 1A | 1HCS * IGN23A | --- | HCS2A | C | 7.3 | |
| | 1HCSARC557 | 2c/12/120Vac | 1A | 1HCS * IGN24A | --- | HCS2A | C | 7.3 | |
| | 1HCSARC573 | 2c/12/120Vac | 5A | 1KJB5474 (Ignitor) | --- | HCS1A | C | 7.3 | |
| | 1HCSARC574 | 2c/12/120Vac | 5A | 1KJB5474 (Ignitor) | --- | HCS1A | C | 7.3 | |
| | 1HCSARC575 | 2c/12/120Vac | 3A | 1KJB5472 (Ignitor) | --- | HCS2A | C | 7.3 | |
| | 1HCSARC581 | 2c/12/120Vac | 6A | 1KJB5473 (Ignitor) | --- | HCS2A | C | 7.3 | |
| | 1HCSARC582 | 2c/12/120Vac | 7A | 1KJB5473 (Ignitor) | --- | HCS2A | C | 7.3 | |
| | 1HCSARC583 | 2c/12/120Vac | 3A | 1KJB5473 (Ignitor) | --- | HCS2A | C | 7.3 | |
| | 1HCSARC584 | 2c/12/120Vac | 3A | 1KJB5474 (Ignitor) | --- | HCS2A | C | 7.3 | |
| | 1HCSARC585 | 2c/12/120Vac | 2A | 1KJB5478 (Ignitor) | --- | HCS5A | C | 7.3 | |
| | 1HCSARC586 | 2c/12/120Vac | 5A | 1KJB5478 (Ignitor) | --- | HCS5A | C | 7.3 | |
| | 1HCSARC587 | 2c/12/120Vac | 5A | 1KJB5478 (Ignitor) | --- | HCS5A | C | 7.3 | |
| | 1HCSARC588 | 2c/12/120Vac | 5A | 1KJB5478 (Ignitor) | --- | HCS5A | C | 7.3 | |
| | 1HCSARC595 | 2c/12/120Vac | 3A | 1KJB5472 (Ignitor) | --- | HCS2A | C | 7.3 | |
| | 1HCSARC596 | 2c/12/120Vac | 2A | 1KJB5472 (Ignitor) | --- | HCS2A | C | 7.3 | |
| | 1HCSARC597 | 2c/12/120Vac | 2A | 1KJB5474 (Ignitor) | --- | HCS2A | C | 7.3 | |
| | 1HVNARCO03 | 5c/12/120Vac | 3A FU | 1HVN * MOV22A | 1HVN01 | GMVN09 | C | 6.1 | |

CABLE DERATING SUMMARY

FIRE AREA RC1/27 FIRE-WRAP RATING 1HR
3HR

AMBIENT TEMP 50 °C

PAGE 62 OF

| RACEWAY | CABLE NO. | CABLE / SERVICE SIZE / VOLTAGE | LOAD / FLA | CONNECTED DEVICE | CBD / ESK | C. CIRCUIT NO. | C/I | D.C.A. | REMARKS |
|---------------------|--------------|--------------------------------|---------------------------------------|------------------------------------|---------------------------|----------------|-----|-------------------------|---------------------------|
| ITC500R (Cont'd) | 1MVNARC503 | 2c/12/120vac | Disconnected | 1MVN*NOV22A | 7HVN05 | 1MVNA20 | — | 7.3 | |
| | 1MVRARC504 | 7c/12/120vac | 3A FU | 1MVR*NOV125,124,106 1MVR*AO216Z | 7HVR04 | 1MVRA20 | C | 5.6 | |
| | 1MVRARC568 | 2c/10/120vac | 2AOW / 2A | 1MVR*U1AHO | 7HVR18 | 1MVR25 | C | 10.9 | 215.250-057 -021B |
| | 1ICSNRC523 | 7c/12/120vac | 10A FU / 0.41A | 1EST*AOVFD66 | ^{SN14} 82BE534AR | ICSN05 | C | 5.6 | SEE ATTACH. 2-CALC L |
| | 1RCSARC003 | 5c/12/120vac | 3A FU | 1RCS*MOV58A | 6RCS03 | 1RCSA28 | C | 6.1 | |
| | 1RCSARC007 | 5c/12/120vac | 3A FU | 1RCS*MOV59A | 6RCS03 | 1RCSA29 | C | 6.1 | |
| | 1RCSARC010 | 5c/12/120vac | 3A FU | 1RCS*MOV60A | 6RCS04 | 1RCSA30 | C | 6.1 | |
| | 1RCSARC013 | 5c/12/120vac | 3A FU | 1RCS*MOV61A | 6RCS04 | 1RCSA31 | C | 6.1 | |
| | 1RCSARC500 | 2c/12/120vac | Disconnected | 1RCS*MOV58A | 7RCS01 | 1RCSA35 | — | 7.3 | |
| | 1RH5ARC043 | 2c/12/120vac | 3A FU | 1E12*F042A | 6RH505 | 1RH5A17 | C | 7.3 | |
| | 1RH5ARC045 | 2c/12/120vac | 3A FU | 1E12*F042A | 6RH505 | 1RH5A17 | C | 7.3 | |
| | 1RH5ARC055 | 5c/12/120vac | 3A FU | 1E12*F037A | 6RH511 | 1RH5A18 | C | 6.1 | |
| | 1RH5ARC071 | 5c/12/120vac | 3A FU | 1E12*F042A | 6RH515 | 1RH5A23 | C | 6.1 | |
| | 1RH5ARC502 | 7c/12/120vac | 10A FU / 0.41A | 1E12*AOVFO41A | ^{SN14} 82BE534AA | 1RH5A10 | C | 5.6 | SEE ATTACH. 2-CALC L |
| | 1RH5ARC534 | 3c/12/120vac | 5A FU | 1E12*F039A | ^{SN14} 82BE534AA | 1RH5A12 | C | 6.3 | |
| | 1RH5NRC521 | 2c/12/120vac | Disconnected | 1E12*F037A | 7RH501 | 1RH5N13 | — | 7.3 | |
| | 1RMSARC506 | 3c/12/120vac | 3.5A | 1RMS*RIC1A | 24TR030201 | — | C | 6.3 | |
| | 1RMSNRC514 | 2c/8/120vac | 30A FU / 12 AMPS | 1RMS*RE111 | 5CV2A1 | — | C | 17.7 | CR42-0250 247.250- |
| | 1RMSNRC534 | 2c/8/120vac | 30A FU / 12 AMPS | 1RMS*RE112 | 5CV2A1 | — | — | 17.7 | 329-026 |
| | 1RMSNRC547 | 2c/12/120vac | 2.5A FU | 1RMS*RE111 | 5CV2A1 | — | — | 7.3 | EE-60X FEDER C61084 |
| 1RPSARC601 | 2c/12/120vac | 5A FU | K11*SOVF110A | ^{SN11} 82BE531AA | 1RPSA02 | — | 7.3 | | |
| 1RPSNRC502 | 7c/12/120vac | 20A FU / 1.02A | ^{SN11} K11*AOV's Pos. Indic. | ^{SN11} 82BE531AA | 1RPSN01 | ↓ | 5.6 | SEE ATTACH. 2-CALC N | |

REV 9
CALC E-218 ADDENDUM A
ATTACHMENT 1

CABLE DERATING SUMMARY
AMBIENT TEMP 50°C

FIRE AREA RC4/22 FIRE-WRAP 1 HR RATING

| RACEWAY | CABLE NO. | CABLE GIRE / SERVICE VOLTAGE | LOAD / FLA | CONNECTED DEVICE | CIRCUIT NO. | CBD/ESK | C/I | D.C.A. | REMARKS |
|---------------------|-------------|------------------------------|--------------|----------------------|-------------|------------------------|-----|--------|-------------------------|
| ITC500R (Cont'd) | 1RPSNRC502 | 5E/12/120VAC | 20AFU/1.02A | 1041 * F001A | 1RPSN01 | 3PH BRZE21AA | C | 6.1 | SEE ATTACH 2 Calc. N |
| | 1RPSNRC513 | 5E/12/120VAC | 20AFU/1.02A | 1041 * F001A | 1RPSN01 | 3PH BRZE21AA | C | 6.1 | |
| | 1SL5ARCO03 | 5E/12/120VAC | 3AFU | 1041 * F001A | 1SL5A01 | 6SL501 | C | 6.1 | |
| | 1SL5ARCO05 | 5E/12/120VAC | 3AFU | 1041 * F001A | 1SL5A01 | 6SL5106 6SL501 | C | 7.3 | |
| | 1SL5ARCO07 | 5E/12/120VAC | 3AFU | 1041 * F001A | 1SL5A01 | 6SL501 | C | 6.1 | |
| | 1SL5ARCO10 | 5E/12/120VAC | 10AFU/0.54A | 1041 * F001A | 1SL5A03 | 3SL503 3PH BRZE21AA | C | 6.1 | |
| | 1SL5ARCO12 | 5E/12/120VAC | 10AFU/0.54A | 1041 * F001A | 1SL5A03 | 3SL503 3PH BRZE21AA | C | 7.3 | |
| | 1SL5ARCO14 | 5E/12/120VAC | 10AFU/0.54A | 1041 * F001A | 1SL5A03 | 3SL503 3PH BRZE21AA | C | 6.1 | |
| | 1SL5ARCO16 | 5E/12/120VAC | 10AFU/0.54A | 1041 * F001A | 1SL5A03 | 3SL503 3PH BRZE21AA | C | 7.3 | |
| | 1SL5NRC501 | 2E/12/120VAC | 1AFU | 1041 * F001A | 1SL5N02 | 3SL503 3PH BRZE21AA | C | 6.3 | |
| | 1SL5NRC504 | 2E/12/120VAC | 1AFU | 1041 * F001A | 1SL5N02 | 3SL503 3PH BRZE21AA | C | 6.3 | |
| | 1SL5NRC513 | 4E/10/120VAC | 1AFU | 1041 * F001A | 1SL5N06 | 7SL501 | C | 9.4 | |
| | 1SL5NRC515 | 2E/12/120VAC | Disconnected | 1041 * F001A | 1SL5N07 | 7SL501 | — | 7.3 | |
| | 1SWPARCO38 | 5E/12/120VAC | 3AFU | 15WPA * MOV502A | 15WPA19 | 6SWP18 | C | 6.1 | |
| | 1SWPARCO47 | 5E/12/120VAC | 3AFU | 15WPA * MOV502A | 15WPA20 | 6SWP19 | C | 6.1 | |
| | 1SWPARCO59 | 5E/12/120VAC | 3AFU | 15WPA * MOV4A | 15WPA24 | 6SWP24 | C | 6.1 | |
| | 1SWPARCO521 | 2E/12/120VAC | Disconnected | 15WPA * MOV4A | 15WPA54 | 7SWP26 | — | 7.3 | |
| | 1SWPARCO539 | 12E/12/120VAC | 10AFU/4.6A | SUP Vacuum Red. 500V | 15WPA71 | 7SWP31 | C | 5.5 | SEE ATTACH 2- CALC P |
| | 1SWPARCO05 | 5E/12/120VAC | 3AFU | 15WPA * MOV5B | 15WPA85 | 6SWP25 | C | 6.1 | |

SEE ATTACH 2
Calc. O

SEE ATTACH
2- CALC P

CABLE DERATING SUMMARY

FIRE AREA FBI/E/23/4 FIRE-WRAP RATING 1 HR
3 HR

AMBIENT TEMP 50 °C

PAGE 2 OF

| RACEWAY | CABLE NO. | CABLE / SERVICE SIZE / VOLTAGE | LOAD / FLA | CONNECTED DEVICE | CIRCUIT NO. | CBD/ESK | C/I | D.C.A. | REMARKS |
|---------|------------|---|---------------|-------------------------|-------------|---------|-----|--------|----------------|
| ITL600R | ICCPNRK009 | 3/4" #10 / 480V | 0.33A / 0.75A | KCPX MOV169 | — | EE-1VA | I | 28 | *K' tray value |
| | IHVFAFK001 | 3/4" #12 / 480V | 0.5A / 0.80A | IHVFXFN7A | — | EE-1VA | C | 8.7 | |
| | IHVFAFL001 | TIX 250 MCM / 480V | 40A / 47A | IHVFXFN3A | — | EE-1VA | C | 171 | |
| | IHVFAFL200 | TIX 250 MCM / 480V | 57kW / 71.5A | IHVFXFN3A IHVFXFLZAN | — | EE-1AA | C | 171 | |
| | IRDSNRK001 | 3/4" #12 / 480V | 0.33A / 1.0A | ICHXFOB3 | — | EE-1VA | I | 19 | |
| | ISFCARL200 | TIX 350 MCM / 480V | 100A / 116A | ISFC*PIA | — | EE-1AA | C | 214 | |
| | ISFCNRK001 | 3/4" #10 / 480V | 1.6A / 4A | ISFC*MOV122 | — | EE-1VA | I | 28 | |
| | ISFCNRK002 | 3/4" #12 / 480V | 1A / 2.8A | ISFC*MOV121 | — | EE-1VA | I | 19 | |
| | ISFCNRK003 | 3/4" #10 / 480V | 1.6A / 4A | ISFC*MOV121 | — | EE-1VA | I | 28 | |
| ITL601R | IHVFAFK001 | SEE ITL600R FOR CABLE DERATING SUMMARY | | | | | | | |
| | IHVFAFL001 | | | | | | | | |
| | IHVFAFL200 | | | | | | | | |
| | IRDSNRK001 | | | | | | | | |
| | ISFCNRK001 | | | | | | | | |
| | ISFCNRK002 | | | | | | | | |
| ITL602R | IHVFAFK001 | SEE ITL600R FOR CABLE DERATING SUMMARY | | | | | | | |
| | IHVFAFL001 | | | | | | | | |
| | IHVFAFL200 | | | | | | | | |
| | IRDSNRK001 | | | | | | | | |

Revo
CALC E-218/ADDENDUM A
ATTACHMENT 1

CABLE DERATING SUMMARY

AREA FBI/342 FIRE-WRAP RATING 1HR
5HR

AMBIENT TEMP 50 °C

PAGE 9 OF

| RACEWAY | CABLE NO. | CABLE / SERVICE SIZE / VOLTAGE | LOAD / FLA | CONNECTED DEVICE | CIRCUIT NO. | CBD/ESK | C/I | D.C.A. | REMARKS |
|------------|-----------------------|--------------------------------|------------------------------|------------------------------------|--------------------------|----------|-----|--------|---------|
| ITC600R | ICCPARC015 | 5/12 120VAC | 3 AMP FUSE | ICCP * MOV169 | ICCPA14 | 6CCP14 | C | 6.1 | |
| | ICCPNRC507 | 2/10 120VAC | DISCONNECTED FROM PWA SOURCE | ICCP * MOV169 | ICCPN10 | 7CCP06 | | 10.9 | |
| | IDERARC500 | 5/12 120VAC | 3AMP FUSE | IH13 * P743 | IDERA03 | 7DER04 | | 6.1 | |
| | IENBARC617 | 3/12 125VDC | 3.4 AMPS | IENS * SW03A | IENS * PHL03A CKT. 3 | EE12G | | 6.3 | |
| | IENSARC502 | 2/8 120VAC | 2.5 AMPS | IENS * SW03A | ISCV * PHL8A1 CKT. 11 | SCV8A1 | | 17.7 | |
| | IHVFA RC002 | 2/12 120VAC | 3AMP FUSE | IHVFC FS32B | IHVFA03 | 6HVFA05 | | 7.3 | |
| | IHVFA RC003 | 2/12 120VAC | 3AMP FUSE | IENS * MCC8A | IHVFA | 6HVFA05 | | 7.3 | |
| | IHVFA RC006 | 5/12 120VAC | 3AMP FUSE | 1 * JB6034 IHVFA * FLT2A | IHVFA15 | 6HVFA12 | | 6.1 | |
| | IHVFA RC500 | 3/12 120VAC | 5AMP FUSE | IH13 * P731 | IHVFA05 | 7HVFA01 | | 6.3 | |
| | IHVFA RC503 | 12/12 120VAC | 5AMP FUSE | IH13 * P731 | IHVFA05 | 7HVFA01 | | 5.5 | |
| | IHVFA RC513 | 3/12 120VAC | 5AMP FUSE | IENS * MCC8A | IHVFA06 | 7HVFA02 | | 6.3 | |
| | IHVFA RC514 | 12/12 120VAC | 5AMP FUSE | IH13 * P731 | IHVFA06 | 7HVFA02 | | 5.5 | |
| | IHVFA RC522 | 3/12 120VAC | 0.10 AMPS | 1 * JB6034 FIL. TR. DAMPER SIB. | IHVFA16 | 7HVFA07 | | 6.3 | |
| | IHVFA RC555 | 2/10 120VAC | 5AMP FUSE | 1 * JB6034 | IHVFA06 | 7HVFA02 | | 7.3 | |
| | IHVFA RC500 | 2/10 120VAC | 0.083 AMPS | IHVFA * FS32B | ISCV * PHL8A1 CKT. 15 | IHVFA32 | | 10.9 | |
| | IHVFA RC502 | 2/12 120VAC | 0.75 AMPS | IHVFA * FN3A | IHVFA24 | 7HVFA09 | | 7 | |
| | IHVFA RC503 | 2/12 120VAC | 0.25 AMPS | IHVFA * FN7A | IHVFA24 | 7HVFA09 | | 7.3 | |
| | IHVFA RC504 | 2/12 120VAC | 0.083 AMPS | IHVFA * FS182 | ISCV * PHL8A1 CKT. 20 | IHVFA182 | | 7.3 | |
| | IHVFA RC702 | 2/14 125VDC | 0.035 AMPS | IHVFA * FS32B | IITHA02 | 6HVFA05 | | 5.7 | |
| | IIASARC508 | 3/12 120VAC | 1.2 AMPS | IH13 * P743 | IIASA03 | 7IASA02 | | 6.3 | |
| IIASARC513 | 2/12 120VAC | 0.8 AMPS | 1 * JB6033 IIAS-SOV45A | IIASA03 | 7IASA02 | | 7.3 | | |
| IRCSARC300 | 5/12 125VDC | 2.4 AMPS | IH13 * P715 | IRCSA03 | 5RCS03 | | 6.1 | | |

Rev 0,
CALC E-218/ADDENDUM A
ATTACHMENT 1

CABLE DERATING SUMMARY

AMBIENT TEMP 50 °C

PAGE 11 OF 11

FIRE AREA $\frac{18}{32314}$ FIRE-WRAP RATING 1 HR
3 HR

| RACEWAY | CABLE NO. | CABLE / SERVICE SIZE / VOLTAGE | LOAD / FLA | CONNECTED DEVICE | CIRCUIT NO. | CBD/ESK | C/I | D.C.A. | REMARKS |
|------------|-------------|--------------------------------|------------|------------------|-------------|---------|-----|--------|---------|
| ITC601R | IDERARC500 | | | | | | | | |
| | IHVFA RC002 | | | | | | | | |
| | IHVFA RC003 | | | | | | | | |
| | IHVFA RC006 | | | | | | | | |
| | IHVFA RC500 | | | | | | | | |
| | IHVFA RC503 | | | | | | | | |
| | IHVFA RC513 | | | | | | | | |
| | IHVFA RC514 | | | | | | | | |
| | IHVFA RC522 | | | | | | | | |
| | IHVFA RC555 | | | | | | | | |
| | IHVFBRC500 | | | | | | | | |
| | IHVFNRC502 | | | | | | | | |
| | IHVFNRC503 | | | | | | | | |
| | IHVFNRC504 | | | | | | | | |
| | IHVFNRC702 | | | | | | | | |
| | IIASARC508 | | | | | | | | |
| | IIASARC513 | | | | | | | | |
| | IRDSBRC002 | | | | | | | | |
| | IRDSNRC500 | | | | | | | | |
| | IRMSARC500 | | | | | | | | |
| IRMSARC501 | | | | | | | | | |
| IRMSARC503 | | | | | | | | | |

SEE ITC600R FOR
CABLE DERATING SUMMARY

CONT'D ON NEXT PG.

Rev 0
 CALC E-218/ADDENDUM A
 ATTACHMENT 1

CABLE DERATING SUMMARY

FIRE AREA FBI/24 FIRE-WRAP RATING } 1 HR
 } 3 HR

AMBIENT TEMP 50 °C

PAGE 13 OF

| RACEWAY | CABLE NO. | CABLE/SERVICE SIZE/VOLTAGE | LOAD / FLA | CONNECTED DEVICE | CIRCUIT NO. | CBD/ESK | C/I | O.C.A. | REMARKS |
|----------|------------|----------------------------|------------|-------------------------|---------------------------------------|---------|-----|--------|---------|
| ITC 602R | 1HVFA05 | 5/8 120VAC | 5 AMP FU | 12 JB 6006 FB VENT SYS. | 1HVFA05 | 7HVFO1 | C | 6.1 | |
| | 1RMSARC504 | 3/4 120VAC | 8A FU/1A | 1RMSRREXSA | FIR CONTROLLER 247.250- FE 329-039 | | ↓ | 7.3 | |
| | 1RMSARC505 | 3/4 120VAC | 2 AMPS | 1RMSR CAB 20A | 1SCVMPULTR CKT. 19 | SCV14A1 | ↓ | 7.3 | |
| | 1DERARC500 | | | | | | | | |
| | 1HVFARC002 | | | | | | | | |
| | 1HVFARC003 | | | | | | | | |
| | 1HVFARC006 | | | | | | | | |
| | 1HVFARC500 | | | | | | | | |
| | 1HVFARC503 | | | | | | | | |
| | 1HVFARCS13 | | | | | | | | |
| | 1HVFARCS14 | | | | | | | | |
| | 1HVFARCS33 | | | | | | | | |
| | 1HVFARCS55 | | | | | | | | |
| | 1HVFBRCS00 | | | | | | | | |
| | 1HVFNRCS02 | | | | | | | | |
| | 1HVFNRCS03 | | | | | | | | |
| | 1HVFNRCS04 | | | | | | | | |
| | 1HVFNRCS07 | | | | | | | | |
| | 1IASARC508 | | | | | | | | |
| | 1IASARC513 | | | | | | | | |
| | 1RDSBRC002 | | | | | | | | |
| | 1RDSNRCS00 | | | | | | | | |

SEE ITC600R FOR
 CABLE DERATING SUMMARY

CONT'D ON NEXT PG.

Rev 0,
CALC E-218 ADDENDUM A
ATTACHMENT 1

FIRE AREA C2C FIRE-WRAP RATING 1HR 3HR
CABLE DERATING SUMMARY
AMBIENT TEMP 40 °C

PAGE 15 OF ___

| RACEWAY | CABLE NO. | CABLE / SERVICE SIZE / VOLTAGE | LOAD / FLA | CONNECTED DEVICE | CIRCUIT NO. | CBD/ESK | C/I | D.C.A. | REMARKS |
|------------|--------------|--------------------------------|--------------------------|------------------|-------------|--------------------------|-----|-------------|-----------------------------|
| TC0030 | ICSHAOC600 | 5c/12/125Vdc | 15AFU/0.3A | 1H13*P751 | ICSHA03 | B2BES37AA ^{SH4} | C | 7.5 | 3221.415-000-008 M.O.P. |
| | ICSHAOC702 | 2c/14/125Vdc | Annunciator | 1H13*P712 | ICSHA23 | SH12 | C | 7.0 | |
| | ICSHBOC600 | 5c/12/125Vdc | 10AFU/0.3A | 1H13*P751 | ICSHB03 | SH4 | C | 7.5 | 3221.418-000-008 M.O.P. |
| | ICSHNOC012 | 5c/12/120Vac | 1AFU | 1H13*P751 | ICSHN03 | B2BES36AA ^{SH5} | C | 7.5 | |
| | ICSHNOC300 | 9c/12/125Vdc | 35AFU/0.366A 15AFU/IE | 1H13*P751 | ICSHN11 | B2BES37AA ^{SH6} | C/I | 6.9C 21E | similar to ICSHNOC312/314 |
| | ICSHNOC303 | 5c/12/125Vdc | 15AFU/0.08A | 1H13*P751 | ICSHN11+13 | SH6,7,8 | C | 7.5 | white light 2 @ 0.04 Amp |
| | ICSHNOC306 | 9c/12/125Vdc | 35AFU/0.366A 15AFU/IE | 1H13*P751 | ICSHN13 | SH8 | C/I | 6.9C 21E | similar to ICSHNOC312/314 |
| | ICSHNOC308 | 2c/12/125Vdc | 15AFU | 1H13*P751 | ICSHN13 | SH8 | I | 21 | |
| | ICSHNOC312 | 9c/12/125Vdc | 35AFU/0.366A HPS MTR. | 1E22*5004/202 | ICSHN19 | SH9 | C | 6.9 | SEE ATTACH. 2-CALCR |
| | ICSHNOC314 | 2c/12/125Vdc | 15AFU HPS MTR. | 1E22*5004/202 | ICSHN19 | SH9 | I | 21 | |
| | ICSHNOC315 | 9c/12/125Vdc | 35AFU/0.366A 15AFU/IE | 1H13*P751 | ICSHN21 | SH10 | C/I | 6.9C 21E | similar to ICSHNOC312/314 |
| | ICSHNOC453 | 2c/12/120Vac | 10AFU/Metering | 1H13*P751 | ICSHN12 | SH11 | C | 9.0 | |
| | ICSHNOC457 | 2c/12/120Vac | 10AFU/Metering | 1H13*P751 | ICSHN12 | SH11 | C | 9.0 | |
| | ICSHNOC502 | 3c/12/120Vac | 1AFU | 1E22*F0310 | ICSHN06 | B2BES36AA ^{SH5} | C | 7.7 | |
| | ICSHNOC511 | 2c/12/24Vac | 2AFU | 1H13*P751 | ICSHN07 | SH8 | C | 9.0 | |
| | ICSHNOC512 | 2c/12/24Vac | 2AFU | 1H13*P751 | ICSHN07 | SH8 | C | 9.0 | |
| | ICSHNOC518 | 2c/10/120Vac | 10AFU | 1H13*P751 | ICSHN49 | B2BES37AA ^{SH3} | C | 13.3 | |
| | ICSHNOC519 | 2c/10/120Vac | 10AFU | 1E22*F0310 | ICSHN57 | B2BES37AA ^{SH3} | C | 13.3 | |
| | ICSHNOC521 | 2c/12/120Vac | 15ABKT | 1E22*PNL5001 | | 221415104 | I | 21 | Panel Light & Cont. Receipt |
| | ICSHNOC523 | 9c/12/120Vac | 2AFU | 1E22*5002 | | | C | 6.9 | 221.418-000-095B |
| ICSHNOC524 | 2c/12/120Vac | 1AFU | 1E22*5002 | | | C | 9.0 | d. to | |
| ICSHNOC525 | 2c/12/120Vac | 2AFU | 1E22*5001 | | | C | 9.0 | | |

CONT'D -> NEXT PG.

CABLE DERATING SUMMARY

FIRE AREA C2C FIRE-WRAP RATING 1HR
3HR

AMBIENT TEMP 40°C

| RACEWAY | CABLE NO. | CABLE/SERVICE SIZE/VOLTAGE | LOAD/FLA | CONNECTED DEVICE | CIRCUIT NO. | CBD/ESK | C/I | D.C.A. | REMARKS |
|---------------------|-------------|----------------------------|------------------------|------------------|---------------------------|-------------------|-----|--------|--|
| ITC0030 (CONT'D) | 1CSHNOC526 | 22/12/100Vdc | 1AFU | 1E22X5001 | | 22141534 SH3 | C | 6.7 | 221418-000-0750 |
| | 1CSHNOC600 | 22/12/125Vdc | 15AFU/0.026 | 1H13XP751 | 1CSHN09 | B2BES37AA | C | 9.0 | See Attach 2 CALC T |
| | 1CSHNOC601 | 52/12/125Vdc | 15AFU/0.126 | 1H13XP751 | 1CSHN09 | SH4 | C | 7.5 | SEE ATTACH- 2-CALCS |
| | 1CSHNOC602 | 22/12/125Vdc | 15AFU/0.126 | 1H13XP751 | 1CSHN09 | SH4 | C | 7.7 | |
| | 1CSHNOC615 | 22/12/125Vdc | 15AFU/0.126 | 1H13XP751 | 1CSHN09 | SH4 | C | 9.0 | Similar to 1CSHNOC602 PSCC Ind. Lamp KAO, KAI |
| | 1CSHNOC616 | 22/12/125Vdc | 10AFU/0.04 | 1H13XP712 | 1CSHN24 | B2BES36AA SH3 | C | 9.0 | B2BES36AA, SH4 |
| | 1CSHNOC620 | 22/12/125Vdc | 10AFU/0.33A 40W | 1H13XP751 | 1CSHN43 | B2BES37AA SH9 | C | 9.0 | |
| | 1CSHNOC700 | 22/14/125Vdc | Annunciator | 1H13XP712 | | B2BES36AA SH9 | C | 7.0 | |
| | 1CSHROC500 | 22/12/100Vdc | 3AFU | 1H13XP751 | 1CSHN34 | B2BES37AA SH11 | C | 9.0 | |
| | 1CSHROC505 | 22/12/PTCCT. | 3AFU | 1H13XP751 | 1CSHRO | SH6 | C | 9.0 | |
| | 1CSHROC602 | 32/12/125Vdc | 10AFU/0.33A 40W | 1H13XP751 | | B2BES36AA | C | 7.7 | |
| | 1CSHROC663 | 32/12/125Vdc | 10AFU/0.33A 40W | 1H13XP751 | | SH6 | C | 7.7 | |
| | 1EGFCOC001 | 3/12 120VAC | 1AMP FU | 1H13XP751 | 1EGFC02 | 6EGF03 | C | 2.7 | |
| | 1EGFNOCT04 | 7/14 125VDC | ANNUN. | 1H13XP712 | ALARM 165 | 10ANN21 | I | 7.0 | |
| | 1ENBCOC600 | 2/12 125VDC | 0.05A nIPS | 1H13XP751 | CIR. BXAS 620 THRU 623 | 1ENB08 | I | 6.9 | |
| | 1ENBCOC603 | 2/12 125VDC | G.E CB 10 TRIP COIL | 1H13XP751 | 1E22XCB623 | 1ENB08 | I | 2.1 | |
| | 1HVCCOC001 | 7/12 120VAC | 3AMP FU | 1H13XP751 | 1HVCC05 | 6HVC07 | C | 6.8 | |
| | 1HVCCOC002 | 7/12 120VAC | 3AMP FU | 1EGSXPNL5C | 1HVCF05 | 6HVC07 | C | 6.8 | |
| | 1HVCCOC500 | 7/12 120VAC | 3AMP FU | 1H13XP751 | 1HVCC14 | 7HVC14 | C | 9.0 | |
| | 1HVCCOC501 | 7/12 120VAC | 3AMP FU | 1H13XP751 | 1HVCC14 | 7HVC14 | C | 9.0 | |
| 1HVCFDC001 | 7/12 120VAC | 3AMP FU | 1H13XP751 | 1HVCF05 | 6HVC07 | C | 6.8 | | |
| 1HVCFDC002 | 7/12 120VAC | 3AMP FU | 1EGSXPNL5C | 1HVCC05 | 6HVC07 | C | 6.8 | | |

CONT'D ON NEXT PG.

Rev 09
 CALC E-218 / ADDENDUM A
 ATTACHMENT 1

CABLE DERATING SUMMARY
 AMBIENT TEMP 40°C

| TRAY AREA | CABLE NO. | CABLE / SERVICE SIZE / VOLTAGE | LOAD / FLA | CONNECTED DEVICE | CIRCUIT NO. | CBD/ESK | C/I | D.C.A. | REMARKS |
|------------------|-------------|--------------------------------|------------|---------------------|-------------------|---------|-----|--------|---------|
| 7003C (CONTD) | 1HVCNOC700 | 3/4" 125VDC | ANNUN. | 1H13*P751 | ALARM 410 | 10ANN15 | C | 7.0 | |
| | 1HVCNOC701 | 3/4" 125VDC | ANNUN. | 1H13*P751 | ALARM 399 | 7HVC14 | C | 7.0 | |
| | 1HVPCCOC001 | 3/4" 120VAC | SPARE | 1H13*P751 | --- | 6HVP08 | --- | 7.7 | SPARE |
| | 1HVPCCOC002 | 3/4" 120VAC | SPARE | 1H13*P751 | --- | 6HVP11 | --- | 9.0 | SPARE |
| | 1HVPCCOC006 | 3/4" 120VAC | 3 AMP FU | 1H13*P751 | 1HVPC02 | 6HVP08 | C | 7.7 | |
| | 1HVPCCOC008 | 3/4" 120VAC | 3 AMP FU | 1E65*PNL5C | 1HVPC05 | 6HVP11 | | 9.0 | |
| | 1HVPCCOC009 | 3/4" 120VAC | 3 AMP FU | 1H13*P751 | 1HVR11 | 6HVR11 | | 7.5 | |
| | 1HVPCCOC009 | 3/4" 120VAC | 3 AMP FU | 1E65*PNL5C | 1HVCC05 | 6HVP07 | | 6.9 | |
| | 1HVPCCOC003 | 3/4" 120VAC | 3 AMP FU | 1E22*5002 | 1HVCA06 | 6HVP07 | | 9.0 | |
| | 1HVPCCOC095 | 3/4" 120VAC | COMPT. | 1H13*P751 | COMPT. KAI2014 | 6HVP07 | | 9.0 | |
| | 1HVPCCOC700 | 3/4" 120VAC | ANNUN. | 1E22*5002 | ALARM 1198 & 1272 | 1HVP05 | | 6.8 | |
| | 1SCCCOC001 | 3/4" 120VAC | 3 AMP FU | 1H13*P751 | 1SCCA08 | 7SCC13 | | 7.7 | |
| | 1SCCCOC0500 | 5/4" 120VAC | 3 AMP FU | 1H13*P751 | 1SCCC04 | 7SCC11 | | 7.5 | |
| | 1SCCCOC0502 | 3/4" 12 VAC | 3 AMP FU | 1H13*P751 | 1SCCA-8 | 7SCC11 | | 9.0 | |
| | 1SWPCCOC004 | 3/4" 120VAC | 2 AMP FU | 1H13*P712 | 1SWPL | 6SWP10 | | 7.7 | |
| 1SWPCCOC051 | 5/4" 125VDC | COMPT. | 1H13*P751 | KAI2650 KAI19020 | 5SWP06 | | 5.4 | | |
| 1SWPCCOC601 | 3/4" 125VDC | 5 AMP FU | 1H13*P751 | 1IHAC03 | 5SWP06 | | 7.0 | | |
| 1SWPCCOC701 | 3/4" 125VDC | 5 AMP FU | 1H13*P751 | 1IHAC02 | 10ANN50 | | 7.0 | | |

CABLE DERATING SUMMARY

FIRE AREA RC4/E7 FIRE-WRAP RATING 1HR
5HR

AMBIENT TEMP 50 °C

PAGE 18 OF

| RACEWAY | CABLE NO. | CABLE / SERVICE SIZE / VOLTAGE | LOAD / FLA | CONNECTED DEVICE | CIRCUIT NO. | CBD/ESK | C/I | D.C.A. | REMARKS | |
|---------------------|--|--|--------------|------------------|--------------|---------|--------|--------|---------|----------------------|
| ITC502R 60% F.II | ICMSARC534 | 5c/14/120vac | 3AFU | 1CMSX20V335 | 1CMSA03 | 7CMS03 | C | 4.4 | | |
| | ICMSARC540 | 5c/14/120vac | 3AFU | 1CMSX20V335 | 1CMSA04 | 7CMS04 | C | 4.4 | | |
| | ICMSYRC524 | 5c/12/120vac | 3AFU | 1XJB5111 | 1CMSA04 | 7CMS04 | C | 6.1 | | |
| | ICMSYRC525 | 5c/12/120vac | 3AFU | 1XJB5111 | 1CMSA03 | 7CMS03 | C | 6.1 | | |
| | ICMSYRC526 | 12c/12/120vac | 3AFU | 1XJB5112 | 1CMSA04 | 7CMS04 | C | 5.5 | | |
| | ICPMARC010 | 2c/12/120vac | 3AFU | 1XJB5027 | 1CPMA03 | 6CPM04 | C | 7.3 | | |
| | ICPMARC011 | 2c/12/120vac | 3AFU | 1XJB5027 | 1CPMA01 | 6CPM01 | C | 7.3 | | |
| | ICPMARC501 | 2c/12/120vac | Disconnected | 1CPMxMOV3A | 1CPMA06 | 7CPM01 | — | 7.3 | | |
| | ICPMARC503 | 2c/12/120vac | Disconnected | 1CPMxMOV2A | 1CPMA06 | 7CPM01 | — | 7.3 | | |
| | ICPMARC007 | 2c/12/120vac | 3AFU | 1XJB5027 | 1CPMC03 | 6CPM04 | C | 7.3 | | |
| | 1501XPNL 2A2 | 1HVRARC568 | 2c/10/120vac | 240w/2A | 1HVRXUC1A | 1HVRAC5 | 7HVR18 | C | 10.9 | 215.250-057 -0298 |
| | | 15WPARC512 | 2c/12/120vac | Disconnected | 15WPxMOV5B | 15WPA54 | 75WP26 | — | 7.3 | |
| | | 15WPARC514 | 2c/12/120vac | Disconnected | 15WPxMOV502A | 15WPA54 | 75WP26 | — | 7.3 | |
| | | All other cables in ITC502R are covered in ITC500R | | | | | | | | |
| ITC503R 27% F.II | All cables in ITC503R are covered in ITC502R | | | | | | | | | |
| ITC504R 17% F.II | 1HCSARC541 | 2c/12/120vac | 1Amp | 1HCSXIGN41A | — | HCS4A | C | 7.3 | | |
| | 1HCSARC547 | 2c/12/120vac | 1Amp | 1HCSXIGN46A | — | HCS4A | C | 7.3 | | |
| | 1HCSARC549 | 2c/12/120vac | 1Amp | 1HCSXIGN45A | — | HCS4A | C | 7.3 | | |
| | All other cables in ITC504R are covered in ITC502R | | | | | | | | | |

REV'D
CALC E-218/ ADDENDUM A
ATTACHMENT 1

CABLE DERATING SUMMARY
AMBIENT TEMP 50 °C

FIRE ARENCE/23 FIRE-WRAP 1 HR RATING 3 HR

| TRAYWAY | CABLE NO. | CABLE SIZE / SERVICE VOLTAGE | LOAD / FLA | CONNECTED DEVICE | CIRCUIT NO. | CBD/ESK | C/I | D.C.A. | REMARKS |
|------------|-------------|------------------------------|---------------|-----------------------|-----------------------|----------------------|-----|--------|---------------------------------|
| TC512N | 1FWSNNG514 | 2#12 120VAC | 3 AMP FUSE | 1RCPXTER03F | 1FWSN20 | 247230027 | C | 7.3 | |
| | 1FWSNNG536 | 2#12 120VAC | 3 AMP FUSE | 1R22XPNL P027 | 1FWSN20 | 247230027 | | 2.3 | |
| | 1JRBNNC500 | 2#10 120VAC | 8.7 AMPS | 1JRB*DRAB | 1SCA-PNL8B2 | 7JRB04 | | 10.9 | |
| | 1JRBNNC501 | 2#10 120VAC | 8.7 AMPS | 1JRB*DRAB | 1SCA-PNL8A2 | 7JRB04 | | 10.9 | |
| | 1JRBNNC502 | 2#12 120VAC | 0.24 AMP | 1SFT*PNL106 | 1JRBNO3 | 7JRB04 | | 5.6 | |
| | 1JRBNNC513 | 2#12 120VAC | 0.05 AMP | 1SFT*PNL106 | 1JRBNO2 | 7JRB03 | | 7.3 | |
| | 1JRBNNC524 | 2#12 120VAC | 0.08 AMP | 1SFT*PNL106 | ALARM 1162 REFLASH | 7JRB04 | I | 2.1 | SEG B/D CR C-60592A |
| | 1JRBNNC700 | 2#14 120VAC | ANNUN | 1SFT-PNL106 | ALARM 1171 | 7JRB04 | | | |
| | 1JRBNNC703 | 5#14 125VDC | ANNUN | 1JRB*DRAB | ALARM 0696 | 10ANN117 | | | |
| | 1JRBNNC955 | 2#16 125VDC | COMPTR | 1SFT-PNL106 | COMPTR KA22026 | 7JRB04 | | | |
| | 1JRBNNC956 | 2#16 125VDC | COMPTR | 1SFT-PNL106 | COMPTR KA22028 | 7JRB04 | | | |
| | 1JRBNNC960 | 2#16 125VDC | COMPTR | 1SFT-PNL106 | COMPTR KA22027 | 7JRB04 | | | |
| | 1JRBNNC961 | 2#16 125VDC | COMPTR | 1SFT-PNL106 | COMPTR KA22029 | 7JRB04 | | | |
| | 1P06NNG508 | 2#12 120VAC | DUPLEX RECEPT | 1R22XPNL P027 | 1P06NNG | PO6500-09 UPFLTES | I | 2.1 | DIGITAL SIGNALS IN THE MA RANGE |
| | 1RDCNNG501 | 2#12 120VAC | 5 AMP FU | 1UB5146 | 1RDCN01 | 22236063 | C | 5.6 | |
| | 1RDCNNG503 | 2#12 120VAC | 5 AMP FU | 1-JB5146 | 1RDCN01 | 22236063 | | 5.6 | |
| | 1RDSANG003 | 5#12 120VAC | 3 AMP FUSE | 1G11-F003 | 1RDSA03 | 6RDS02 | | 6.1 | |
| | 1RDSNNG501 | 2#12 120VAC | 0.04 AMPS | 1-JB6122 | 1RDSN01 | 828E231AA 5N.2 | | 6.3 | |
| | 1RDSNNG503 | 2#12 120VAC | 0.04 AMPS | 1G11-PC001AP | 1RDSN01 | | | 7.3 | |
| | 1RDSNNG504 | 2#10 120VAC | 0.42 AMPS | 1NNS-SNG1A | 1SCA-PNL8A2 CKT. 3 | 7RDS02 | | 10.9 | |
| 1RMSNNG570 | 2#12 120VAC | 2 AMPS | 1RMS-CAB143 | 1SCA-PNL3A1 CKT. 7 | 7RDS02 | | 7.3 | | |
| 1RMSNNG580 | 2#12 120VAC | 3.5 AMPS | 1RMS-CAB150 | 1SCA-PNL8BE CKT. 7 | 5CA8B2 | | 7.3 | | |

CONT'D ON NEXT PG.

REV'D,
CALC E-218/ADDENDUM A
ATTACHMENT 1

CABLE DERATING SUMMARY

AREA RC3/23 FIRE-WRAP RATING 1HR 3HR

AMBIENT TEMP 50 °C

PAGE 20 OF

| RACEWAY | CABLE NO. | CABLE / SERVICE SIZE / VOLTAGE | LOAD / FLA | CONNECTED DEVICE | CIRCUIT NO. | CBD/ESK | C/I | O.C.A. | REMARKS | |
|---------------------|-------------|--------------------------------|-------------|------------------|----------------------|--------------------|-----|--------|------------------------------|----------------|
| TC 512N (CONT'D) | 1RMSZNC505 | 3/12 120VAC | 5 AMPS | 1RMS-RI138 | 18CA-PNL2A CKT. 8 | 247250329016 | C | 6.3 | (SEE ATTACH. 2) (CALC. M) | |
| | 1RMSZNC506 | 3/12 120VAC | 3.5 AMPS | 1RMS-RI150 | | 247250329021 | | 6.3 | | |
| | 1RMSZNC508 | 3/12 120VAC | 5 AMPS | 1RMS-RI151 | IRMS-L1 L2 | 247250329018 | | 6.3 | | |
| | 1SFCNNG707 | 3/14 125VDC | .04 AMP | 1SFT-PNL106 | 1SFCN7115 | 10ANN24 | | 4.9 | | |
| | 1SFCNNG708 | 5/14 125VDC | .08 AMP | 1SFT-PNL106 | 1SFCN7113 E7114 | 10ANN24 | | 4.4 | | |
| | 1SFTANG524 | 2/12 120VAC | ANNUN. | 1RCP*TCR03F | 1SFTA46 | 793E934AA SH.4 | | 7.3 | | |
| | 1SFTANG704 | 2/14 120VAC | ANNUN. | 1RCP*TCR03F | 1SFTA46 | 793E934AA SH.17 | | 5.7 | | |
| | 1SFTANG707 | 12/14 120VAC | ANNUN. | 1RCP*TCR03F | 1SFTA46 | 793E934AA SH.17 | | 4.3 | | |
| | 1SFTANG709 | 7/14 120VAC | ANNUN. | 1RCP*TCR03F | 1SFTA46 | 793E934AA SH.17 | | 4.3 | | |
| | 1SFTCNG004 | 2/12 120VAC | 3 AMP FU | 1RCP*TCR03F | 1SFTC05 | 793E934AA SH.16 | | 7.3 | | |
| | 1SFTCNG006 | 2/12 120VAC | 3 AMP FU | 1RCP*TCR03F | 1SFTC05 | 793E934AA SH.16 | | 7.3 | | |
| | 1SFTNNG003 | 9/12 120VAC | 3A FUSE | 1SFT-PNL106 | 1SFTN28 | 6SFT01 | | 5.6 | | |
| | 1SFTNNG005 | 9/12 120VAC | 3A FUSE | 1SFT-PNL106 | 1SFTN27 | 6SFT01 | | 5.6 | | |
| | 1SFTNNG010 | 5/12 120VAC | 3AMP FU | 1RCP*TCR03F | 1SFTN17 | 793E934AA SH.15 | | 6.1 | | |
| | 1SFTNNG013 | 5/12 120VAC | 3AMP FU | 1RCP*TCR03F | 1SFTN17 | 793E934AA SH.15 | | 6.1 | | |
| | 1SFTNNG016 | 12/12 120VAC | 3AMP FU | 1RCP*TCR03F | 1SFTC04 | 793E934AA SH.16 | | 5.5 | | |
| | 1SFTNNG023 | 9/12 120VAC | 3AMP FU | 1RCP*TCR03F | 1SFTN05 | 793E934AA SH.19 | | 5.6 | | |
| | 1SFTNNG025 | 2/16 120VAC | 3AMP FU | 1RCP*TCR03F | 1SFTC05 | 793E934AA SH.16 | I | | | DIGITAL SIGNAL |
| | 1SFTNNG511 | 2/12 120VAC | 1.75A | 1SFT-PNL106 | 1SFTN26 | 7SPT05 | C | 7.3 | | |
| | 1SFTNNG521 | 12/12 120VAC | 3.9A | 1-JB5433 | 1SFTN26 | 7SFT01 | | 5.5 | | |
| 1SFTNNG524 | 9/12 120VAC | 3.9A | 1-JB5433 | 1SFTN26 | 7SFT01 | | 5.6 | | | |
| 1SFTNNG548 | 5/12 120VAC | 5AMP FU | 1SFT-PNL106 | 1SFTN02 | 793E934AA SH.4 | | 6.1 | | | |

CONT'D ON NEXT PG.

CABLE DERATING SUMMARY
AMBIENT TEMP 50 °C

FIRE AREA R23/23 FIRE-WRAP RATING 1HR
3HR

| RACEWAY | CABLE NO. | CABLE/SERVICE SIZE/VOLTAGE | LOAD / FLA | CONNECTED DEVICE | CIRCUIT NO. | CBD/ESK | C/I | O.C.A. | REMARKS | |
|--------------------|----------------|----------------------------|-------------------------|------------------|--------------------|-----------------|-----|--------|-------------|-------|
| TC512N (CONT'D) | 1SFTNNC549 | 3/4" 12 120VAC | 5 AMP FU | 1F42-F002 | 1SFTN02 | 793E934AA SH.4 | C | 7.3 | ELECTRONICS | |
| | 1SFTNNC551 | 27/8" 20 120VAC | ENCODER B INPUT READOUT | 1RCP*TCR03F | 1SFTN21 | 793E934AA SH.5 | — | — | | |
| | 1SFTNNC557 | 3/8" 12 120VAC | 0.33 AMPS | 1RCP*TCR03F | 1SFTN11 | 793E934AA SH.6 | C | 6.3 | | |
| | 1SFTNNC558 | 3/8" 12 120VAC | 0.33 AMPS | 1RCP*TCR03F | 1SFTN12 | | | 6.3 | | |
| | 1SFTNNC565 | #12 120VAC | 0.48 AMPS | 1RCP*TCR03F | 1SFTN09 | | | 6.1 | | |
| | 1SFTNNC566 | 2/4" 12 120VAC | 0.16 AMPS | 1RCP*TCR03F | 1SFTN11 | | | 7.3 | | |
| | 1SFTNNC567 | 9/16" 12 120VAC | 1.06 AMPS | 1RCP*TCR03F | 1SFTN11 | 793E934AA SH.7 | | 5.6 | | |
| | 1SFTNNC568 | 9/16" 12 120VAC | 1.19 AMPS | | 1SFTN11 | 793E934AA SH.8 | | 5.6 | | |
| | 1SFTNNC569 | 9/16" 12 120VAC | 0.94 AMPS | | 1SFTN12 | 793E934AA SH.7 | | 5.6 | | |
| | 1SFTNNC570 | 9/16" 12 120VAC | 1.11 AMPS | | 1SFTN12 | 793E934AA SH.8 | | 5.6 | | |
| | 1SFTNNC580 | 2/4" 12 120VAC | 0.04 AMPS | | 1SFTN11 | 793E934AA SH.7 | | 7.3 | | |
| | 1SFTNNC581 | 2/4" 12 120VAC | 0.32 AMPS | | 1SFTN11 1SFTN12 | | | 7.3 | | |
| | 1SFTNNC582 | 9/16" 12 120VAC | 0.69 AMPS | | 1SFTN14 | 793E934AA SH.9 | | 5.6 | | |
| | 1SFTNNC583 | 9/16" 12 120VAC | 0.68 AMPS | | 1SFTN14 | | | 5.6 | | |
| | 1SFTNNC584 | 9/16" 12 120VAC | 0.58 AMPS | | 1SFTN15 | | | 5.6 | | |
| | 1SFTNNC585 | 9/16" 12 120VAC | 0.68 AMPS | | 1SFTN15 | | | 5.6 | | |
| | 1SFTNNC593 | 2/4" 12 120VAC | SPARE | | — | — | — | — | | SPARE |
| | 1SFTNNC594 | 2/4" 12 120VAC | SPARE | | — | — | — | — | | SPARE |
| | 1SFTNNC595 | 2/4" 12 120VAC | 0.17 AMPS | | 1SFTN14 | 793E934AA SH.10 | C | 7.3 | | |
| | 1SFTNNC706 | 2/4" 14 120VAC | ANNUN. | | ALARM 4658 | 793E934AA SH.17 | I | 21 | | |
| 1SFTNNC500 | 2/4" 12 120VAC | SPARE | | — | — | — | — | SPARE | | |
| 1SFTNNC506 | 5/8" 12 120VAC | 0.20 AMPS | | 1SFTN01 | 793E934AA SH.10 | C | 6.1 | | | |

CONTD ON NEXT PG.

Rev 0,
CALC E-218 ADDENDUM A
ATTACHMENT 1

CABLE DERATING SUMMARY
AMBIENT TEMP 50 °C

FIRE AREA R3/23 FIRE-WRAP 1 HR RATING 5 HR

| RACEWAY | CABLE NO. | CABLE/SERVICE SIZE/VOLTAGE | LOAD / FLA | CONNECTED DEVICE | CIRCUIT NO. | CB0/ESK | C/I | D.C.A. | REMARKS |
|-----------------------|-------------|----------------------------|---------------|------------------|--------------------|-------------------------|-----|--------|---------|
| ITC 512 N (CONT'D) | 1SFT2NC508 | 3/4" 120VAC | ANNUN. | 1 RCP#TCR03F | 1SFTN01 | 0936934AA SN.10 | I | 21 | |
| | 1SFT2NC510 | 3/4" 120VAC | 1 AMP FU | | 1SFTN13 | | C | 6.3 | |
| | 1SFT2NC512 | 5/8" 120VAC | 1.32 AMPS | | 1SFTN03 | 0936934AA SN.11 | | 6.1 | |
| | 1SFT2NC515 | 9/16" 120VAC | 0.94 AMPS | | 1SFTN03 | | | 5.6 | |
| | 1SFT2NC519 | 9/16" 120VAC | 1.46 AMPS | | 1SFTN03 | | | 5.6 | |
| | 1SFT2NC521 | 3/4" 120VAC | 0.34 AMPS | | 1SFTN01 | | | 7.3 | |
| | 1SFT2NC523 | 9/16" 120VAC | 1.1 AMPS | | 1SFTN08 | 0936934AA SN.12 & 13 | | 5.6 | |
| | 1SFT2NC526 | 9/16" 120VAC | 1.65 AMPS | | 1SFTN08 | | | 5.6 | |
| | 1SFT2NC529 | 1" 120VAC | 0.99 AMPS | | 1SFTN08 | | | 5.5 | |
| | 1SFT2NC539 | 9/16" 120VAC | 1.41 AMPS | | 1SFTN16 | 0936934AA SN.15 | | 5.6 | |
| | 1SFT2NC540 | 9/16" 120VAC | 1.25 AMPS | | 1SFTN16 | | | 5.6 | |
| | 1SFT2NC545 | 9/16" 120VAC | 1.12 AMPS | | 1SFTN09 | 0936934AA SN.18 | | 5.6 | |
| | 1SFT2NC548 | 3/4" 120VAC | 0.63 AMPS | | 1SFTN19 | 0936934AA SN.15 | | 7.3 | |
| | 1SFT2NC549 | 5/8" 120VAC | 0.68 AMPS | | 1SFTN12 | 0936934AA SN.8 | | 6.1 | |
| | 1SFT2NC551 | 3/4" 120VAC | 0.20 AMPS | | 1SFTN012 | 0936934AA SN.11 | | 7.3 | |
| | 1SFT2NC554 | 9/16" 120VAC | 0.72 AMPS | | 1SFTN09 | 0936934AA SN.19 | | 5.6 | |
| | 1SFT2NC565 | 7/8" 120VAC | 1.33 AMPS | 1 JB5433 | 1SFTN26 | 75F01 & 75F03 | | 5.6 | |
| | 1SFT2NC575 | 3/4" 120VAC | 3 AMPS | 1 RCP#TCR03F | 1SFTN11 | 0936934AA SN.6 | | 7.3 | |
| | 1SFT2NC577 | 3/4" 120VAC | 0.68 AMPS | | 1SFTN11 | 0936934AA SN.7 | | 7.3 | |
| | 1SFT2NC579 | 3/4" 120VAC | 0.68 AMPS | | 1SFTN12 | | | 7.3 | |
| 1SFT2NC588 | 3/4" 120VAC | 3 AMP FU | 1 F42-D002 | 1SFTN17 | 0936934AA SN.15 | | 7.3 | | |
| 1NCSANC703 | 3/4" 125VDC | ANNUN. | 1 H22#PMLP002 | 94987 2485 | 22240044 | | I | 21 | |

Let's
CALC E-218/ADDENDUM A
ATTACHMENT 1

CABLE DERATING SUMMARY

FIRE AREA R4/E7 FIRE-WRAP } 1 HR
... RATING } 3 HR

AMBIENT TEMP 50 °C

PAGE 23 OF

| TRAYWAY | CABLE NO. | CABLE / SERVICE SIZE / VOLTAGE | LOAD / FLA | CONNECTED DEVICE | CIRCUIT NO. | COB/ESK | C/I | O.C.A. | REMARKS |
|------------|-------------|--------------------------------|-------------------|------------------|-------------|------------------|-----|--------|---|
| TG 529N | 1DRSANG952 | 3#16 125VDC | COMPTX KA19137 | 1DRS-F557A | 1DRSN02 | 7DRS01 | I | | DIGITAL SIGNALS |
| | 1DRSCNG952 | 3#16 125VDC | COMPTX KA19139 | 1DRS-F557C | 1DRSN02 | 7DRS01 | I | | |
| | 1DRSENG952 | 3#16 125VDC | COMPTX KA19141 | 1DRS-F557E | 1DRSN02 | 7DRS01 | I | | |
| | 1DRSNNG502 | 2#12 120VAC | 0.83 AMPS | 1DRS-UC1A | 1DRSN03 | 7DRS02 | C | 7.3 | |
| | 1DRSNNG504 | 5#12 120VAC | 0.05 AMPS | 1-JB5033 | 1DRSN02 | 7DRS01 | | 6.1 | |
| | 1DRSNNG508 | 2#12 120VAC | 0.83 AMPS | 1DRS-UC1C | 1DRSN03 | 7DRS02 | | 7.3 | |
| | 1DRSNNG525 | 2#12 120VAC | 0.83 AMPS | 1DRS-UC1E | 1DRSN03 | 7DRS02 | | 7.3 | |
| | 1HTSNNG001 | 2#12 120VAC | 0.42 AMPS | 1HTS-UB1A | CKT. 1A-K1 | 21151-997 349 | | 7.3 | SEE ATTACH. 2-CALC U |
| | 1HTSNNG002 | 2#12 120VAC | 0.42 AMPS | 1HTS-UB1A | CKT. 2A-K2 | 21151-997 352 | | 7.3 | |
| | 1HTSNNG003 | 2#12 120VAC | 0.42 AMPS | 1HTS-UB1B | CKT. 1B-K1 | 21151-997 352 | | 7.3 | |
| | 1HTSNNG004 | 2#12 120VAC | 0.42 AMPS | 1HTS-UB1B | CKT. 2B-K2 | 21151-997 352 | | 7.3 | |
| | 1HTSNNG010 | 2#12 120VAC | 4-20MA S/G. | 1RMS-CKT15 | 1RMSK15 | 21161-77452 | | 7.3 | TEMP. DETECTION NOT TERMINATED REQ EC SIS |
| | 1HTSNNG030 | 2#12 120VAC | | 1RMS-CKT16 | | | | 7.3 | |
| | 1HYRCNG508 | 9#12 120VAC | 3 AMP FU | 1-JB5002 | 1HVRG18 | 7HVR12 | | 5.6 | |
| | 1HYRCNG511 | 2#12 120VAC | 3 AMP FU | 1HVR-AOD124 | 1HVRG18 | 7HVR12 | | 7.3 | |
| | 1HYRCNG512 | 2#12 120VAC | 3 AMP FU | 1HVR-AOD124 | 1HVRG18 | 7HVR12 | | 7.3 | |
| | 1HYRCNG513 | 2#12 120VAC | 3 AMP FU | 1HVR-AOD124 | 1HVRG18 | 7HVR12 | | 7.3 | |
| | 1HYRCNG514 | 2#12 120VAC | 3 AMP FU | 1HVR-AOD127 | 1HVRG18 | 7HVR12 | | 7.3 | |
| | 1HYRCNG515 | 2#12 120VAC | 3 AMP FU | 1HVR-AOD127 | 1HVRG18 | 7HVR12 | | 7.3 | |
| | 1HYRCNG516 | 2#12 120VAC | 3 AMP FU | 1HVR-AOD127 | 1HVRG18 | 7HVR12 | | 7.3 | |
| 1HYRCNG530 | 2#12 120VAC | SPARE | 1-JB5002 | | 7HVR12 | | 7.3 | SPARE | |
| 1HYRNNG020 | 2#12 120VAC | 3 AMP FU | 1HVR-AOD128 | 1HVRN08 | 6HVR24 | C | 7.3 | | |

CONT'D ON NEXT PG.

REV 0,
CALC E-218/APPENDUM A
ATTACHMENT 1

CABLE DERATING SUMMARY
AMBIENT TEMP 50 °C

1 HR FIRE-WRAP }
2 HR RATING }

FIRE AREA 24/27

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| RACEWAY | CABLE NO. | CABLE / SERVICE SIZE / VOLTAGE | LOAD / FLA | CONNECTED DEVICE | CIRCUIT NO. | CBD/ESK | C/I | D.C.A. | REMARKS |
|----------------------|-------------|--------------------------------|----------------|------------------|---------------------|------------------|-----|--------|---------|
| ITC 529N (CONT'D) | 1HVRNNG507 | 2#12 120VAC | 3 AMP FU | 1HVR-A0D124 | 1HVRN13 | 7HVR17 | C | 7.3 | |
| | 1HVRNNG509 | 5#12 120VAC | 3 AMP FU | 1-JB5037 | 1HVRN13 | 7HVR17 | | 6.1 | |
| | 1HVRNNG513 | 3#12 120VAC | 3 AMP FU | 1-JB5020 | 1HVRN13 | 7HVR17 | | 6.3 | |
| | 1HVRNNG533 | 2#12 120VAC | 3 AMP FU | 1HVR-A0V123 | 1HVRN13 | 7HVR17 | | 7.3 | |
| | 1HVRNNG533 | 2#12 120VAC | 3 AMP FU | 1HVR-A0V125 | 1HVRN13 | 7HVR17 | | 7.3 | |
| | 1HVRNNG534 | 2#12 120VAC | 3 AMP FU | 1HVR-A0V147 | 1HVRN13 | 7HVR17 | | 7.3 | |
| | 1HVRNNG538 | 2#12 120VAC | 3 AMP FU | 1HVR-ADD127 | 1HVRN13 | 7HVR17 | | 7.3 | |
| | 1HVRNNG540 | 2#12 120VAC | 3 AMP FU | 1-JB5002 | 1HVRN13 | 7HVR17 | | 7.3 | |
| | 1MSSNNG011 | 5#12 120VAC | 3 AMP FU | 1B21-F001 | 1MSSN20 | 6MSS18 | | 6.1 | |
| | 1MSSNNG014 | 5#12 120VAC | 3 AMP FU | 1B21-F002 | 1MSSN21 | 6MSS18 | | 6.1 | |
| | 1MSSNNG017 | 5#12 120VAC | 3 AMP FU | 1B21-F005 | 1MSSN22 | 6MSS19 | | 6.1 | |
| | 1MSSNNG537 | 2#12 120VAC | 0.21 AMPS | 1B21-F001 | 1MSSN30 | 7MSS05 | | 7.3 | |
| | 1MSSNNG538 | 2#12 120VAC | 0.42 AMPS | 1B21-F002 | 1MSSN31 | 7MSS05 | | 7.3 | |
| | 1P06NNG519 | 2#12 120VAC | DUPLEX RECEPT. | 1B21-F002 | 1SCA-NL8A2 CKT 9 | SC8A2 | I | 21 | |
| | 1P06NNG520 | 2#12 120VAC | DUPLEX RECEPT. | 1H22*PNLP011 | 1SCA-NL8A2 CKT 9 | SC8A2 | I | 21 | |
| | 1RCSANNG518 | 9#12 120VAC | 0.16 AMPS | 1H22*PNLP002 | 1RCSA07 | 828E446 5N.14 | C | 5.6 | |
| | 1RCSANNG519 | 12#12 120VAC | 0.20 AMPS | 1B33-D003A | 1RCSA07 | | | 5.5 | |
| | 1RCSANNG520 | 9#12 120VAC | 0.16 AMPS | 1B33-D003A | 1RCSA07 | | | 5.6 | |
| | 1RCSANNG521 | 9#12 120VAC | 1.28 AMPS | 1B33-D003A | 1RCSA07 | | | 5.6 | |
| | 1SLSANNG002 | 5#12 120VAC | 2 AMP FU | 1H22*PNLP011 | 1SLSA02 | 828E334A 5A.1 | | 6.1 | |
| 1SLSANNG701 | 2#14 125VDC | ANNUN. ALARM 2/41 | 1C41KTSN003 | 1SLSA21 | 828E234A 5M.5 | | 5.7 | | |
| 1SLSBNG002 | 5#12 120VAC | 2 AMP FU | 1H22*PNLP011 | 1SLSB02 | 828E234A 5A.1 | | 6.1 | | |
| | | | CONT'D | | PN NEXT PG. | | | | |

REV 0,
CALC E-218/ADDENDUM A
ATTACHMENT 1.

CABLE DERATING SUMMARY

FIRE AREA RC4/27 FIRE-WRAP RATING 1HR
3HR

AMBIENT TEMP 50 °C

PAGE 26 OF

| RACEWAY | CABLE NO. | CABLE/SERVICE SIZE/VOLTAGE | LOAD / FLA | CONNECTED DEVICE | CIRCUIT NO. | CBD/ESK | C/I | D.C.A. | REMARKS |
|----------|------------|----------------------------|------------|------------------|-------------|-----------------|-----|--------|---------|
| ITC 532N | 1WCSNNC506 | 3/12 120VAC | 10 AMP FU | 1633XPVF033 | 1WCSN02 | 222.440-000-043 | C | 20 | |
| | 1DRSANC952 | | | | | | | | |
| | 1DRSNNC502 | | | | | | | | |
| | 1HTSNNC001 | | | | | | | | |
| | 1HTSNNC002 | | | | | | | | |
| | 1HTSNNC003 | | | | | | | | |
| | 1HTSNNC004 | | | | | | | | |
| | 1HTSNNC010 | | | | | | | | |
| | 1HTSNNC030 | | | | | | | | |
| | 1HYRCNG514 | | | | | | | | |
| | 1HYRCNG515 | | | | | | | | |
| | 1HYRCNG516 | | | | | | | | |
| | 1HVRNNG020 | | | | | | | | |
| | 1HVRNNG513 | | | | | | | | |
| | 1HVRNNG532 | | | | | | | | |
| | 1HVRNNG533 | | | | | | | | |
| | 1HVRNNG534 | | | | | | | | |
| | 1HVRNNG538 | | | | | | | | |
| | 1POGNNC520 | | | | | | | | |
| | 1SLSANG701 | | | | | | | | |
| | 1WCSANC703 | | | | | | | | |
| | 1WCSNNC004 | | | | | | | | |

SEE ITC529N FOR
CABLE DERATING SUMMARY

CONT'D ON NEXT PG.

REV A
CALC E-218/ADDENDUM A
ATTACHMENT 1

CABLE DERATING SUMMARY

FIRE AREA C2C FIRE-WRAP RATING 1HR
3HR

AMBIENT TEMP 40 °C

PAGE 28 OF

| RACEWAY | CABLE NO. | CABLE/SERVICE SIZE/VOLTAGE | LOAD/FLA | CONNECTED DEVICE | CIRCUIT NO. | CBD/ESK | C/I | D.C.A. | REMARKS |
|------------|------------|--|----------|------------------|-------------|----------------|-----|--------|--|
| 1CC0010A | 1ENBLOC603 | | | | | | | | SEE ITC0030 FOR CABLE DERATING SUMMARY |
| | 1SWPNOC601 | | | | | | | | |
| 1CC0010B | 1CSHNOC608 | 3/4" 125VDC | 15AFU | 1H13XP712 | 1CSHN09 | 828E537AA SH.4 | C | 20 | |
| | 1SWPNOC601 | (SEE ITC0030 FOR CABLE DERATING SUMMARY) | | | | | | | |
| 1CC0010J | 1CSHNOC321 | 3/4" 125VDC | 15AMP FU | 1H22XPWLP038 | 1CSHN11 | 828E537AA SH.6 | I | 21 | |
| 1CC0010K | 1CSHNOC321 | 3/4" 125VDC | 15AMP FU | 1H22XPWLP038 | 1CSHN11 | 828E537AA SH.7 | I | 21 | |
| | 1CSHNOC322 | 3/4" 125VDC | 15AMP FU | 1H22XPWLP038 | 1CSHN13 | 828E537AA SH.7 | I | 21 | |
| 1CC0020A | 1CSHAOC600 | | | | | | | | SEE ITC0030 FOR CABLE DERATING SUMMARY |
| | 1CSHAOC702 | | | | | | | | |
| | 1CSHBOC600 | | | | | | | | |
| | 1CSHNOC308 | | | | | | | | |
| | 1CSHNOC314 | | | | | | | | |
| | 1CSHNOC502 | | | | | | | | |
| | 1CSHNOC519 | | | | | | | | |
| | 1CSHNOC521 | | | | | | | | |
| | 1CSHNOC523 | | | | | | | | |
| 1CSHNOC524 | | | | | | | | | |
| 1CSHNOC525 | | | | | | | | | |

CONT'D ON NEXT PG.

CABLE DERATING SUMMARY

FIRE AREA C2C FIRE-WRAP } 1 HR
RATING 3 HR

AMBIENT TEMP 40 °C

| RACEWAY | CABLE NO. | CABLE/SERVICE SIZE/VOLTAGE | LOAD/FLA | CONNECTED DEVICE | CIRCUIT NO. | CBD/ESK | C/I | DCA. | REMARKS |
|----------------------|------------|---|-------------------------|------------------|--------------------------------|-------------------|-----|------|---------|
| 1CC0020A (CONT'D) | 1CSHNOC526 | SEE ITC0030 FOR CABLE DERATING SUMMARY | | | | | | | |
| | 1CSHNOC600 | | | | | | | | |
| | 1CSHNOC601 | | | | | | | | |
| | 1CSHNOC602 | | | | | | | | |
| | 1CSHNOC615 | | | | | | | | |
| | 1CSHNOC616 | | | | | | | | |
| | 1CSHNOC620 | | | | | | | | |
| | 1CSHNOC700 | | | | | | | | |
| | 1CSHR0C505 | | | | | | | | |
| | 1EGFNO6704 | | | | | | | | |
| | 1ENBC06600 | | | | | | | | |
| | 1HVPC06002 | | | | | | | | |
| 1SCCC06500 | | | | | | | | | |
| CC0020B | 1CSHA06700 | 2#14 125VDC | ANNUN. | 1H13K P712 | 1CSHA 23- 2369 2369 | BR2537AA SN.12 | C | 15 | |
| | 1CSHA06703 | 2#14 125VDC | ANNUN. | 1H13K P712 | 1CSHA- 2346 | | C | 15 | |
| | 1CSHA06705 | 2#14 125VDC | ANNUN. | 1H13K P712 | 1CSHA- 2347 | | C | 15 | |
| | 1CSHA06707 | 2#14 125VDC | ANNUN. | 1H13K P712 | 1CSHA- 2360 | | C | 15 | |
| | 1CSHA06712 | 2#14 125VDC | ANNUN. | 1H22*PNLP028 | 1CSHA- 2361 | | C | 15 | |
| | 1CSHNOC302 | 5#12 125VDC | BKR. CLOSE/ TRIP CRT | 1E22*PNL5001 | 1CSHN11 | BR2537AA SN.6 | I | 20 | |
| | 1CSHNOC309 | 5#12 125VDC | BKR. CLOSE/ TRIP CRT | 1E22*PNL5001 | 1CSHN13 | BR2537AA SN.8 | I | 20 | |
| | 1CSHNOC310 | 5#12 125VDC | BKR. CLOSE/ TRIP CRT | 1H22*PNLP028 | 1CSHN13 | | I | 20 | |

CONT'D ON NEXT PG.

Rev 0,
CALC E-218/ADDENDUM A
ATTACHMENT 1

CABLE DERATING SUMMARY

FIRE AREA C2C FIRE-WRAP (1HR) RATING SHR

AMBIENT TEMP 70 °C

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| TRACWAY | CABLE NO. | CABLE SIZE | SERVICE VOLTAGE | LOAD / FLA | CONNECTED DEVICE | CIRCUIT NO. | COB/ESK | C/I | O.C.A. | REMARKS | |
|----------------------|-------------|-------------|-----------------|------------|------------------|-------------|----------------|--------|--------|---------|--------------------|
| CC0020 B (CONT'D) | 1CSHNOC 400 | 3/4" 10 | 120VAC | 15 AMP FU | 1H22K PNL P028 | 1CSHN13 | 828E537MA SH.8 | C | 27 | | |
| | 1CSHNOC 450 | 3/4" 12 | 120VAC | 10 AMP FU | 1E22K PNL 5001 | 1CSHN12 | 828E537MA SH.7 | | 20 | | |
| | 1CSHNOC 451 | 3/4" 12 | 120VAC | 10 AMP FU | 1E22K PNL 5001 | 1CSHN18 | | | 20 | | |
| | 1CSHNOC 456 | 3/4" 12 | 120VAC | 10 AMP FU | 1E22K PNL 5001 | 1CSHN12 | | | 20 | | |
| | 1CSHNOC 604 | 2" 1/2 | 125VDC | 15 AMP FU | 1H22K PNL P028 | 1CSHN09 | 828E537MA SH.4 | | 20 | | |
| | 1CSHNOC 605 | 2" 1/2 | 125VDC | 15 AMP FU | 1H22K PNL P028 | 1CSHN09 | | | 20 | | |
| | 1CSHNOC 606 | 2" 1/2 | 125VDC | 15 AMP FU | 1E22K PNL 5001 | 1CSHN09 | | | 20 | | |
| | 1CSHNOC 607 | 2" 1/2 | 125VDC | 15 AMP FU | 1E22K PNL 5001 | 1CSHN09 | | | 20 | | |
| | 1CSHNOC 610 | 2" 1/2 | 125VDC | 15 AMP FU | 1H22K PNL P028 | 1CSHN10 | 828E537MA SH.5 | | 20 | | |
| | 1CSHNOC 611 | 2" 1/2 | 125VDC | 15 AMP FU | 1H22K PNL P028 | 1CSHN10 | | | 20 | | |
| | 1CSHNOC 612 | 2" 1/2 | 125VDC | 15 AMP FU | 1H22K PNL P028 | 1CSHN10 | | | 20 | | |
| | 1CSHNOC 613 | 2" 1/2 | 125VDC | 15 AMP FU | 1H22K PNL P028 | 1CSHN10 | | | 20 | | |
| | 1CSHR0C 950 | 2" 1/2 | 125VDC | COM FTR | 1H13X P712 | E22-NC001 | 828E537MA SH.5 | | 15 | | |
| | CC0020 C | 1CSHNOC 002 | 3/4" 12 | 120VAC | 1 AMP FU | 1H13X P712 | 1CSHN05 | 6CSH01 | C | 17.7 | |
| 1CSHNOC 004 | | 3/4" 12 | 120VAC | 1 AMP FU | 1H13X P712 | 1CSHN04 | 6CSH01 | | 17.7 | | |
| 1CSHNOC 008 | | 3/4" 12 | 120VAC | 2 AMP FU | 1H13X P712 | 1CSHN27 | 6CSH02 | | 17.7 | | |
| 1CSHNOC 010 | | 3/4" 12 | 120VAC | 2 AMP FU | 1H13X P712 | 1CSHN28 | 6CSH02 | | 17.7 | | |
| 1CSHNOC 013 | | 3/4" 12 | 120VAC | 1 AMP FU | 1H13X P712 | 1CSHN25 | 6CSH04 | | 17.7 | | |
| 1CSHNOC 015 | | 3/4" 12 | 120VAC | 2 AMP FU | 1H13X P712 | 1CSHN02 | 6CSH03 | | 17.7 | | |
| 1CSHNOC 017 | | 3/4" 12 | 120VAC | 1 AMP FU | 1H13X P712 | 1CSHN26 | 6CSH03 | | 17.7 | | |
| 1EGFCOC 002 | | 2" 1/2 | 120VAC | 1 AMP FU | 1EGFRAL101 | 1EGFC02 | 6EGF03 | | 17.7 | | |
| | | | | | | | | | | | CONT'D ON NEXT PG. |

REV'D
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CABLE DERATING SUMMARY
AMBIENT TEMP 40 °C

1 HR
FIRE-WRAP RATING

3 HR

FIRE AREA C2C

PAGE 3/ OF

| RACEWAY | CABLE NO. | CABLE/SERVICE SIZE/VOLTAGE | LOAD / FLA | CONNECTED DEVICE | CIRCUIT NO. | CB0/ESK | C/I | O.C.A. | REMARKS |
|----------------------|------------|--|------------|------------------|-------------------------------|--------------|-----|--------|--------------------|
| 1CC0020C (CONT'D) | 1HVP00C002 | 3/4" 120VAC | SPARE | 1H13*P751 | — | 6HVP11 | — | — | SPARE |
| | 1HVP00C003 | 3/4" 120VAC | 5 AMP FU | 1E22*PNL5001 | 1HVP005 | 6HVP11 | C | 20 | |
| | 1HVP00C004 | 3/4" 120VAC | 5 AMP FU | 1HVP*PNL12C | 1HVP005 1HVP006 | 6HVP11 | | 17.7 | |
| | 1HVP00C005 | 3/4" 120VAC | 3 AMP FU | 1HVP*PNL12C | 1HVP002 | 6HVP08 | | 17.7 | |
| | 1HVP00C501 | 3/4" 120VAC | 2 AMPS | 1HVP*FN3A | 1HVP006 | 7HVP03 | | 20 | |
| | 1HVP00C502 | 3/4" 120VAC | 3 AMP FU | 1HVP*PNL12C | 1HVP007 | 7HVP05 | | 30 | |
| | 1HVP00C700 | 3/4" 125VDC | ANNUN. | 1H13*P712 | ALARM 1121 | 6HVP08 | | 15 | |
| | 1HYRNO0700 | 3/4" 125VDC | ANNUN. | 1H13*P712 | ALARM 1121 | 6HVP11 | | 15 | |
| | 1HYRNO0701 | 3/4" 125VDC | ANNUN. | 1H13*P712 | ALARM 0530 | 10ANN18 | | 15 | |
| | 1SC00C500 | (SEE 1TC0030 FOR CABLE DERATING SUMMARY) | | | | | | | |
| 1CC0020G | 1CSHNO0621 | 3/4" 125VDC | 10 AMP FU | 1H13*P702 | H13-PL18 INSTR BUS SN.3 | 2E2531A C | C | 20 | |
| 1CC0030A | 1HVC00C500 | (SEE 1TC0030 FOR CABLE DERATING SUMMARY) | | | | | | | |
| 1CC0030B | 1CSHNO0012 | SEE 1TC0030 FOR CABLE DERATING SUMMARY | | | | | | | |
| | 1CSHNO0511 | | | | | | | | |
| | 1CSHNO0512 | | | | | | | | |
| | 1CSHNO0518 | | | | | | | | |
| | 1CSHNO0519 | | | | | | | | |
| 1CSHNO0521 | 1CSHNO0521 | | | | | | | | |
| 1CSHNO0523 | 1CSHNO0523 | | | | | | | | |
| | | | | | | | | | CONT'D ON NEXT PG. |

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CABLE DERATING SUMMARY
 AMBIENT TEMP 40 °C

1 HR
 5 HR

FIRE-WRAP RATING

FIRE AREA C2C

| RACEWAY | CABLE NO. | CABLE/SERVICE SIZE/VOLTAGE | LOAD / FLA | CONNECTED DEVICE | CIRCUIT NO. | CBD/ESK C/I | D.C.A. | REMARKS |
|----------|------------|----------------------------|------------------------|------------------|-------------|-------------|--------|---------|
| 1C00030C | 1CSHA0C702 | | | | | | | |
| | 1GSHN0C300 | | | | | | | |
| | 1GSHN0C303 | | | | | | | |
| | 1GSHN0C306 | | | | | | | |
| | 1GSHN0C312 | | | | | | | |
| | 1GSHN0C314 | | SEE 17C0030 FOR | | | | | |
| | 1GSHN0C315 | | CABLE DERATING SUMMARY | | | | | |
| 1C00030D | 1HVG0C003 | | | | | | | |
| | 1HVG0C951 | | | | | | | |
| | 1HYN0C700 | | SEE 17C0030 FOR | | | | | |
| | 1SNPC0C951 | | CABLE DERATING SUMMARY | | | | | |
| | 1SNPN0C701 | | | | | | | |

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CABLE DERATING SUMMARY
AMBIENT TEMP 40 °C

FIRE AREA C 2 C FIRE-WRAP 1 HR RATING SHR

| TRAYWAY | CABLE NO. | CABLE/SERVICE SIZE/VOLTAGE | LOAD / FLA | CONNECTED DEVICE | CIRCUIT NO. | CBD/ESK | C/I | D.C.A. | REMARKS |
|-----------|------------|----------------------------|------------|------------------|----------------------|---------|-----|--------|---------|
| 1CC0020L2 | 1SCG004503 | 3/4" 120VAC | 3 AMP FU | 1E22X5004 | 1SCG004 | 7SCC1 | 0 | 20 | |
| | 1SNPC00300 | 3/4" 125VDC | 0.58 AMPS | 1H13X P712 | 1SNPC08 | SSWP06 | | 17.7 | |
| | 1SNPC00307 | 3/4" 125VDC | 0.10 AMPS | 1H13X P712 | 1SNPC08 | SSWP06 | | 20 | |
| | 1SNPN00600 | 3/4" 185VDC | 1.1 AMPS | 1H13X P712 | 12HAC01 REL. 74-N | 11SWP13 | | 20 | |
| | 1SNPN00703 | 5/8" 125VDC | ANNUN. | 1H13X P712 | ALARM 0622 & 1274 | SSWP06 | | 15 | |
| 1CC0030E2 | 1HYC000002 | | | | | | | | |
| | 1HYF000002 | | | | | | | | |
| | 1HYPC00008 | | | | | | | | |
| | 1HYC000001 | | | | | | | | |
| 1CC0030F | 1SNPC00004 | | | | | | | | |
| | 1SNPC00004 | | | | | | | | |

SEE ITC0030 FOR
CABLE DERATING SUMMARY

(SEE ITC0030 FOR CABLE DERATING SUMMARY)

CABLE DERATING SUMMARY
AMBIENT TEMP 50 °C

PAGE 4 OF 4

| FIRE AREA <u>FBI/21</u> | | FIRE-WRAP RATING 1 HR / 5 HR | | CABLE NO. | CABLE/SERVICE SIZE/VOLTAGE | LOAD / FLA | CONNECTED DEVICE | CIRCUIT NO. | COO/ESK | C/I | D.C.A. | REMARKS |
|-------------------------|--|---------------------------------|--|------------|-------------------------------|-------------|------------------|-----------------------|---------|-----|--------|---------|
| | | | | 1SFCARL200 | ^{AL} TRX35CMCM48V | 100 HP/116A | 1SFCXPIA | 1EJ54N01A CCT. 004 | EE-1AA | C | 212 | |
| 1CL600RA1 | | | | 1SFCARL200 | | | | | | | | |
| CL600RA2 | | | | 1SFCARL200 | | | | | | | | |

SEE 1CL600RA FOR CABLE DERATING SUMMARY

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| <u>ESK</u> | <u>CKT. NO.</u> | <u>EQUIPMENT</u> | <u>CONTINUOUS E.L.A.</u> | <u>CALC / PAGE</u> |
|---|-------------------------------|--|------------------------------|--------------------|
| <i>828E535AA SH. 7</i> | <i>1CSLN04</i> | <i>1E21* AOV F006</i> | <i>0.41</i> | <i>L, PAGE 46</i> |
| <i>828E539AA SH. 7</i> | <i>1ICSNO5</i> | <i>1E51* AOV F066</i> | <i>0.41</i> | <i>L, PAGE 46</i> |
| <i>828E534AA SH. 14</i> | <i>1RNSA10</i> | <i>1E12* AOV F041A</i> | <i>0.41</i> | <i>L, PAGE 45</i> |
| <i>247.250-329-006</i> | <i>CABLE</i> | <i>1RMS ENC 508</i> | <i>5</i> | <i>M, PAGE 45</i> |
| <i>828E531AA SH. 11</i> | <i>1RPSNO1</i> | <i>1C11* AOV's</i> | <i>1.02</i> | <i>N, PAGE 46</i> |
| <i>828E234AA SH. 4</i> | <i>1SLSA03</i> | <i>1C41* VEX F004</i> | <i>0.54</i> | <i>O, PAGE 49</i> |
| <i>7SWP31</i> | <i>1SWPA71</i> | <i>1SWP* 50V522ARC, 523A & C, 552A</i> | <i>4.6</i> | <i>P, PAGE 50</i> |
| <i>CBDSCV2A2</i> | <i>1SCV* PNL2A2 CKX 7</i> | <i>1RMS* RE5A</i> | <i>17.12</i> | <i>Q, PAGE 51</i> |
| <i>828E537AA SH. 9</i> | <i>1CSHN19</i> | <i>1E22* S004ACB2</i> | <i>0.366</i> | <i>R, PAGE 53</i> |
| <i>828E537AA SH. 4</i> | <i>1CSHN09</i> | <i>1E22* S001</i> | <i>0.126</i> | <i>S, PAGE 58</i> |
| <i>828E537AA SH. 4</i> | <i>1CSHN09</i> | <i>1E22* S001</i> | <i>0.026</i> | <i>T, PAGE 58</i> |
| <i>211.161-997-349 D & 352D</i> | <i>CABLES</i> | <i>1HTSNNC001, 002, 003, 004</i> | <i>0.42 EA.</i> | <i>U, PAGE 59</i> |

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CALCULATION L

{BZBE534AA, SH14}

Reference Elementary: BZBE535AA, SH7 {BZBE539AA, SH7}

Cable No: IC5LNRC501 (IC5NRC523) {IRH5ARC502}

Circuit No: IC5LN04 (IC5N05) {IRH5A10}

Loads:

ID

FLA

Pilot Solenoid ⁻⁰⁰²⁷ (Per 228,218-062-001M) (ASCO NP831665E) 0.2 (23VA per ASCO Cat.# NP-1)

K18 - Agostat GP 0.05

4 Lights - PGCC (0.04 amp. ea.) 0.16

Note: Circuits in () or { } are similar 0.41

CALCULATION M

REFERENCE ELEMENTARY: 247250329006B
247250329018I

CABLE NO: IRMSBNC508

CIRCUIT NO: IRMS-L1/L2

JUSTIFICATION FOR A DIVERSITY FACTOR

TOTAL CONNECTED LOADS 6.5 AMPS

INTERMITTENT LOADS:

ID

FLA

FLASHING RED LIGHT 0.5 AMP

HORN 1.0 AMP

1.5 AMPS

CONTINUOUS LOADS 5 AMPS

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CALCULATION N

Reference Elementary: 828E531AA, 5H 11

Cable No: 1RPSNRC502, 507, 513

Circuit No: 1RPSN01

Loads

| <u>ID</u> | | <u>FLA</u> |
|----------------------------|--------------------------|-------------|
| K101 | Pattent Brumfield MDR | 0.215 |
| K102 | | 0.215 |
| K103 | | 0.215 |
| K104 | | 0.215 |
| 4 lights at PGCC 0.04A ea. | | <u>0.16</u> |
| | | 1.02 A |

POTTER & BRUMFIELD RELAYS

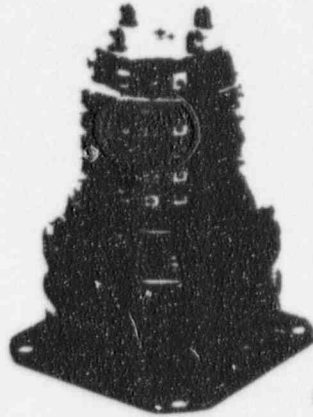
CALCULATION N

MDR series

10 AMP
 ROTARY RELAYS



SMALL 8PDT



MEDIUM 24PDT

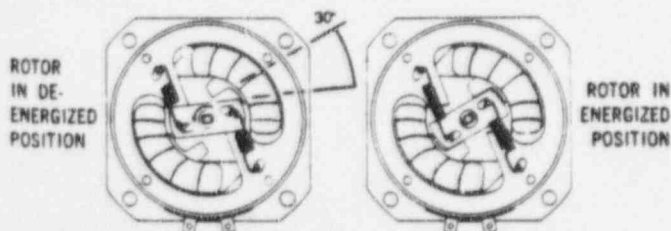
ENGINEERING DATA

Designed and constructed to meet or exceed the most rigorous requirements of military specifications, MDR series rotary relays are used in control circuits of nuclear reactors, missile systems, gun fire apparatus and computers.

MDR relays meet the most rigorous requirements of specifications MIL-R-19523 which includes the rugged requirements of MIL-STD-167 for vibration and MIL-S-901 for shock. The contacts will not chatter when relays are subjected to high-impact shock blows of 2000 ft-lbs. Endurance ratings are 100,000 operations for series 141, 170, and all latching series and 500,000 for all others. MDR relays are designed to operate over an ambient temperature range of 0°C to +65°C. MDR relays designed for operation over range of 0°C to +90°C are available on special order. Please consult factory.

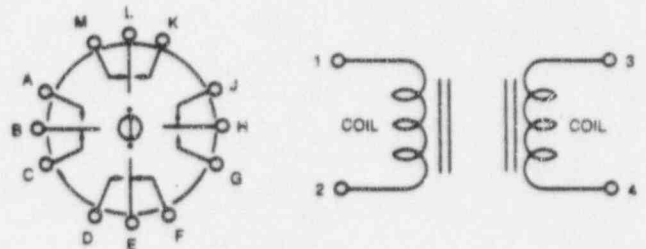
CONVENTIONAL NON-LATCHING SERIES

The basic construction of the conventional MDR relay consists of a rotary actuator mechanism with the contact sections mounted in insulating rings on top. The actuator mechanism embodies a stator assembly on which two relay coils are mounted. The two coils are connected in series inside the relay. When the coils are energized, a rotor turns through an arc of approximately 30 degrees, thereby operating the contact section through the extension of the rotor shaft. The travel of the rotor is confined to a 30 degree arc between the stator faces and the stop ring. Two springs return the rotor to the stop ring when the coils are de-energized. This also returns the contacts to their normal positions. Thus, the conventional non-latching series provide an "energized" and "de-energized" position.



LATCHING TWO-POSITION SERIES

Except for the latching feature, MDR latching two-position relays utilize the same general construction as conventional non-latching relays. They have two sets of coils and provide a latching two-position operation. They operate as follows:



When coil 1-2 is energized, contacts A-B, D-E, G-H and K-L close. The indicator line on the rotor shaft and the two dots on the top are not in alignment.

When coil 1-2 has been de-energized and coil 3-4 is energized, contacts B-C, E-F, H-J and L-M close. The indicator line and the two dots are aligned.

The armature is held by positive spring action in its last energized position when both coils are de-energized. Coils must be energized alternately, not simultaneously.

AVAILABLE IN SMALL AND MEDIUM SIZES

MDR rotary relays are offered in two basic sizes, small and medium. Each of these is available in conventional nonlatching and latching two-position versions. The small non-latching MDR is furnished with AC coils to 12PDT and with DC coils to 8PDT. The small latching relay with AC or DC coils is equipped with contacts to 8PDT. The medium non-latching series is provided with AC or DC coils to 24PDT, while latching version features AC or DC coils with contacts to 16PDT. All contact arrangements are Form C (break-before-make).

**TYPICAL OPERATE AND RELEASE TIMES
AT NOMINAL COIL VOLTAGE AT +25°C**

Models in this series are available from stock. The last section of the databook lists by part number those units which are normally stocked. Non-stock items are subject to normal OEM leadtimes.

| TYPE | OPERATE TIME IN MILLISECONDS | RELEASE TIME IN MILLISECONDS |
|--------------------------|---------------------------------|---------------------------------|
| SMALL AC NON - LATCHING | 5 to 12 | 5 to 18 |
| SMALL DC NON - LATCHING | 15 to 30 | 5 to 15 |
| SMALL AC LATCHING | 6 to 12 | N/A |
| SMALL DC LATCHING | 10 to 18 | N/A |
| MEDIUM AC NON - LATCHING | 6 to 12 | 6 to 20 |
| MEDIUM DC NON - LATCHING | 65 to 90 | 10 to 30 |
| MEDIUM AC LATCHING | 8 to 14 | N/A |
| MEDIUM DC LATCHING | 30 to 80 | N/A |

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CALCULATION N

COIL CHARACTERISTICS OF SMALL NON - LATCHING MDR ROTARY RELAYS

SMALL
NON - LATCHING

| SERIES | CONTACTS | COIL VOLTAGE 60 Hz for AC | COIL CURRENT AMPERES | DC COIL RESISTANCE OHMS | COIL POWER WATTS* | BREAKDOWN VOLTS RMS |
|-----------|----------|------------------------------|-------------------------|-------------------------------|----------------------|------------------------|
| MDR-131-1 | 4PDT | 115VAC | 0.215 | 66 | 6.5 | 1230 |
| MDR-131-2 | 4PDT | 440 VAC | 0.045 | 1256 | 5.1 | 1880 |
| MDR-135-1 | 4PDT | 28 VDC | 0.362 | 76 | 10.0 | 1308 |
| MDR-137-8 | 4PDT | 125VDC | 0.062 | 1520 | 10.3 | 2375 |
| MDR-134-1 | 8PDT | 115 VAC | 0.215 | 66 | 6.5 | 1230 |
| MDR-134-2 | 8PDT | 440 VAC | 0.045 | 1256 | 5.1 | 1880 |
| MDR-136-1 | 8PDT | 28 VDC | 0.362 | 76 | 10.0 | 1308 |
| MDR-136-8 | 8PDT | 125 VDC | 0.062 | 1520 | 10.3 | 2375 |
| MDR-163-1 | 12PDT | 115 VAC | 0.230 | 62 | 6.9 | 1230 |
| MDR-163-2 | 12PDT | 440 VAC | 0.055 | 940 | 6.3 | 1880 |

*Actual Wattmeter readings

COIL CHARACTERISTICS OF MEDIUM NON - LATCHING MDR ROTARY RELAYS

MEDIUM
NON - LATCHING

| SERIES | CONTACTS | COIL VOLTAGE 60 Hz for AC | COIL CURRENT AMPERES | DC COIL RESISTANCE OHMS | COIL POWER WATTS* | BREAKDOWN VOLTS RMS |
|-----------|----------|------------------------------|-------------------------|-------------------------------|----------------------|------------------------|
| MDR-170-1 | 16PDT | 115 VAC | 0.620 | 8.4 | 17.0 | 1230 |
| MDR-170-2 | 16PDT | 440 VAC | 0.160 | 107 | 17.0 | 1880 |
| MDR-172-1 | 16PDT | 28 VDC | 0.667 | 42 | 18.7 | 1308 |
| MDR-173-1 | 16PDT | 125 VDC | 0.125 | 1024 | 16.0 | 2375 |
| MDR-141-1 | 24PDT | 115 VAC | 0.620 | 8.4 | 17.0 | 1230 |
| MDR-141-2 | 24PDT | 440 VAC | 0.160 | 107 | 17.0 | 1880 |
| MDR-167-1 | 24PDT | 28 VDC | 0.667 | 42 | 18.7 | 1308 |
| MDR-142-1 | 24PDT | 125 VDC | 0.125 | 1024 | 16.0 | 2375 |

*Actual Wattmeter readings

COIL CHARACTERISTICS OF SMALL LATCHING MDR ROTARY RELAYS

SMALL
LATCHING

| SERIES | CONTACTS | COIL VOLTAGE 60 Hz for AC | COIL CURRENT AMPERES | DC COIL RESISTANCE OHMS | COIL POWER WATTS | BREAKDOWN VOLTS RMS |
|----------|----------|------------------------------|-------------------------|-------------------------------|---------------------|------------------------|
| MDR-67-2 | 4PDT | 115 VAC | 0.150 | 210 | 5.5 | 1230 |
| MDR-4091 | 4PDT | 440 VAC | 0.020 | 4500 | 3.0 | 1880 |
| MDR-67-3 | 4PDT | 28 VDC | 0.778 | 36 | 21.8 | 1308 |
| MDR-6080 | 4PDT | 125 VDC | 0.164 | 760 | 20.6 | 2375 |
| MDR-4078 | 8PDT | 115 VAC | 0.150 | 210 | 5.5 | 1230 |
| MDR-4082 | 8PDT | 440 VAC | 0.020 | 4500 | 3.0 | 1880 |
| MDR-6036 | 8PDT | 28 VDC | 0.778 | 36 | 21.8 | 1308 |
| MDR-6061 | 8PDT | 125 VDC | 0.164 | 760 | 20.6 | 2375 |

COIL CHARACTERISTICS OF MEDIUM LATCHING MDR ROTARY RELAYS

MEDIUM
LATCHING

| SERIES | CONTACTS | COIL VOLTAGE 60 Hz for AC | COIL CURRENT AMPERES | DC COIL RESISTANCE OHMS | COIL POWER WATTS | BREAKDOWN VOLTS RMS |
|----------|----------|------------------------------|-------------------------|-------------------------------|---------------------|------------------------|
| MDR-6064 | 12PDT | 115 VAC | 0.380 | 24 | 12.0 | 1230 |
| MDR-6065 | 12PDT | 440 VAC | 0.055 | 540 | 5.7 | 1880 |
| MDR-7020 | 12PDT | 28 VDC | 0.316 | 88.6 | 8.8 | 1308 |
| MDR-7035 | 12PDT | 125 VDC | 0.083 | 1500 | 10.4 | 2375 |
| MDR-66-4 | 16PDT | 115 VAC | 0.380 | 24 | 12.0 | 1230 |
| MDR-6066 | 16PDT | 440 VAC | 0.055 | 540 | 5.7 | 1880 |
| MDR-7025 | 16PDT | 28 VDC | 0.316 | 88.6 | 8.8 | 1308 |
| MDR-7036 | 16PDT | 125 VDC | 0.083 | 1500 | 10.4 | 2375 |

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CALCULATION 0

Reference Elementary: 828E234AA 5H.4

Cable No: 15LSARC010, 12, 14, 16

Circuit No: 15LSA03

Loads:

FD

FLA

K2A Agastat GP

0.05

K3A Agastat GP

0.05

2 Lights at FGCC (PPD176AK633)

0.08 (2x0.04)

2 Lights at 1H22*PNL ROIKET-16

0.08 (2x0.04)

1C41*VEXFO04A (3221.243-000-003A)

0.02 (2x0.01 Supervisory current, 5amp max. to fire)

74 - J10

0.13

42X - J10

0.13

0.54 AMP

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ATTACHMENT 2
CALCULATION P

Reference ESK: 75WP31

Cable No.: 15WPARC559

Circuit No.: 15WPA71

Loads

| <u>ID</u> | <u>FLA</u> |
|---|------------|
| 74 - Agastat GP | 0.05 |
| 15WP*50V523A } Target Rack 7TKK-006 247.501-240-016D | 0.8 |
| 15WP*50V523C } | 0.8 |
| 15WP*50V522A } Target Rack 7TKK-016 247.501-240-045B | 0.8 |
| 15WP*50V522C } | 0.8 |
| 15WP*50V552A Target Rack 7TKK-017 247.501-240-047B | 0.8 |
| 69 - Agastat GP | 0.05 |
| 62 - Agastat TR | 0.05 |
| 3 - Agastat GP | 0.05 |
| 10 Lights - PGCC (0.04 amp. ea.) | <u>0.4</u> |
| | 4.6 Amp |

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CALCULATION Q

REFERENCE ELEMENTARY: DWG. 0366-2520
MAN. 3247.250-329-011A

CABLE NO: 1RMSNRC502

CIRCUIT NO: CKT. 7 (150V * PNL 2A2)

| <u>EQUIP. ID</u> | <u>FUSE ID</u> | <u>CONNECTED LOADS</u> |
|-------------------------------|----------------|------------------------|
| RD72-02 (HIGH) | F14 (0.5A FU) | 0.5 A |
| STACK SELECT. ASSY. (1 1/2) | F15 (8A FU) | 2.65 A |
| LOW RANGE VALVES | F5 (4A FU) | 0.99 A |
| RD72-01 (MID) | F13 (0.5A FU) | 0.5 A |
| SAMPLE CONDITIONING SKID | F2 (8A FU) | 1.0 A |
| CONTROL Rm. DISPLAY | F3 (8A FU) | 2.0 A |
| LOW RANGE PUMP (1/4 HP) | F4 (10A FU) | 5.8 A |
| RM80 J BOX | F6 (2.5A FU) | 3.0 A |
| RD52 (3CH. PREAMP.) | F7 (2.5A FU) | 2.5 A |
| MID/HIGH RANGE VALVES | F8 (4A FU) | .99A |
| RD72-01/02 RECT. | F9 (4A FU) | 2.0 A |
| MID/HIGH RANGE PUMP (1/40 HP) | F10 (4A FU) | 0.21A |

TOTAL CONNECTED LOAD 22.14 AMPS

JUSTIFICATION FOR A DIVERSITY FACTOR

ALTERNATE LOAD NO. 1 (LOW RANGE)

| <u>FUSE ID</u> | <u>CONNECTED LOADS</u> |
|----------------|------------------------|
| F15 | 1.33 A |
| F5 | .99 A |
| F2 | 1.0 A |
| F3 | 2.0 A |
| F4 | 5.8 A |
| F6 | 3.0 A |
| F7 | 2.0 A |
| F9 | 1.0 A |

TOTAL LOAD 17.12 AMPS

ALTERNATE LOAD NO. 2 (MID/HIGH RANGE)

| <u>FUSE ID</u> | <u>CONNECTED LOADS</u> |
|----------------|------------------------|
| F14 (0.5A FU) | 0.5A |
| F15 (8A FU) | 1.33A |

CALCULATION SHEET

STONE & WEBSTER ENGINEERING CORPORATION

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QA CATEGORY / CODE CLASS

ATTACHMENT 2

CALCULATION Q CONT'D.

| <u>FUSE ID</u> | <u>CONNECTED LOADS</u> |
|----------------|------------------------|
| F13 (0.5A Fu) | 0.5A |
| F2 (8A Fu) | 1.0A |
| F3 (8A Fu) | 2.0A |
| F6 (2.5A Fu) | 3.0A |
| F7 (2.5A Fu) | 2.0A |
| F8 (4A Fu) | .99A |
| F9 (4A Fu) | 1.0A |
| F10 (4A Fu) | 0.21A |
| TOTAL LOAD | <u>12.53 AMPS</u> |

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CALC E-218 REV.0 ADDENDUM A

QA CATEGORY/CODE CLASS

ATTACHMENT 2
CALCULATION R

Reference Elementary: 828E537AA, Sh. 9

Cable No: 1CSHNOC312

Circuit No: 1CSHN19

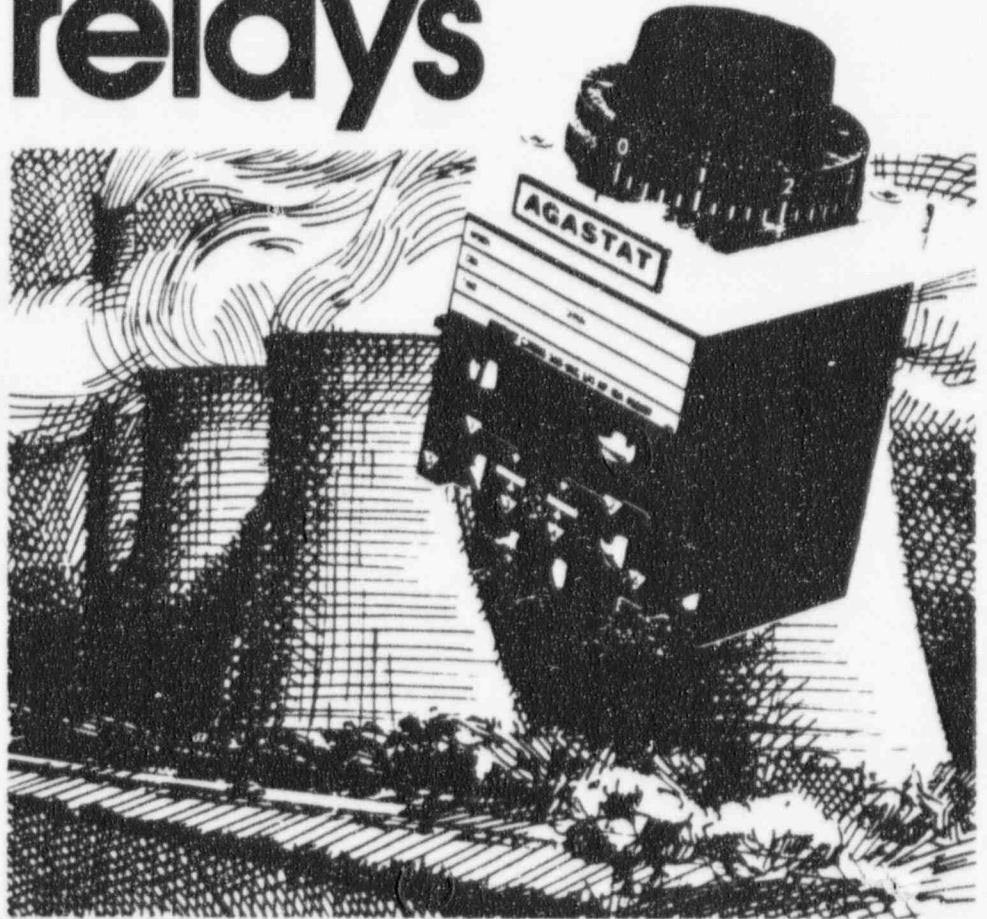
Loads:

| <u>ID</u> | <u>FLA</u> |
|---------------------------|---------------------|
| 74A Agostat 7012 PD(TDPV) | 0.064 (8w.) |
| Indicating Lights PGCC | 0.16 (4@ 0.04) |
| Indicating Lights SWGR. | 0.12 (3@ 0.04) |
| 50GSX GE HMA | <u>0.022</u> (2.7w) |
| | 0.366 Amp |

Note: Only continuous loads identified
 All other loads are intermittent

AGASTAT®

seismic & radiation tested time delay relays



In order to satisfy the growing need for electrical control components suitable for class 1E service in nuclear power generating stations, the Control Products Division is now offering a series of AGASTAT® timing relays which have been tested for these applications. These E7000 Series electropneumatic devices have demonstrated compliance with the requirements of IEEE Standards 323-1974 (Standard for Qualifying Class 1E Equipment for Nuclear Power Generating Stations) and IEEE Standard 344-1975 (Seismic Qualification for Nuclear Power Generating Stations). Testing was also referenced to ANSI/IEEE C37.98 (formerly IEEE Standard 501-1978, Standard for Seismic Testing of Relays).

The present E7000 Series design was evolved over 40 years of continual field use in a wide range of industrial applications. On-Delay, Off-Delay and Four-Pole versions are available for use with a choice of 25 coil voltages, as well as time-calibrated delay adjustment to as long as 60 minutes.



CONTROL PRODUCTS
DIVISION

CALC E-218 ADDENDUM 'A', REV C
ATTACHMENT 2

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CALCULATION B

For two-step operation, a maximum timing ratio between upper and lower switches of 3:2 is recommended. Once adjusted at the factory, this ratio remains constant regardless of changes in dial settings. (Ex: if upper switch transfer is set on dial at 60 sec., minimum time on lower switch should be 40 sec.)

Four pole models add approximately 1 1/4" to the maximum height of the basic model, approximately 1/2" to the depth. They are designed for vertical operation only.



Timing Adjustment

The AGASTAT E7000 Series is the first electropneumatic timer to offer the ease of adjustment and resetting of a calibrated dial head. Discrete ranges covering a total span from .1 second to 60 minutes are available. (See table on page 6.) Each has its own calibrated, clearly identified dial. Timing is set by simply turning the dial to the desired time value. In the zone of approximately 25° separating the high and low ends of timing ranges A, D, E, and K, instantaneous operation (no time delay) will occur. All other ranges produce an infinite time delay when the dial is set in this zone.

OPERATING CHARACTERISTICS

Environmental Conditions. (Qualified Life)

| PARAMETER | MIN. | NORMAL | MAX. |
|-------------------|------|-------------|-------------------------------|
| Temperature (°F) | 40 | 70-104 | 156 |
| Humidity (R.H. %) | 10 | 40-80 | 95 |
| Pressure | --- | Atmospheric | --- |
| Radiation (rads) | --- | --- | 2.0 X 10 ⁶ (Gamma) |

Operating Conditions. (Normal Environment)

| NORMAL OPERATING SPECIFICATIONS | WITH DC COILS | WITH AC COILS |
|---|---------------|---------------|
| Coil Operating Voltage, Nominal (Rated) | As Spec | As Spec |
| Pull-in (% of rated value) | 80% Min. | 85% Min. |
| Drop-out (% of rated value) | 10% Approx. | 50% Approx. |
| Power (Watts at rated value) | 8 Approx. | 8 Approx. |
| Relay Operate Time | | |
| Model E7012 | N/A | N/A |
| Model E7022 | 50 ms Max. | 50 ms Max. |
| Relay Release (Recycle) Time | | |
| Model E7012 | 50 ms Max. | 50 ms Max. |
| Model E7022 | N/A | N/A |
| Contact Ratings, Continuous | | |
| (Resistive at 125 vdc) | 1.0 amp | 1.0 amp |
| (Resistive at 120 vac, 60 Hz) | 10.0 amp | 10.0 amp |
| Insulation Resistance (In megohms at 500 vdc) | 500 Min. | 500 Min. |
| Dielectric (vrms, 60 Hz) | | |
| Between Terminals and Ground | 1,500 | 1,500 |
| Between Non-connected Terminals | 1,000 | 1,000 |
| Repeat Accuracy | ± 10% | ± 10% |

Operating Conditions. (Abnormal Environment)

| ADVERSE OPERATING SPECIFICATIONS | NORMAL | DBE "A" | DBE "B" | DBE "C" | DBE "D" |
|---------------------------------------|--------|---------|---------|---------|---------|
| Temperature (°F) | 70-104 | 40 | 120 | 145 | 156 |
| Humidity (R.H. %) | 40-60 | 10-95 | 10-95 | 10-95 | 10-95 |
| Coil Operating Voltage * (% of Rated) | | | | | |
| Model E7012 (AC) | 85-110 | 85-110 | 85-110 | 85-110 | 85-110 |
| Model E7012 (DC) | 80-110 | 80-110 | 80-110 | 90-110 | 90-110 |
| Model E7022 (AC) | 85-110 | 85-110 | 85-110 | 85-110 | 85-110 |
| Model E7022 (DC) | 80-110 | 80-110 | 80-110 | 80-110 | 80-110 |

* All coils may be operated on intermittent duty cycles at voltages 10% above listed maximums (Intermittent Duty = Maximum 50% duty cycle and 30 minutes "ON" time.)

Contact ratings as listed under the UL Component Recognition Program for 100,000 operations:

- 10 Amps., relative, 240 VAC
 - 1/4 horsepower, 120 VAC/240 VAC
 - 15 Amps., 30VDC
 - 5 Amps., General Purpose, 600 VAC
- } Per Pole

COIL DATA

All units draw approximately 8 watts power at rated voltage.

The operating voltage range for AC relays is 85 to 110 percent of nominal rated value.

AC units drop-out at approximately 50% of rated voltage.

The operating range of DC relays is 80 to 110 percent of nominal rated value.

DC units drop-out at approximately 10% of rated voltage.

All units may be operated on intermittent duty cycles (50% on/off, maximum 30 minutes on) at voltages 10% above the listed maximums.

APPROXIMATE WEIGHT

- Model E7012 and E7022 with AC Coils — 2.13 lbs.
- Model E7012 and E7022 with DC Coils — 2.25 lbs.

Model E7014 and E7024 with AC Coils — 2.43 lbs.

Model E7014 and E7024 with DC Coils — 2.57 lbs.

(Weight may vary slightly with particular coil voltage.)

TERMINALS

Standard screw terminals (#8 — 32 truss head screws supplied) are located on the front of the unit, with permanent schematic markings. Barrier isolation is designed to accommodate spade or ring-tongue terminals with spacing to meet industrial control specifications.

In the event of malfunction, return units to:

CONTROL PRODUCTS DIVISION
AMERACE CORPORATION
1000 HICKORY STREET
GRAFTON, WISCONSIN 53024

ATTENTION: PRODUCT SERVICE DEPARTMENT

WARRANTY

The AGASTAT® timing relay is warranted against mechanical and electrical defects for a period of one year from date of shipment from factory if it has been installed and used in accordance with factory recommendations.

Any field repairs or modifications to the original unit will void the Warranty and the Qualification.

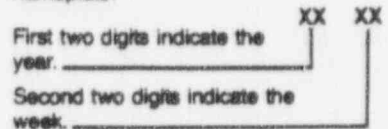
NOTE

Control Products Division of Amerace Corporation does not recommend the use of its products in the containment areas of Nuclear Power Generating Stations.

REPLACEMENT SCHEDULE

The qualified life of this unit is 25,000 operations or 10 years from the date of manufacture, whichever occurs first.

The date of manufacture can be found in the first four (4) digits of the serial number on the nameplate:



Example: Date code 8014: 80 indicates 1980; 14 indicates the week of April 2 through 8.

| | |
|-------|----------------------|
| MODEL | E7012PC032 |
| COIL | 125VDC Serial 8014 — |
| TIME | 1.5 TO 15 SEC. |
| | L1 L2 |

CALCULATION R

GEK-45489

CALC E-218 ADDENDUM A, Rev. C
ATTACHMENT 2

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AUXILIARY RELAYS

TYPE HMA111

DESCRIPTION

The Type HMA111 relay is an instantaneous auxiliary device whose contacts are operated by the movement of a hinged armature. Models are available for operation on standard AC and DC voltages. The Type HMA111 relay is available as a back connected relay supplied with cover or as a front connected relay without cover. The contact arrangement is double pole, double throw. The operating coils are specially designed for long life even when operated continuously near maximum ambient temperature. The HMA111 relay is summarized in Table I.

TABLE I

| RELAY | CONTACT ARRANGEMENT | CONNECTION | COVER |
|---------|---------------------|-----------------|---------|
| HMA111A | DPDT | BACK CONNECTED | WITH |
| HMA111B | DPDT | FRONT CONNECTED | WITHOUT |

APPLICATION

The Type HMA111 relays covered by these instructions are hinged armature auxiliary relays intended for use with protective relays to provide additional contacts, higher contact carrying and interrupting ratings, electrical separation of circuits, or other auxiliary functions. The relays are applicable where no intentional operating delay is required and where the standard pickup values listed under ACCEPTANCE TESTS are acceptable.

RATINGS

The HMA111 relays are available with coil ratings for standard voltages up to 250 volts direct current and for 120 and 240 volts 50 or 60 cycles.

The current-closing rating of the contacts is 30 amperes. The current-carrying rating is 12 amperes continuously or 30 amperes for one minute. The interrupting ratings (non-inductive circuits) for various voltages are listed in the Table II.

TABLE II

| | DC | | | | AC | | |
|-------|----|----|-----|-----|-----|-----|-----|
| VOLTS | 24 | 48 | 125 | 250 | 115 | 230 | 460 |
| AMPS | 12 | 6 | 1.5 | 0.5 | 25 | 15 | 5 |

These instructions do not purport to cover all details or variations in equipment nor to provide for every possible contingency to be met in connection with installation, operation or maintenance. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, the matter should be referred to the General Electric Company.

To the extent required the products described herein meet applicable ANSI, IEEE and NEMA standards; but no such assurance is given with respect to local codes and ordinances because they vary greatly.

CALCULATION R

BURDENS

TABLE III

| D-C COILS | | | |
|-----------|-------|----------|---------------|
| VOLTS | FREQ. | D-C RES. | WATTS IN COIL |
| 6 | d-c | 16.3 | 2.2 |
| 12 | d-c | 55.6 | 2.6 |
| 24 | d-c | 225 | 2.6 |
| 32 | d-c | 400 | 2.6 |
| 48 | d-c | 950 | 2.4 |
| 62.5 | d-c | 1450 | 2.7 |
| 110 | d-c | 4240 | 2.9 |
| 125 | d-c | 5800 | 2.7 |
| 220 | d-c | *950 | 2.9 |
| 250 | d-c | **950 | 3.3 |

*Uses an external resistor of 3300 ohms in series with the coil.

**Uses an external resistor of 3300 ohms in series with the coil.

Certain quantities should be defined before giving BURDEN DATA for a-c coils.

R_{DC} is the resistance of a coil as measured with an ohmmeter, bridge etc.

R_{DO} is the a-c resistance of a coil when a-c power is flowing through the coil but the relay is not picked up. X_{DO} is the inductive impedance when the coil is energized but the relay is not picked up. R_{PU} and X_{PU} ; the resistive and inductive parts of impedance of coil under picked up conditions are designated as R_{PU} and X_{PU} .

Z_{DO} is the impedance of the relay in dropout conditions. Z_{PU} is the impedance of the relay in picked up conditions.

| A-C COILS | | | | | | | | |
|-----------|---------|----------|----------|----------|----------|----------|----------|----------|
| COILS | RATINGS | R_{DC} | R_{DO} | X_{DO} | Z_{DO} | R_{PU} | X_{PU} | Z_{PU} |
| VOLTS | CYCLE | + 10% | + 10% | + 10% | + 10% | + 5% | + 5% | + 5% |
| 120 | 60 | 345 | 503 | 964 | 1087 | 1389 | 1534 | 2069 |
| 240 | 60 | 1410 | 2962 | 3800 | 4818 | 5923 | 5166 | 7859 |
| 120 | 50 | 517 | 595 | 1031 | 1190 | 1567 | 1838 | 2415 |
| 240 | 50 | 2082 | 2687 | 4652 | 5372 | 7086 | 8289 | 10905 |

CHARACTERISTICS

The HMA111 relay is a hinged armature type, instantaneous auxiliary device. When the coil is energized, a magnetic flux flows through the frame pole piece and attracts the armature. Two auxiliary contacts are mechanically coupled to the armature. Auxiliary contacts are normally two form "C" contacts (see internal connections diagram Fig. 2). These contacts can be used to make or break auxiliary circuits.

CONSTRUCTION

The HMA111 is a molded case relay. The various parts of the relay can be seen in Fig. 1. The control spring helps in adjusting the pickup and dropout voltages. The function of the voltage barrier is to avoid flashover between a pair of electrically separate but mechanically coupled normally closed contacts or between a pair of normally open contacts. Cover spring clips maintain spring force against the cover to prevent it from getting off its desired position. The long life coils are capable of continuous operation near maximum ambient temperature.

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QA CATEGORY/CODE CLASS

ATTACHMENT 2

CALCULATION S.

Reference Elementary: 828E537AA, 5H4
 945E404, 5H2,4

Cable No: 1CSHNOC601, 1CSHNOC602

Circuit No: 1CSHN09

Loads:

| | |
|-----------|--|
| <u>ID</u> | <u>FLA</u> |
| K1 GE HFA | 0.062 (78) ^{3221.415-000-008} 242.429-000-472 |

K8 Agostat 7022 T. me Reby 0.064 (8w.) ^{PO 82-1-80062}

K15 GE HEA (Intermittent) 5.4 amp ^{PFF F. 1m 1576, Frame 1425}
 0.126 ^{3242.400-000-026} Not included

CALCULATION T

Reference Elementary: See Calc. T

Cable No: 1CSHNOC 600

Circuit No: See Calc. T

Loads:

| | |
|------------|--------------|
| <u>ID</u> | <u>FLA</u> |
| K2 GE HMA | 0.022 (2.7w) |
| PGCC Light | <u>0.04</u> |
| | 0.026 |

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CALC E-218 REV. 0 ADDENDUM A

QA CATEGORY/CODE CLASS

ATTACHMENT 2

CALCULATION U

REFERENCE ELEMENTARIES: 211.161-997-349D
 211.161-997-353D
 EE-36DJ-5
 EE-63A-1
 E&DCR C-26,935

CABLE NO.S: 1HTSNNC001, 002, 003 & 004

CIRCUIT NO.S: CKT1A-K1, CKT2A-K2, CKT1B-K1 & CKT2B-K2

ASSUMPTIONS: BASED ON DWG. EE-63A-1 NOTES 2 & 6,
 ISOMETRIC VIEW & SCHEDULE/LEGEND
 CHART, EACH OF THE 4-HEATER CABLES
 ARE ASSUMED TO BE \approx 10 FT. IN LENGTH.

THERMON CONSTANT WATTAGE HEATER CABLE
 TYPE T2-5 IS RATED 5 WATTS PER LINEAR FT.

LOAD TABULATION:

FLA FOR HEATER CABLES CKT 1A, 2A, 1B & 2B
 RESPECTIVELY IS;

10 FT @ 5 WATTS/FT. = 50 WATTS

$$I = \frac{50W}{120V} = 0.42 \text{ AMPS}$$

∴ CABLES 1HTSNNC 001, 002, 003 & 004 CONNECTED
 LOAD RESPECTIVELY IS 0.42 AMPS



CALCULATION REVIEW SHEET

1. CALCULATION NUMBER

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JOB NO.

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| ITEM | CALC PAGE | COMMENT | RESPONSE/RESOLUTION |
|------|-----------|--------------------------------------|---------------------|
| 1 | 44 | CALC / PAGES OMITTED | ADDED |
| 2 | 13 | IHVFBRC 500 LEGIBILITY | CORRECTED |
| 3 | 8THRU43 | FIRE ZONES DO NOT MATCH STP-000-3602 | CORRECTED |

COMMENTS PROVIDED BY

COMMENTS RESOLVED

RESOLUTION ACCEPTED

2995

 REVIEWER DATE 8/18/92

4900

 PREPARER DATE 8/18/92

2995

 REVIEWER DATE 8/18/92

TITLE PAGE AND CALCULATION SUMMARY

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| | |
|---|---|
| CLIENT/PROJECT GULF STATES UTILITIES / RIVER BEND UNIT 1 | QA CATEGORY (✓) <input checked="" type="checkbox"/> I - NUCLEAR SAFETY RELATED <input checked="" type="checkbox"/> II <input type="checkbox"/> III <input type="checkbox"/> OTHER |
|---|---|

| |
|--|
| SUBJECT/TITLE AMPACITY VERIFICATION OF CABLES WITHIN RACEWAYS WRAPPED WITH APPENDIX R FIRE PROTECTION BARRIER |
|--|

| APPROVALS - SIGNATURE & DATE | | | ADD. NUMBER | SUPPS. *CALC NO OR REV # | CONFIRMATION *REQUIRED (✓) | |
|------------------------------|------------------------------|---------------------------------|-------------|--------------------------|----------------------------|----|
| PREPARER(S)/DATE(S) | REVIEWER(S)/DATE(S) | INDEPENDENT REVIEWER(S)/DATE(S) | | | YES | NO |
| <i>JURMAIN</i> 5/28/87 | <i>R.F. Savitt</i> 6/4/87 | <i>W. DePina</i> 6/5/87 | NA | KE-177 REV 0 | | ✓ |

THIS DOCUMENT IS A DESIGN INPUT AND REPRESENTS THE AS-BUILT CONFIGURATION OF THE SYSTEMS/STRUCTURES/COMPONENTS SPECIFIED HEREIN UPON COMPLETION OF THE WORK SPECIFIED ON CHANGE DOCUMENT(S) NA AND FIELD CHANGE(S) NA

WORK COMPLETION STATUS IS SPECIFIED IN THE CHANGE CONTROL DOCUMENT REPORTING SYSTEM (IS-217)

OBJECTIVE OF CALCULATION
SEE PAGE 5 OF 35 FOR OBJECTIVE.

CALCULATION METHOD/ASSUMPTIONS
SEE PAGES 6 THROUGH 12 OF 35 FOR ASSUMPTIONS AND METHOD.

SOURCES OF DATA/EQUATIONS
SEE PAGES 13 THROUGH 19 OF 35 FOR INPUTS, REFERENCES, AND FORMULAE.

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CONCLUSIONS
SEE PAGES 20 & 21 OF 35 FOR CONCLUSIONS.

DISTRIBUTION

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|-----------------------|--|---------------|----------------|-----------------|---------------|
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| RECORDS RETENTION | BOSTON | ✓ | SEG ELECTRICAL | RBS - MA 3. | ✓ |
| PERMANENT PLANT FILES | DOCUMENT CONTROL RIVER BEND SITE (GSU) | ✓ | | | |

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| J.O. OR W.O. NO. | DIVISION & GROUP | CALCULATION NO. | OPTIONAL TASK CODE | |
| 12210 | ELECTRICAL | E-218 | N/A | |

THIS CALCULATION SUPERCEDES CALCULATION E-177 IN ITS ENTIRETY FOR THE FOLLOWING REASONS:

- ① THIS CALCULATION INCORPORATES ADDITIONAL CABLES THAT, BECAUSE THEIR ASSOCIATED RACEWAYS WERE FIRE WRAPPED IN WHOLE OR IN PART WITH "APPENDIX R" FIRE WRAP MATERIAL (THERMO LAG), MUST BE EVALUATED FOR ADEQUATE AMPACITY AFTER DERATING FOR THIS FIRE WRAP. ALL SERVICE LEVELS EXCEPT "X" WERE CONSIDERED IN THIS CALCULATION.
- ② RACEWAY IN FIRE ZONE AB-7 IS WRAPPED WITH 1 HOUR RATED RATHER THAN 3 HOUR RATED MATERIAL. THIS INCREASES CALCULATED DCA FOR AFFECTED CABLES, THEREFORE, REVISING TABLES IN ATTACHMENT 2 IS NOT REQUIRED AT THIS TIME.
- ③ SINCE THIS CALC ADDRESSES ALL RACEWAYS THAT APPEARED ON "INSULATION RELEASE" FORMS, CABLES THAT HAD "ON HOLD FOR WRAPPING" STATUS WERE NOT SPECIFICALLY ADDRESSED FOR DERATING AT THIS TIME.
- ④ RACEWAYS 1CH95BPA1 & PA2, IN FIRE ZONE PT-1, ARE DERATED FOR 3 HOUR WRAP PER FIELD REQUEST.
- ⑤ THIS CALC INCORPORATES THE LATEST CONFIRMED DERATING FACTORS FOR THERMO LAG FIRE INSULATION. THIS INFORMATION WAS OBTAINED FROM CORRESPONDENCE BETWEEN SWEC & TSI PER ATTACHMENT 13.
- ⑥ THIS CALC INCORPORATES SPECIFIC JUSTIFICATION CALCULATIONS FOR ANY CABLES WHERE THE DERATED CABLE AMPACITIES WERE LESS THAN THE CABLE SIZING AMPS, WHICH WERE BASED ON CONSERVATIVE ASSUMPTIONS.
- ⑦ THIS CALC TAKES CREDIT FOR GUARANTEED AVERAGE DIAMETERS RATHER THAN GUARANTEED MINIMUM CABLE DIAMETERS FOR 500 VOLT "K & C" CABLE. THIS WILL RESULT IN SLIGHTLY HIGHER DCA'S FOR THESE CABLE TYPES.

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| J.O. OR W.O. NO. <u>12210</u> | DIVISION & GROUP <u>ELECTRICAL</u> | CALCULATION NO. <u>E-218</u> | OPTIONAL TASK CODE <u>N/A</u> | |

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2. LISTING OF ESK'S & SUMMARY OF LOADING VERIFICATION
3. APPENDIX A OF CALCULATION E-137, REV 6
4. ITE TYPE PROTECTIVE RELAYS BULLETIN 7.2.2-1B
5. INSTRUCTION MANUAL FOR 480V LOAD CENTER (242.533-265)
6. AGASTAT TIME DELAY RELAY CATALOG INFORMATION
7. TELCON NOTE - FLOW SWITCH COIL CURRENT
8. CATALOG - GOULD CONTROLFAX 1982, PG 110
9. SPECIAL CASE CABLE AMPACITY CALCULATIONS
10. APPENDIX R INSULATION RELEASE FORMS
11. PANELS 1LAR-PNL1R1B AND 1LAR-PNL19 CONNECTED LOADS.
12. SPECIAL CALCULATION FOR CABLES 1HVKBBL200 & 201, 1HVKDBL200 & 201, 1ENSBBH303 & 304.
13. CORRESPONDENCE BETWEEN SWEC (P.K. GUHA) AND T.S.I. (J.A. RIPPE, JR.) DATED 6/11/85 & 7/5/85.

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1
2
3 I. OBJECT

4 TO DETERMINE THE AFFECT OF FIRE WRAPPING
5 RACEWAYS WITH THERMO-LAG SUBLIMING COATING
6 ENVELOPE SYSTEM IN ACCORDANCE WITH SWEC
7 DWGS. 12210-EE-34YA, YB, YC, YD AND MFR'S INSTRUCTIONS,
8 ON THE ALLOWABLE AMPACITIES OF THE CABLES
9 WITHIN THOSE RACEWAYS. THEN, BASED ON THE "DERATED"
10 AMPACITIES, EVALUATE WHETHER THE CABLES ARE
11 ADEQUATELY SIZED FOR THEIR DESIGNED USE.
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1
2 II. ASSUMPTIONS

3
4 A. CABLE AMPACITIES

- 5
6 1. H-TRAY AND CONDUIT - BASED ON 5KV CABLE SIZING
7 CALCULATION E-167 FOR INDIVIDUAL CIRCUITS.
- 8
9 2. J-TRAY AND CONDUIT - BASED ON 15KV CABLE SIZING
10 CALCULATION E-126-3 FOR INDIVIDUAL CIRCUITS.
- 11
12 3. L-TRAY - BASED ON 600V CABLE SIZING
13 CALCULATION E-137.
- 14
15 4. K-TRAY - BASED ON ETG-II-3-2
16
17 - INTERMITTANT SERVICE: USE IPCEA P46-426
18 WITHOUT DERATING FOR SPACING.
19
20 - CONTINUOUS SERVICE: USE IPCEA P54-440, 2ND ED.
21 WITH 1.5" CALCULATED TRAY DEPTH.
22
- 23 5. C-TRAY - BASED ON ETG-II-3-2
24
25 - INTERMITTENT SERVICE: USE IPCEA P46-426
26 WITHOUT DERATING FOR SPACING.
27
28 - CONTINUOUS SERVICE: USE IPCEA P54-440, 2ND ED.
29 WITH 2.0" CALCULATED TRAY DEPTH
30
- 31 6. CONDUIT - 600V & BELOW - BASED ON 600V CABLE
32 SIZING CALCULATION E-137.
33
34 - NOTE (FROM OKONITE BULLETIN EMB-81); ONLY
35 ONE CABLE OF MAXIMUM 3 CONDUCTORS,
36 FULLY LOADED, PER CONDUIT.
37

38 NOTE: THE ASSUMPTIONS FOR CABLE AMPACITIES IN "K"-TRAY
39 AND "C"-TRAY ARE THE SAME AS THE 600V CABLE
40 SIZING CALCULATION E-137, EXCEPT THE ACTUAL
41 CALCULATED DEPTH OF CABLES IN TRAY IS USED. FOR
42 "C"-TRAY THE CALCULATED DEPTH IS BASED ON 50% ALLOW-
43 ABLE FILL, WHILE THE DEPTH FOR "K"-TRAY IS
44 BASED ON 40% ALLOWABLE FILL.
45
46

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II. ASSUMPTIONS (CONTINUED)

B. CABLE DERATING FACTORS

1. APPENDIX R - FIRE BARRIER MATERIAL DERATING

BASED ON MANUFACTURER'S (T.S.I.) TEST REPORTS SUMMARIZED IN ATTACHMENT #13, THE CABLE AMPACITY DERATING FACTORS ARE AS FOLLOWS:

| | | |
|---------------------------|---|-----------------|
| 1 HOUR CABLE TRAY BARRIER | - | 12.5% DERATING |
| 1 HOUR CONDUIT BARRIER | - | 7.3% DERATING |
| 3 HOUR CABLE TRAY BARRIER | - | 20.55% DERATING |
| 3 HOUR CONDUIT BARRIER | - | 9.7% DERATING |

2. AMBIENT TEMPERATURE DERATING FACTORS

CONDUIT -

H, J, L & K (2*8) - IPCEA P46-426, PG III, FORMULA (5a)

$$ADF = \left[\frac{T_c - T_a' - \Delta TD}{T_c - T_a - \Delta TD} \right]^{1/2} = \frac{I'}{I}$$

FOR 40°C - 1.0
 50°C - 0.9
 65°C - 0.7

K (*10, 12-Power) - NEC 1984, TABLE 310-24

FOR 40°C - 1.0
 50°C - 0.89
 65°C - 0.63

C (CONTROL CABLE) - NEC 1984, TABLE 310-16

FOR 40°C - .91
 50°C - .82
 65°C - .58

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II. ASSUMPTIONS (CONTINUED)

B. CABLE DERATING FACTORS (CONTINUED)

2. AMBIENT TEMPERATURE DERATING FACTORS (CONTINUED)

TRAY -

H, J, L, K, °C - IPCEA P46-426

FOR 40°C - 1.0

50°C - 0.9

65°C - 0.7

3. GROUP DERATING FACTORS

CONDUIT - IPCEA P46-426, PG VI, TABLE IX
 (ASSUME 6 CONDUITS HORIZ) = 0.86

CABLES WITH MAINTAINED SPACING IN
 TRAY - IPCEA P46-426, PG V, TABLE VII
 = 0.82

MULTIPLE CONDUCTOR "C" CABLES IN CONDUIT
 PER NEC-1984, PG 70-151, NOTE 8

| <u>* OF CONDUCTORS</u> | <u>CORRECTION</u> |
|------------------------|-------------------|
| 2-3 | 1.0 |
| 4-6 | 0.8 |
| 7-24 | 0.7 |

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1
2
3 II. ASSUMPTIONS

4 B. CABLE DERATING FACTORS (CONTINUED)

5
6 4. AMPACITY CORRECTION FACTOR FROM
7
8 IPCEA P 54-440, SECTION B

9
10 d) FOR TWO CONDUCTOR CABLE

11
12 d) FOR USE OF 3 COND. CABLE FOR D.C. & 1 ϕ

13
14 c) FOR USE OF MORE THAN 3 CONDUCTORS
15 IN A CABLE. IN CEK TRAY

16
17
18 5. THE DERATING FOR "X"-SERVICE LEVEL
19 CABLE (INSTRUMENTATION) IS ASSUMED
20 TO BE NEGLIGIBLE.
21

22
23
24
25 6. FOR CONTROL CIRCUITS, EITHER THE FUSE
26 RATING WAS USED FOR FULL LOAD AMPS
27 OR ACTUAL LOADS WERE DETERMINED
28 FROM ELEMENTARY DIAGRAMMS AND VENDOR
29 LITERATURE. IF FUSE RATINGS WERE HIGHER
30 THAN DERATED CABLE AMPS, THEN ACTUAL
31 LOADS WERE USED.

32
33
34 7. THE AMBIENT TEMPERATURE OF EACH
35 CIRCUIT WAS DETERMINED FROM THE
36 ENVIRONMENTAL DESIGN CRITERIA (215.150)
37
38
39
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| 12210 | ELECTRICAL | E - 218 | N/A | |

1
2
3 III. METHOD

4 A. THE CABLE SIZE IS BASED ON THREE
5
6 FACTORS IN THE FOLLOWING ORDER.

- 7
8 1. AMPACITY
9
10 2. SHORT CIRCUIT LIMITATIONS
11
12 3. VOLTAGE DROP LIMITATIONS
13

14 WHICH IS SHOWN IN CALCULATION E-137, E-156,
15 E-167, AND E-126. NOTE THAT THIS CALCULATION
16 WILL CHECK FOR CABLE AMPACITY ONLY.
17

18
19
20
21 B. PROCEDURES - REFER TO ATTACHMENT 1

22 FOR THE LISTING OF CABLES.

23 THE DATA SHOWN IN ATTACHMENT

24 WAS COLLECTED AS DESCRIBED BELOW:
25

- 26
27
28 1. LIST ALL RACEWAYS THAT ARE BEING
29 PROTECTED WITH 1 HOUR & 3 HOUR BARRIER
30 MATERIAL AS OUTLINED IN THE APPENDIX R
31 DATA MANAGEMENT SYSTEM
32 AND INSULATION RELEASE FORMS (ATTACHMENT 10)
33
34 2. FROM THE LIST OF RACEWAYS FIND ALL
35 THE CABLES WITHIN EACH RACEWAY BY
36 USE OF THE "ECSIS" REPORT NO EC-6,
37
38
39
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1
2
3 B. PROCEDURES - (CONTINUED)

4 3. RESEARCH EACH CABLE IN THE "ECSIS"
5 REPORT NO. EC-1 AND RECORD THE
6 FOLLOWING:
7

- 8
9
10 - CABLE SIZE
11 (NO. CONDUCTORS, AWG, MATERIAL, VOLT. LEVEL)
12
13 - FROM / TO CONNECTED DEVICE
14
15 - CABLE BLOCK DIAG (CBD) & ELEMENTARY (ESK) NO.
16
17

18 4. DETERMINE THE FULL LOAD AMPS (F.L.A.)
19 OF ALL POWER (J, K, L-SERVICE LEVEL) CIRCUITS
20 BY USING THE MOTOR & LOAD LIST (240.500)
21
22
23

24
25 5. FOR MOTOR-HEATER CIRCUITS DETERMINE
26 THE LOAD FROM THE MOTOR & LOAD LIST.
27
28

29
30 6. FOR CONTROL CIRCUITS (C-SERVICE) USE THE
31 FUSE RATING FOR WORST CASE LOAD UNLESS FUSE
32 IS LARGER THAN DERATED CABLE AMPS. ACTUAL
33 LOADS MAY BE USED IN ANY CASE.
34

35 7. DETERMINE THE DERATED CABLE AMPACITY
36 (D.C.A.) BY CONSIDERING THE FOLLOWING:
37

- 38
39 a) RACEWAY TYPE (K-TRAY, C-TRAY, CONDUIT, ETC.)
40
41 b) AMBIENT TEMPERATURE (40°C, 50°C, 65°C)
42
43 c) USE APPROPRIATE DERATING MULTIPLIERS
44
45 As applicable to each calculation.
46
47

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1
2
3 B. PROCEDURES - (CONTINUED)

4
5 8. DETERMINE THE PROPER DERATED CABLE
6 AMPACITY AND COMPARE TO LOAD.
7 THE DERATED CABLE AMPACITY (D.C.A.)
8 SHOULD BE EQUAL OR GREATER THAN
9 (F.L.A. X 1.25). IF A FUSE OR CIRCUIT BREAKER
10 IS USED AS WORST CASE LOAD, THEN THE DCA
11 CAN BE EQUAL TO OR GREATER THAN THE FUSE/
12 CIRCUIT BREAKER RATING. FOR 5 AND 15 kV
13 CIRCUITS, THE DCA SHALL BE GREATER THAN OR
14 EQUAL TO THE CABLE SIZING AMPS.
15
16
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21
22 9. IF THE DERATED CABLE AMPACITY (D.C.A.)
23 DOES NOT MEET THE LOADING CRITERIA AS
24 DESCRIBED IN PROCEDURE NO. 8 ABOVE
25 THEN THESE CIRCUITS AND ASSOCIATED ESK'S ARE
26 REVIEWED FOR THE ACTUAL CONTINUOUS
27 LOAD. REFER TO ATTACHMENT 2
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IV FORMULA

A. CORRECTION FACTOR FOR OTHER THAN THREE

CURRENT CARRYING CONDUCTORS IN K OR C-TRAY
(APPLIES ONLY TO AMPACITIES TAKEN PER IPCEA P54-440)

$$I_{x'} = \frac{dx'}{do'} I_o' \left(\frac{3}{n_x} \right)^{1/2} \quad (\text{REF 1})$$

WHERE: I_o' = IPCEA P-54-440 TABLE VALUES

$I_{x'}$ = CORRECTED AMPACITY

dx' = DIAMETER OF ACTUAL CABLE
(GUARANTEED AVERAGE O.D.)

do' = DIAMETER OF TABLE REF CABLE

n_x = NUMBER OF CURRENT CARRYING
CONDUCTORS

B. TEMPERATURE CORRECTION FACTORS

(APPLIES ONLY TO AMPACITIES TAKEN PER IPCEA P46-426)

$$I' = I \left[\left(\frac{T_c' - T_a' - \Delta T_D'}{T_c - T_a - \Delta T_D} \right) \left(\frac{x + T_c}{x + T_c'} \right) \right]^{1/2} \quad (\text{REF 2})$$

WHERE: I' = CORRECTED AMPACITY

I = TABLE VALUE

T_c' = ACTUAL CABLE TEMPERATURE, °C

T_a' = ACTUAL AMBIENT TEMPERATURE, °C

T_a = REFERENCE AMBIENT TEMPERATURE, °C

$\Delta T_D'$ = ΔT_D = DIELECTRIC HEAT LOSS CONSTANT

$X = 234.5^\circ\text{C}$ FOR COPPER CABLE
 228.1°C FOR ALUMINUM

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V INPUT / REFERENCES

1. IPCEA P-54-440, 2ND ed - AMPACITIES, CABLES IN OPEN-TOP CABLE TRAYS
2. IPCEA P-46-426, 1962 - POWER CABLE AMPACITIES
3. OKONITE BULLETIN EHB-81 - ENGINEERING DATA, COPPER AND ALUMINUM ELEC CABLES
4. NATIONAL ELECTRIC CODE - 1984
5. CALCULATION E-137, REV 6 - 600V CABLE SIZING
6. CALCULATION E-156, REV 2 - 125 VDC CABLE SIZING
7. ETG - II - 3-2 - CABLE TRAY SYSTEMS
8. FILE NO. 241.200, REV 3 - ELECTRICAL DESIGN CRITERIA FOR INSULATED WIRE AND CABLE
9. ETG - II - 17-0 - RACEWAY FILL AS CALCULATED BY ELECTRICAL CABLE SCHED INFORMATION SYS.
10. THE FOLLOWING INSTALLATION DRAWINGS

| | | | |
|-----------------|--------|--------|--------|
| | | | |
| 12210-EE-34YA-1 | 34YB-1 | 34YC-1 | 34YD-1 |
| ↓ | | | ↓ |

 APPENDIX R RACEWAY FIRE PROT DETAILS
 DETAILS
 OUTLINE
 OUTLINE
11. S&W SPECIFICATION 241.240, REV 1 - 600V CONTROL CABLE
12. ELECTRICAL CABLE SCHEDULE INFORMATION SYSTEM (ECSIS) ISSUE 80 - 6/14/84
13. ETG - II - 7-0 IEEE - IPCEA POWER CABLES
14. 6211.161-970-037B - SELECTED INFORMATION ON THERMO-LAG 330-1 (T.S.I.)
15. ENVIRONMENTAL DESIGN CRITERIA 215.150
16. ELEMENTARY DIAGRAMS (ESK'S) AS LISTED ON PAGES 16 THROUGH 19.

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1
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3 V. INPUTS/REFERENCES (CONTINUED)

4 17. CALCULATION E-126, REV 3 - 15 KV CABLE SIZING

5
6 18. CALCULATION E-167, REV 0 - 5 KV POWER CABLE SIZING

7
8 P. LETTER FROM THERMAL SCIENCE, INC. DATED JULY 5, 1985
9 FROM MR. J.A. RIPPE, JR. (TSI) TO MR. P.K. GUHA (S&W).
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II INPUT/REFERENCES (CONTINUED)

LISTING OF ESK'S & ISSUE

5ENS02-11

05-11
07-13
10-10
11-11
13-7
15-7
17-7
19-8

↓

5RCS03-6

5RCS04-6

5RHS02-10

03-10

↓

5SWP05-16

06-15

↓

6CCP04-8

6CCP05-8

6GTS02-12

6HVC03-9

04-7

↓

06-7

07-7

08-8

12-7

13-9

15-5

18-8

19-7

24-5

↓

6HVFO5-10

06-11

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12-5

14-6

6CCP13-3

6HVK02-9

04-9
06-10
09-6
10-6
11-9
12-7
13-10
15-7
16-1
17-1

↓

6HVN09

6HVN11

6HVP02-7

6HVV07-2

09-2

↓

28-5

6MHW01-2

6SFL02

6SLSO1

6SWP07-12

03-8

↓

09-7

13-6

14-7

15-7

16-8

18-9

19-9

20-7

24-9

25-10

27-5

28-5

35-6

6SWP36-6

38-8
39-4
40-3
50-3
52-3
55-3
56-3
58-3

↓

6EJS02-10

04-8

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05-10

6EGF02-10

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7HVC01-10

03-5

04-8

05-10

07-11

08-8

09-5

10-7

11-10

12-8

15-5

16-5

21-3

22-3

↓

7HVFO7-3

09-2

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03-12

7HVK01-3

7HVK02-1

7HVPO4-3

7HVR18

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V INPUT / REFERENCES (CONTINUED)

LISTING OF ESK'S & ISSUE

7SCC01-6
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 08-7
 09-8
 10-8
 12-6
 16-6
 19-4
 7SWP 15-4
 17-4
 25-4
 26-2
 27-2
 28-1
 8EGS 02-8
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 08-10
 10-11
 14-6
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 8ENS01-5

11EGA03-8
 04-8
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 11EGS 03-5
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 11ESS 01-12
 11ENB01-6
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 7HVV02-3
 7HVV03-2

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 247.130-000-058M
 221.414-000-057P
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 053B
 054N
 055M
 058Q
 057N
 071H
 072M
 075J
 076I
 060P

7ICSO3-
 7RHS04-4
 7SSR04-2
 7SVV03-6
 11BYS06-6
 11EGA01-13
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 11EGF03-9
 11EGSO6-4
 11ENB08-7
 11ICSI1-4
 11SWP13-

221.415-000-031
 102C
 104C
 221.236-000-057K
 216.200-113-033D

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| ANNUNCIATOR ESK# | ISOLATOR ESK# | PWR SPLY ESK# | FUSE RATING | DIST PANEL |
|---------------------|------------------|--------------------------|----------------|----------------------------|
| 10ANN03-8 | 10IHA208-3 | 10IHA230-4 | 5A | 1ENB*PNL02B 1ENB*PNL02A |
| 10ANN08-8 | 10IHA200-5 | 10IHA229-4 | 5A | |
| 10ANN15-6 | 10IHA205-4 | 10IHA229-4 | 5A | ↓ |
| 10ANN16-6 | 10IHA204-5 | 10IHA230-4 | 5A | 1ENB*PNL02B |
| 10ANN17-6 | 10IHA202-6 | 10IHA229-4 10IHA230-4 | 5A | 1ENB*PNL02A 1ENB*PNL02B |
| 10ANN18-6 | 10IHA206-5 | 10IHA230-4 | 5A | 1ENB*PNL02B |
| 10ANN23-8 | 10IHA205-4 | 10IHA230-4 | 5A | ↓ |
| 10ANN26-4 | 10IHA202-6 | 10IHA230-4 | 5A | |
| 10ANN28-6 | 10IHA200-5 | 10IHA230-4 | 5A | |
| 10ANN29-4 | 10IHA212-7 | 10IHA232-4 | 5A | |
| 10ANN31-7 | 10IHA209-5 | 10IHA230 | 5A | |
| 10ANN33-9 | 10IHC211-11 | 10IHC221-5 | 5A | |
| 10ANN33-5 | 10IHA203-3 | 10IHA230 | 5A | |
| 10ANN41-7 | 10IHA210-7 | 10IHA230 | 5A | |
| 10ANN49-7 | 10IHA212-7 | 10IHA232-4 | 5A | |
| 10ANN108-5 | 10IHA219-6 | 10IHA232 | 5A | |
| 10ANN110-4 | 10IHA215-4 | 10IHA231-4 | 5A | 1ENB*PNL02A |
| 10ANN123-4 | 10IHA217-7 | 10IHA231-4 | 5A | ↓ |
| 10ANN124-3 | 10IHA205-4 | 10IHA229 | 5A | |
| 10ANN127-3 | 10IHA214-8 | 10IHA231 | 5A | ↓ |
| 10ANN130-3 | 10IHA217-7 | 10IHA232 | 5A | |

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| ANNUNCIATOR ESK * | ISOLATOR ESK * | PWR SPLY ESK * | FUSE RATING | DIST. PANEL |
|----------------------|-------------------|-------------------|----------------|----------------|
| 10ANN20-8 | | | | |
| 10ANN21-7 | | | | |
| 10ANN42-7 | | | | |
| 10ANN43-4 | | | | |
| 10ANN44-7 | | | | |
| 10ANN47-6 | | | | |
| 10ANN126-5 | | | | |
| 10ANN133-4 | | | | |

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| <u>12210</u> | <u>ELECTRICAL</u> | <u>E-218</u> | <u>NA</u> | |

1
2 VI CONCLUSIONS

3
4 A. AMPACITY CHARTS OF DERATED CABLE AMPS

- 5
6 1. 460 Vac, 3 ϕ CONTINUOUS LOADING - PG. 24 & 28
7
8 2. 460 Vac, 3 ϕ INTERMITTENT LOADING - PG. 33
9
10 3. 120 Vac & 125 Vdc CONTINUOUS LOADING - PG 29,30,31
11
12 4. 120 Vac & 125 Vdc INTERMITTENT LOADING - PG 33
13
14 5. *16 AWG 300V CABLE USED FOR
15 CONTROL CIRCUITS - PG 34 & 35
16

17
18 6. ALL CABLES MEET THE REQUIREMENTS FOR
19 DERATED CABLE AMPS EXCEPT THE FOLLOWING
20 LISTED CABLES:

21 IHVKBBC515 - SEE SPECIAL CALCULATION
22 IN ATTACHMENT 9.

23
24 ISCABNK508 - SEE SPECIAL CALCULATION
25 IN ATTACHMENT 9.

26
27 ISCAANK500 - LOAD LIMITED TO 9 KVA PER
28 CALCULATION E-182.

29
30 IHVKDBC506 - SEE SPECIAL CALCULATION
31 IN ATTACHMENT 9.

32
33 IENSBBH300 - SEE SPECIAL CALCULATION
34 IN ATTACHMENT 9

35
36
37
38 7. THE AMPACITY CHARTS ARE BASED ON CABLE TRAY
39 NOT EXCEEDING 100% OF ALLOWABLE FILL, WHERE 100%
40 ALLOWABLE FILL IS DEFINED AS:

41 K TRAY \Rightarrow 40% OF USABLE AREA
42 C TRAY \Rightarrow 50% OF USABLE AREA

43
44
45
46 SEE ATTACHMENT 3

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| 12210 | ELECTRICAL | E-218 | NA | |

VI CONCLUSIONS (CONTINUED)

8. THE FOLLOWING CABLES HAVE BEEN PARALLELED TO ACHIEVE ADEQUATE CABLE AMPACITY FOR ASSOCIATED LOADS:

1CSHNØK607 (ALL 3 CONDUCTORS TO SAME POLE)
 1CSHNØK608 (ALL 3 CONDUCTORS TO SAME POLE)
 1CSHNØK601 (ALL 3 CONDUCTORS TO SAME POLE)
 1CSHNØK603 (ALL 3 CONDUCTORS TO SAME POLE)

1HVKBBL200 || 1HVKBBL201
 1HVKDBL200 || 1HVKDBL201

1EHSBBL204 || 1EHSBBL205

1ENSBBH303 || 1ENSBBH304

1CSHCØH301 || 1CSHCØH306

1BYSANL605 || 1BYSANL618
 1BYEBNL605 || 1BYEBNL618

1NH5BNL216 || 1NH5BNL235

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| 12210 | ELECTRICAL | E-218 | N/A | |

1
2
3 VII CALCULATIONS

4 A. AMPACITIES OF 460V, 3 ϕ CONTINUOUS LOADING

5
6 THE AMPACITY OF CABLES USED FOR 460 VAC, 3 ϕ
7 CONTINUOUS DUTY LOAD APPLICATION ENCLOSED
8 IN ONE & THREE HOUR RATED FIRE BARRIER
9 IS SHOWN ON CHART 1, PAGE 24 & 28. THIS CHART
10 IS BASED ON THE FOLLOWING.
11
12
13
14
15

16 I. K-TRAY

17
18
19 a) FROM IPCEA P-54-440, 2ND ED, ^{1st table 21, Page IX}
20 TABLES & 6, PAGE IV, 1.5" CALCULATED
21 DEPTH OF CABLE IN TRAY. THE BASIS
22 FOR 1.5" IS DERIVED IN APPENDIX A OF
23 CALC E-137. (SEE ATTACHMENT 3)
24
25

26 b) CORRECT FOR AMBIENT TEMPERATURE

27 MULTIPLY CHART VALUE FROM (a) ABOVE BY:

28 1.0 FOR 40°C AMBIENT

29 0.9 FOR 50°C AMBIENT

30 0.7 FOR 65°C AMBIENT

31 c) CORRECT FOR FIRE BARRIER MATERIAL. MULTIPLY

32 AMBIENT CORRECTED VALUE FROM (b) ABOVE BY:

33 0.875 FOR 1 HOUR RATED BARRIER

34 0.795 FOR 3 HOUR RATED BARRIER
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VII. CALCULATIONS (CONTINUED)

A. AMPACITIES OF 460V, 3 ϕ CONTINUOUS LOADING (CONTINUED)

2. CONDUIT

a) CABLE AMPACITY

1) WIRE SIZE 8 AWG & LARGER - FROM IPCEA P-46-426. WHERE 3 1/2 CABLES ARE USED FOR A CABLE TYPE, TRIPLEXED AMPACITIES ARE USED FROM APPROPRIATE IPCEA TABLE.

2) WIRE SIZES #10 & #12 AWG - FROM NATIONAL ELECTRIC CODE, 1984, TABLE 310-24 FOR 3 CONDUCTOR CABLES.

b) MULTIPLY VALUES DETERMINED IN (a) ABOVE BY 0.86 FOR GROUP CORRECTION OF 6 CONDUCTORS IN HORIZONTAL ROW WITH LESS THAN ONE CONDUIT DIAMETER SPACING.

c) MULTIPLY THE GROUP CORRECTED VALUES, FROM (b) ABOVE, BY:

1.0 FOR 40° C AMBIENT
0.9 FOR 50° C AMBIENT (0.89 FOR #10 & #12)
0.7 FOR 65° C AMBIENT (0.63 FOR #10 & #12)

d) CORRECT FOR FIRE BARRIER MATERIAL. MULTIPLY AMBIENT CORRECTED VALUES, FROM (c) ABOVE, BY:

0.927 FOR 1 HOUR RATED BARRIER
0.903 FOR 3 HOUR RATED BARRIER

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CHART 1
(CONTINUED)

| CABLE SIZE | CABLE TYPE | L - TRAY | | | | | | |
|------------|------------|-----------------|------|------|------|------|------|------|
| | | I (FREE AIR) | 40°C | | 50°C | | 65°C | |
| | | | 1HR | 3HR | 1HR | 3HR | 1HR | 3HR |
| 12 | 3/C-CU | | | | | | | |
| 10 | 3/C-CU | | | | | | | |
| 8 | 3/C-CU | | | | | | | |
| 6 | TRIPLEX-CU | 89 | 63.9 | 58.0 | 57.5 | 52.2 | 44.8 | 40.6 |
| 4 | TRIPLEX-CU | 117 | 84.0 | 76.3 | 75.6 | 68.7 | 58.9 | 53.4 |
| 2 | TRIPLEX-CU | 158 | 113 | 103 | 102 | 92.8 | 79.5 | 72.0 |
| 2/0 | TRIPLEX-AL | 193 | 139 | 126 | 125 | 113 | 97.1 | 88.0 |
| 250 | TRIPLEX-AL | 292 | 210 | 190 | 189 | 171 | 147 | 133 |
| 350 | TRIPLEX-AL | 364 | 261 | 237 | 235 | 214 | 183 | 166 |
| 500 | 3-1/C-AL | 458 | 329 | 299 | 296 | 269 | 230 | 209 |
| 750 | 3-1/C-CU | 747 | 536 | 487 | 483 | 438 | 376 | 341 |

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| 12210 | ELECTRICAL | E-218 | N/A | |

VII CALCULATIONS (CONTINUED)

B. AMPACITIES OF 120V 1 ϕ & 125VDC CONTINUOUS LOADED CONTROL CABLE.

THE AMPACITY OF CABLES USED FOR 120VAC 1 ϕ & 125VDC CONTROL CONTINUOUS DUTY LOADING WHICH IS ENCLOSED IN ONE & THREE HOUR RATED FIRE BARRIER IS SHOWN ON CHART 2 PAGE 29 & 30.

THIS CHART IS BASED ON THE FOLLOWING.

1. C-TRAY

a) FROM IPCEA P-54-440 (2nd ED) TABLE 3 ON PAGE iii, 2.0" CALCULATED DEPTH OF CABLE IN TRAY, AS CALCULATED ON PAGE 3 OF ATT. 3.

b) CORRECT FOR TWO CONDUCTOR CABLE AND MORE THAN THREE CONDUCTOR CABLE IN ACCORDANCE WITH IPCEA P-54-440:

$$I_x' = \frac{dx'}{do'} I_o' \left(\frac{3}{n_x} \right)^{1/2}$$

WHERE I_o' = TABLE VALUE (FROM (a) ABOVE)

I_x' = CORRECTED AMPACITY

dx' = GUARAN. AVERAGE CABLE O.D. (FROM SPEC 241.240)

do' = DIAMETER OF REFERENCE CABLE (FROM (a) ABOVE)

n_x = NO. OF CURRENT CARRYING CONDUCTORS

SEE CHART NO. 3 ON PAGE 31

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| <u>12210</u> | <u>ELECTRICAL</u> | <u>E-21B</u> | <u>N/A</u> | |

1
2 VII. CALCULATIONS (CONTINUED)
3

4 B. AMPACITIES OF 120V, 1 ϕ & 125Vdc CONTINUOUS LOADED CONTROL
5 CABLE (CONTINUED)

6 1. C-TRAY (CONTINUED)

7
8 c) CORRECT FOR AMBIENT TEMPERATURE:

9
10 1.0 FOR 40°C AMBIENT
11 0.9 FOR 50°C AMBIENT
12 0.7 FOR 65°C AMBIENT
13

14 d) CORRECT FOR FIRE BARRIER MATERIAL. MULTIPLY
15 AMBIENT CORRECTED VALUES FROM (c) ABOVE
16 BY:
17

18 0.875 FOR 1 HOUR BARRIER
19 0.795 FOR 3 HOUR BARRIER
20

21 2. CONDUIT

22
23 a) FROM NATIONAL ELECTRIC CODE - 1984, TABLE
24 310-16, FOR 90°C CONDUCTOR TEMPERATURE,
25 UP TO 3 CONDUCTORS.
26

27 b) CORRECT CONDUCTOR AMPACITY FOR AMBIENT
28 TEMPERATURE. MULTIPLY BY AMBIENT
29 CORRECTION FACTOR FROM TABLE 310-16:
30

31 0.91 FOR 40°C AMBIENT
32 0.82 FOR 50°C AMBIENT
33 0.58 FOR 65°C AMBIENT
34
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| <u>12210</u> | <u>ELECTRICAL</u> | <u>E-218</u> | <u>N/A</u> | |

1
2
3 VII. CALCULATIONS (CONTINUED)

4 B. AMPACITIES OF 120V, 1 ϕ & 125 Vdc CONTINUOUS LOADED CONTROL
5 CABLE (CONTINUED)

6 2. CONDUIT (CONTINUED)

7
8 c) CORRECT FOR NUMBER OF CONDUCTORS IN CABLE.
9 MULTIPLY VALUES FROM (b) BY CORRECTION
10 FACTOR FROM NEC, NOTE 8 TO TABLES 310-16
11 THROUGH 310-19:

12
13 1.0 FOR 1 TO 3 CONDUCTORS
14 0.8 FOR 4 TO 6 CONDUCTORS
15 0.7 FOR 7 TO 24 CONDUCTORS

16
17 d) CORRECT FOR FIRE BARRIER MATERIAL. MULTIPLY
18 MULTICONDUCTOR CORRECTED VALUES FROM
19 (c) ABOVE BY:

20
21 0.927 FOR 1 HOUR BARRIER
22 0.903 FOR 3 HOUR BARRIER
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CHART 1
480V CONTINUOUS LOAD CABLE AMPACITY
 NOTE: K-TRAY IS BASED ON 1.5" CALC CABLE DEPTH
 → AS PER ICEA P-54-440 (Second Edition), Page 1

* PER NEC, THESE VALUES AFTER DERATING OR 20A AND 30A FOR #12 & #10 WIRE, RESPECTIVELY SHALL BE USED, WHICHEVER IS LESS.

| CABLE SIZE | TYPE / MATERIAL | K-TRAY, OPEN TOP | | | | | | CONDUIT | | | | | | | |
|------------|-----------------|------------------|------|----------|------|----------|------|---------|-------------|------|------|------|------|------|------|
| | | 40°C | | (9) 50°C | | (7) 65°C | | 40°C | | 50°C | | 65°C | | | |
| | | NO DERATING | 1HR | 3HR | 1HR | 3HR | 1HR | 3HR | NO DERATING | 1HR | 3HR | 1HR | 3HR | 1HR | 3HR |
| #12 | 3/C-CU | 11 | 10.7 | 9.7 | 9.6 | 8.7 | 7.4 | 6.8 | 31* | 20 | 20 | 20 | 20 | 15.6 | 15.2 |
| #10 | 3/C-CU | 17 | 16.3 | 14.8 | 14.7 | 13.4 | 11.4 | 10.4 | 40* | 30 | 30 | 28.4 | 27.6 | 20.1 | 19.6 |
| #8 | 3/C-CU | 27 | 25.2 | 22.9 | 22.7 | 20.6 | 17.6 | 16.0 | 52 | 41.4 | 40.4 | 37.3 | 36.3 | 29 | 28.3 |
| #6 | TRIPLEX-CU | 35 | 30.6 | 27.8 | 27.5 | 25.0 | 21.4 | 19.5 | 75 | 59.8 | 58.3 | 53.8 | 52.4 | 41.9 | 40.8 |
| #4 | TRIPLEX-CU | 50 | 43.8 | 39.8 | 39.4 | 35.8 | 30.6 | 27.9 | 97 | 77 | 75 | 70 | 68 | 54 | 53 |
| #2 | TRIPLEX-CU | 73 | 64 | 57.9 | 57.4 | 52.2 | 44.7 | 40.6 | 130 | 104 | 101 | 93 | 91 | 73 | 71 |
| #210 | TRIPLEX-AL | 115 | 100 | 90.9 | 90.1 | 81.9 | 70.0 | 63.7 | 159 | 127 | 124 | 114 | 111 | 89 | 86 |
| 250 | TRIPLEX-AL | - | - | - | - | - | - | - | 249 | 198 | 193 | 179 | 174 | 139 | 135 |
| 350 | TRIPLEX-AL | - | - | - | - | - | - | - | 303 | 241 | 235 | 218 | 212 | 169 | 165 |
| 350 | 3-1/C-CU | - | - | - | - | - | - | - | 384 | 306 | 298 | 276 | 268 | 214 | 209 |
| 500 | 3-1/C-AL | - | - | - | - | - | - | - | 381 | 304 | 296 | 274 | 266 | 213 | 207 |
| 500 | 3-1/C-CU | - | - | - | - | - | - | - | 477 | 380 | 371 | 342 | 333 | 266 | 259 |
| 750 | 3-1/C-CU | - | - | - | - | - | - | - | 598 | 477 | 465 | 429 | 418 | 334 | 325 |

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4 1/2" x 11" x 1/2"

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CHART 2

AMPACITIES OF 600V COPPER CABLE USED FOR 120 Vol, 1Ø & 125 Vdc CONTROL CABLE, CONTINUOUS LOADING, INCLUDING FIRE BARRIER DERATING.

| CABLE SIZE | CABLE TYPE | I _N | C-TRAY | | | | | | CONDUIT | | | | | | |
|------------|------------|----------------|---------------|---------------|---------------|---------------|---------------|---------------|-----------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | | | 40°C | | 50°C | | 65°C | | 30-16 (KNEE) | 40°C | | 50°C | | 65°C | |
| | | | 1HR (.875) | 3HR (.715) | 1HR (.787) | 3HR (.716) | 1HR (.612) | 3HR (.557) | | 1HR (.844) | 3HR (.822) | 1HR (.700) | 3HR (.740) | 1HR (.528) | 3HR (.501) |
| 14 | 2/c CU | 7.95 | 7.0 | 6.3 | 6.3 | 5.7 | 4.9 | 4.4 | 25 | 15 | 15 | 15 | 15 | 13.5 | 13.1 |
| 14 | 3/c CU | 6.84 | 6.0 | 5.4 | 5.4 | 4.9 | 4.2 | 3.8 | 25 | 15 | 15 | 15 | 15 | 13.5 | 13.1 |
| 14 | 5/c CU | 6.21 | 5.4 | 4.9 | 4.9 | 4.4 | 3.8 | 3.5 | 20 | 15 | 15 | 15 | 14.8 | 10.8 | 10.5 |
| 14 | 7/c CU | 6.01 | 5.3 | 4.8 | 4.7 | 4.3 | 3.7 | 3.3 | 17.5 | 14.8 | 14.4 | 13.3 | 13 | 9.4 | 9.2 |
| 14 | 12/c CU | 5.96 | 5.2 | 4.7 | 4.7 | 4.3 | 3.6 | 3.3 | 17.5 | 14.8 | 14.4 | 13.3 | 13 | 9.4 | 9.2 |
| 12 | 2/c CU | 10.23 | 9.0 | 8.1 | 8.1 | 7.3 | 6.3 | 5.7 | 30 | 20 | 20 | 20 | 20 | 16.1 | 15.7 |
| 12 | 3/c CU | 8.82 | 7.7 | 7.0 | 6.9 | 6.3 | 5.4 | 4.9 | 30 | 20 | 20 | 20 | 20 | 16.1 | 15.7 |
| 12 | 5/c CU | 8.52 | 7.5 | 6.8 | 6.7 | 6.1 | 5.2 | 4.7 | 24 | 20 | 19.7 | 18.2 | 17.8 | 12.9 | 12.6 |
| 12 | 7/c CU | 7.77 | 6.8 | 6.2 | 6.1 | 5.6 | 4.8 | 4.3 | 21 | 17.7 | 17.3 | 16 | 15.6 | 11.3 | 11.0 |
| 12 | 9/c CU | 7.88 | 6.9 | 6.3 | 6.2 | 5.6 | 4.8 | 4.4 | 21 | 17.7 | 17.3 | 16 | 15.6 | 11.3 | 11.0 |
| 12 | 12/c CU | 7.68 | 6.7 | 6.1 | 6.0 | 5.5 | 4.7 | 4.3 | 21 | 17.7 | 17.3 | 16 | 15.6 | 11.3 | 11.0 |
| 10 | 2/c CU | 15.22 | 13.3 | 12.1 | 12.0 | 10.9 | 9.3 | 8.5 | 40 | 30 | 30 | 30 | 29.6 | 21.5 | 21.0 |
| 10 | 4/c CU | 13.10 | 11.5 | 10.4 | 10.3 | 9.4 | 8.0 | 7.3 | 32 | 27 | 26.3 | 24.3 | 23.7 | 17.2 | 16.8 |
| 10 | 7/c CU | 11.62 | 10.2 | 9.2 | 9.2 | 8.3 | 7.1 | 6.5 | 28 | 23.6 | 23 | 21.3 | 20.7 | 15.1 | 14.7 |
| 10 | 12/c CU | 12.20 | 10.7 | 9.7 | 9.6 | 8.7 | 7.5 | 6.8 | 28 | 23.6 | 23 | 21.3 | 20.7 | 15.1 | 14.7 |
| 8 | 2/c CU | 24.57 | 21.6 | 19.6 | 19.4 | 17.7 | 15.1 | 13.8 | 55 | 46.4 | 45.2 | 41.8 | 40.8 | 29.6 | 28.8 |
| 8 | 4/c CU | 20.16 | 17.6 | 16.0 | 15.9 | 14.4 | 12.3 | 11.2 | 44 | 37.1 | 36.2 | 33.4 | 32.6 | 23.7 | 23.1 |
| 8 | 7/c CU | 18.94 | 16.6 | 15.1 | 14.9 | 13.6 | 11.6 | 10.5 | 38.5 | 32.5 | 31.6 | 29.3 | 28.5 | 20.7 | 20.2 |
| 8 | 12/c CU | 18.59 | 16.3 | 14.8 | 14.6 | 13.3 | 11.4 | 10.4 | 38.5 | 32.5 | 31.6 | 29.3 | 28.5 | 20.7 | 20.2 |

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|-----------------------------------|---------------------------------------|---------------------------------|----------------------------------|--------------------------------|
| J.O. OR W.O. NO. <u>122-10</u> | DIVISION & GROUP <u>ELECTRICAL</u> | CALCULATION NO. <u>E-218</u> | OPTIONAL TASK CODE <u>N/A</u> | |

CHART 2
(CONTINUED)

| K - TRAY | | | | | | | |
|--------------------|----------------|------|------|------|------|------|------|
| I _o (A) | I _x | 40°C | | 50°C | | 65°C | |
| | | 1HR | 3HR | 1HR | 3HR | 1HR | 3HR |
| 7 | 9.27 | 8.1 | 7.4 | 7.3 | 6.6 | 5.7 | 5.2 |
| 7 | 7.98 | 7.0 | 6.3 | 6.3 | 5.7 | 4.9 | 4.4 |
| 7 | 7.25 | 6.3 | 5.8 | 5.7 | 5.2 | 4.4 | 4.0 |
| 7 | 7.01 | 6.1 | 5.6 | 5.5 | 5.0 | 4.3 | 3.9 |
| 7 | 6.95 | 6.1 | 5.5 | 5.5 | 5.0 | 4.3 | 3.9 |
| 10 | 12.79 | 11.2 | 10.2 | 10.1 | 9.2 | 7.8 | 7.1 |
| 10 | 11.02 | 9.6 | 8.8 | 8.7 | 7.9 | 6.7 | 6.1 |
| 10 | 10.65 | 9.3 | 8.5 | 8.4 | 7.6 | 6.5 | 5.9 |
| 10 | 9.71 | 8.5 | 7.7 | 7.7 | 7.0 | 5.9 | 5.4 |
| 10 | 9.86 | 8.6 | 7.8 | 7.8 | 7.1 | 6.0 | 5.5 |
| 10 | 9.6 | 8.4 | 7.6 | 7.6 | 6.9 | 5.9 | 5.3 |
| 14 | 17.75 | 15.5 | 14.1 | 14.0 | 12.7 | 10.9 | 9.9 |
| 14 | 15.28 | 13.4 | 12.1 | 12.0 | 10.9 | 9.4 | 8.5 |
| 14 | 13.56 | 11.9 | 10.8 | 10.7 | 9.7 | 8.3 | 7.6 |
| 14 | 14.23 | 12.5 | 11.3 | 11.2 | 10.2 | 8.7 | 7.9 |
| 24 | 29.62 | 25.9 | 23.5 | 23.3 | 21.2 | 18.1 | 16.5 |
| 24 | 24.9 | 21.2 | 19.2 | 19.1 | 17.3 | 14.8 | 13.5 |
| 24 | 22.73 | 19.9 | 18.1 | 17.9 | 16.3 | 13.9 | 12.7 |
| 24 | 22.31 | 19.5 | 17.7 | 17.6 | 16.0 | 13.7 | 12.4 |

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|-----------------------------------|---------------------------------------|---------------------------------|----------------------------------|--------------------------------|
| CALCULATION IDENTIFICATION NUMBER | | | | PAGE <u>31</u> OF <u>35</u> |
| J.O. OR W.O. NO. 12210 | DIVISION & GROUP ELECTRICAL | CALCULATION NO. E-218 | OPTIONAL TASK CODE N/A | |

**CHART 3
CABLE GROUP DERATING CHART**

FROM IEEE P-54-640,
TABLE 3 2.0" CALC DEPTH

| CABLE MA. NO. NGP- | WIRE SIZE AWG | NO CONDUCTORS PX | dx' DIA. OF CABLE | do' DIA. IN TABLE | Io' AMPLITY FROM TABLE | Ix' CABLE AMPLITY |
|--------------------------|---------------------|------------------------|-------------------------|-------------------------|---------------------------------|-------------------------|
| 01 | 14 | 2 | 0.411 | 0.38 | 6 | 7.95 |
| 02 | 14 | 3 | 0.433 | ↓ | ↓ | 6.84 |
| 03 | 14 | 5 | 0.508 | ↓ | ↓ | 6.21 |
| 04 | 14 | 7 | 0.581 | ↓ | ↓ | 6.01 |
| 06 | 14 | 12 | 0.755 | ↓ | ↓ | 5.96 |
| 11 | 12 | 2 | 0.449 | 0.43 | 8 | 10.23 |
| 12 | 12 | 3 | 0.474 | ↓ | ↓ | 9.82 |
| 13 | 12 | 5 | 0.591 | ↓ | ↓ | 8.52 |
| 14 | 12 | 7 | 0.638 | ↓ | ↓ | 7.77 |
| 15 | 12 | 9 | 0.734 | ↓ | ↓ | 7.88 |
| 16 | 12 | 12 | 0.826 | ↓ | ↓ | 7.68 |
| 22 | 10 | 2 | 0.497 | 0.48 | 12 | 15.22 |
| 24 | 10 | 4 | 0.605 | ↓ | ↓ | 13.10 |
| 26 | 10 | 7 | 0.710 | ↓ | ↓ | 11.62 |
| 27 | 10 | 12 | 0.976 | ↓ | ↓ | 12.20 |
| 28 | 8 | 2 | 0.645 | 0.64 | 20 | 24.69 |
| 30 | 8 | 4 | 0.745 | ↓ | ↓ | 20.16 |
| 32 | 8 | 7 | 0.926 | ↓ | ↓ | 18.94 |
| 33 | 8 | 12 | 1.190 | ↓ | ↓ | 18.59 |

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CALCULATION SHEET

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| CALCULATION IDENTIFICATION NUMBER | | | |
|-----------------------------------|--------------------------------|--------------------------|---------------------------|
| J.O. OR W.O. NO. 12210 | DIVISION & GROUP ELECTRICAL | CALCULATION NO. E-218 | OPTIONAL TASK CODE N/A |

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VII CALCULATIONS (CONTINUED)

C. AMPACITIES OF INTERMITTENT LOADING

THE AMPACITY FOR INTERMITTENT LOADING DOES NOT REQUIRE DERATING FOR RACEWAY TYPE OR GROUP DERATING. THE AMPACITIES FOR BOTH K & C SERVICE LEVEL INTERMITTENT CIRCUITS ARE SHOWN BY CHART 4 ON PAGE 33. THIS TABLE WAS DERIVED IN CALCULATION E-137, (600V CABLE SIZING), PAGE 36.

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CALCULATION SHEET

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| CALCULATION IDENTIFICATION NUMBER | | | | PAGE <u>33</u> OF <u>35</u> |
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| J.O. OR W.O. NO. <u>12210</u> | DIVISION & GROUP <u>ELECTRICAL</u> | CALCULATION NO. <u>E-218</u> | OPTIONAL TASK CODE <u>N/A</u> | |

CHART 4
CABLE AMPACITIES FOR INTERMITTENT LOADS
ALL CATEGORIES & RACEWAYS

| CABLE SIZE | TYPE/MATERIAL | ALL RACEWAY | | |
|------------|---------------|-------------|------|------|
| | | 40°C | 50°C | 65°C |
| #12 | 3/C - CU | 21 | 19 | 14 |
| #10 | 3/C - CU | 31 | 28 | 21 |
| #8 | 3/C - CU | 59 | 53 | 41 |
| #6 | TRIPLEX - CU | 89 | 80 | 62 |
| #4 | TRIPLEX - CU | 117 | 105 | 82 |
| #2 | TRIPLEX - CU | 158 | 142 | 111 |
| #2/0 | TRIPLEX - AL | 193 | 173 | 135 |
| #250 | TRIPLEX - AL | 292 | 263 | 204 |
| #350 | TRIPLEX - AL | 364 | 328 | 255 |
| #350 | 1/C - AL | 552 | 497 | 386 |
| #500 | 1/C - AL | 544 | 490 | 381 |
| #500 | 1/C - CU | 695 | 625 | 486 |
| #750 | 1/C - CU | 898 | 808 | 629 |

* ALL AMPACITIES ARE FROM ELECTRICAL CALCULATION
 E-137, PAGE 36.

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| CALCULATION IDENTIFICATION NUMBER | | | | PAGE 34 OF 35 |
|-----------------------------------|--------------------------------|--------------------------|---------------------------|------------------|
| J.O. OR W.O. NO. 12210 | DIVISION & GROUP ELECTRICAL | CALCULATION NO. E-218 | OPTIONAL TASK CODE N/A | |

VII CALCULATIONS (CONTINUED)

D. AMPACITY OF #16 AWG @ 125VDC CONTINUOUS
 LOADING.

THE AMPACITY OF CABLES USED FOR 125VDC
 CONTINUOUS DUTY LOADING IN C-TRAY AT
 40°C AMBIENT TEMPERATURE ENCLOSED IN
 A THREE HOUR BARRIER IS 6.5 AMPS AND
 IS BASED ON THE FOLLOWING:

1.) FROM NATIONAL ELECTRIC CODE, 1934 ED, (NEC)
 TABLE 310-16:

#16 AWG IS 13 AMPS @ 90°C COND TEMP
 30°C AMB TEMP

2.) CORRECT FOR AMPACITY AT 40°C AMB TEMP.

$$I' = I \left[\frac{(T_c' - T_a' - \Delta T_D')}{(T_c - T_a - \Delta T_D)} \right]^{1/2}$$

$$I' = I [.9129]$$

WHERE: I = 13 AMPS

$$I' = 16.43 \text{ A}$$

$$T_c' = T_c = 90^\circ\text{C}$$

$$T_a' = 40^\circ\text{C}$$

$$T_a = 30^\circ\text{C}$$

$\Delta T_D' = \Delta T_D$ WHICH IS ASSUMED NEGLIGIBLE

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| CALCULATION IDENTIFICATION NUMBER | | | | PAGE 35 OF 35 |
|-----------------------------------|--------------------------------|--------------------------|---------------------------|------------------|
| J.O. OR W.O. NO. 12219 | DIVISION & GROUP ELECTRICAL | CALCULATION NO. E-218 | OPTIONAL TASK CODE N/A | |

III CALCULATIONS (CONTINUED)

3) CORRECTION FOR GROUP DERATING

FROM NEC NOTE 8 TO TABLE 310-16

(MORE THAN 43 CONDUCTORS IN A RACEWAY)

GROUP DERATING FACTOR IS 0.50

4) CORRECTION FOR 3 HOUR RATE BARRIER MATERIAL

0.795 FOR 3 HOUR BARRIER

SUMMARY;

DERATED CABLE AMPACITY (D.C.A.) IS ;

$$D.C.A. = (18)(.91)(.50)(.795) = 6.51 \text{ AMPS}$$

E. AMPACITIES OF 5KV AND 15KV CABLES

THE DCA'S FROM THE RESPECTIVE CABLE SIZING CALCULATIONS (E-167 & E-126) ARE MULTIPLIED BY THE APPROPRIATE APPENDIX R DERATING FACTOR.

THE RESULT IS COMPARED TO THE *CSA FOR THE APPROPRIATE CIRCUIT IN ACCORDANCE WITH SECT. III. B.8 FOR CABLE ADEQUACY. WHERE AMBIENT TEMPERATURE USED IN THE RESPECTIVE CALC IS GREATER THAN THE TEMPERATURE SHOWN IN THE ENVIRONMENTAL DESIGN CRITERIA, THE DCA IS CORRECTED FOR TEMPERATURE TO THE CLOSEST AMBIENT ABOVE OR EQUAL TO THE DESIGN CRITERIA TEMPERATURE.

*CSA - CABLE SIZING AMPS

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| CALCULATION IDENTIFICATION NUMBER | | | | PAGE <u>1</u> OF <u>67</u> |
|-----------------------------------|------------------|-----------------|--------------------|-------------------------------|
| J.O. OR W.O. NO. | DIVISION & GROUP | CALCULATION NO. | OPTIONAL TASK CODE | |
| 12210 | ELECTRICAL | E-218 | N/A | |

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ATTACHMENT 1

THE LISTING OF RACEWAYS AND CIRCUITS SHOWN ON
PAGE 2 THRU 27 IS DERIVED AS DESCRIBED IN
SECTION IV OF THIS CALCULATION UNDER PROCEDURES.

CABLE DERATING

FIRE AREA

AB-1

1 HR / 2 HR

AMBIENT TEMP 50°C

| RACEWAY | CABLE NO. | CBL SIZE | LOAD/FLA. | CONNECTED DEVICE | CIRCUIT NO. | CBD/ESK | C/I | D.C.A. | REMARKS |
|-----------|--|---------------------|--------------|----------------------------|--------------------|------------------|-----|--------|--------------|
| ICK812BE2 | ICCPNBK005 | 3/#12 CU 480VAC | 1/3hp / .75A | IEHSVMCC2H ICCP*MOV129 | - | E-330-2 E-330 | I | 19 | N/O DERATING |
| ICC816BC1 | ICCPBBC004 | 5/#12 CU 120VAC | 3AFU | | ICCPB04 | 6CCP05-8 | C | 17.8 | |
| | ICCPNBC506 | 2/#10 CU 120VAC | 25W HR/.21A | ISCV*PNL2H1 | ICLPND7 | 7CCP06 | C | 29.6 | |
| | ISWPNBC709 | 2/#14 CU 125VDC | 5AFU | 1*JB808B ICCP*MOV129 | ISWPN0527 C0527 | 10ANN17-6 | C | 15 | |
| ICC843BD3 | ISWPNBC708 | 2/#14 CU 125VDC | 5AFU | ICCP*MOV16B | | | C | 15 | |
| | ISWPNBC709 | SEE ICC816BC1 ABOVE | | | - | - | - | - | |
| | ISWPNBC730 | 2/#14 CU 125VDC | 5AFU | ICCP*MOV335 | ISWPN0527 C0527 | 10ANN17-6 | C | 15 | N/O DERATING |
| ICK811RH | RACEWAY IS DELETED FROM ECCSIS | | | | - | 330-01 | - | - | CKT DELETED |
| ICK801BA1 | ICNSNBK001 | 3/#6 CU 480VAC | 3/4hp / 2.3A | IEHSVMCC2B ICNSVMOV130 | - | 421-03 | I | 80 | N/O DERATING |
| ICK812BD | ICCPBBK001 | 3/#12 CU 480VAC | 1/3hp / .75A | ICCP*MOV16B | - | 330-01 | I | 19 | " |
| | ICCPNBK005 | | | ICCP*MOV129 | - | 330-02 | I | 19 | " |
| | ICCPNBK006 | | | ICCP*MOV335 | - | 330-03 | I | 19 | " |
| ICC816BB | ICCPBBC002 | 5/#12 CU 120VAC | 3AFU | ICCP*MOV16B | ICCPB03 | 6CCP04-8 | C | 17.8 | |
| | ICCPBBC004 | | 3AFU | ICCP*MOV129 | ICCPB04 | 6CCP05-8 | C | 17.8 | |
| | ICCPBBC006 | | 3AFU | ICCP*MOV335 | ICCPB13 | 6CCP13-3 | C | 17.8 | |
| | ICCPNBC505 | 2/#10 CU | 25W HR/.21A | ICCP*MOV16B | - | 7CCP07 | C | 29.6 | |
| | ISWPNBC708 | 2/#14 CU 125VDC | 5AFU | 1*JB808B " | ISWPN0527 C0527 | 10ANN17-6 | C | 15 | |
| | ISWPNBC709 | | 5AFU | 1*JB808B ICCP*MOV129 | | | C | 15 | |
| | ISWPNBC730 | | 5AFU | 1*JB808B ICCP*MOV335 | | | C | 15 | |
| ICC816BC | ICCPNBC507 | 2/#10 CU 120VAC | 25W HR/.21A | ISCV*PNL2H1 ICCP*MOV335 | - | 7CCP06 | C | 29.6 | |
| | ALL THE OTHER CABLES IN ICC816BC ARE COVERED IN ICC816BB | | | | | | | | - |
| ICK812BE | ICCPNBK005 | SEE ICK812 ABOVE | | | | | | | |
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ATTACHMENT 1
E-2/B

CABLE DERATING

FIRE AREA AB-7

1 HR / 3 HR

AMBIENT TEMP 50°C

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| RACEWAY | CABLE NO. | CBL SIZE | LOAD/FLA. | CONNECTED DEVICE | CIRCUIT NO. | CBD/ESK | C/I | D.C.A. | REMARKS |
|------------|------------------------------------|------------------------|--------------------------------|--------------------------------|------------------|------------------|------|--------|---|
| ICH800BA | IRHSCBH300 | 3-4/0 4160VAC | 700hp / 1630LA/FLA. | IE12 * CO02L | — | EE1L | C | 180.95 | SEE CALL E-127 REV3, PSB & PSI Trey Derating controls. |
| ICH800BB | IRHSBBH300 | 3-11/0 4160VAC | 700hp / 1630LA/FLA. | IE12 * CO02B | — | EE1L | C | 180.95 | |
| ICH802BA | IRHSCBH300 | SAME CABLES ABOVE | | | | | | | |
| ICH802BB | IRHSBBH300 | | | | | | | | |
| ITH802B | SAME CABLES IN ICH802BA & ICH802BB | | | | | | | | |
| ICK810BA1 | ISWPBBK024 | 3/#12 CU 480VAC | 3/4 hp / .23A | IE12 * F068B | — | E-330 | I | 19 | |
| | ISWPNBK001 | | 1/3 hp / .75A | ISWP * MOV173 | — | E-330 | I | 19 | |
| | ISWPNBK002 | | 1/3 hp / .75A | ISWP * MOV174 | — | E-330 | I | 19 | |
| ICK810BA2 | ISWPBBK024 | SAME AS IS ICK810BA1 | | ABOVE | | | | | |
| ICK810BA3 | ISWPNBK001 | | | | | | | | |
| ICK810BA4 | ISWPNBK002 | | | | | | | | |
| ICK811BF | ISWPBBK001 | 3/#12 CU 480VAC | 1.6 hp / 4.0A | IEHS * MCC18B ISWP * MOV96B | — | 319-01 EE-1YB | I | 19 | |
| | ISWPBBK003 | 3/#12 CU 480VAC | 1.6 hp / 4.0A | ISWP * MOV57B | — | 921 EE-1YB | I | 19 | |
| ICK811BF1 | ISWPBBK003 | SAME AS ICK811BF ABOVE | | | | | | | |
| ICK811BF2 | ISWPBBK001 | | | | | | | | |
| ICC843BA | IEJSNBC711 | | | | | | | | |
| | IEJSNBC712 | SPARE CABLES / DAMAGED | | | | | | | |
| | IEJSNBC713 | | | | | | | | |
| IHVRNBC709 | 2/#14 CU 125VDC | 5A FU | IEHS * MCC2H ISWP * MOV173 | IHVRN0529 | 10ANN18-6 | C | 15 | | |
| ILSVNBC702 | | 5A FU | ISWP * MOV174 IEHS * MCC2B | ILSVN0925 | 10ANN108-5 | C | 15 | | |
| ISWPBBC006 | 5/#12 CU 120VAC | 3A FU | IEHS * MCC8B ISWP * MOV96B | ISWP06 | 6SWP07-12 | C | 17.8 | | |
| ISWPBBC009 | | 3A FU | ISWP * MOV57B | ISWP07 | 6SWP08-8 | C | 17.8 | | |
| ISWPBBC011 | | 3A FU | IEHS * MCC2H ISWP * MOV174 | ISWPB34 | 6SWP35 | C | 17.8 | | |
| ISWPBBC013 | | 3A FU | ISWP * MOV173 | ISWPB35 | 6SWP36 | C | 17.8 | | |
| ISWPBBC070 | | 3A FU | IEHS * MCC2F IE12 * F068B | ISWPB37 | 6SWP38 | C | 17.8 | | |
| ISWPBBC511 | 2/#12 CU 120VAC | 2SW MR / .21A | ISCV * PNL2H1 ISWP * MOV96B | — | SCV2H1 7SWP27 | C | 20 | | |
| ISWPBBC518 | | | ISCV * PNL2F1 IE12 * F068B | — | 7SWP27 | C | 20 | | |
| ISWPBBC519 | | | ISCV * PNL2H1 ISWP * MOV96B | — | SCV2H1 7SWP27 | C | 20 | | |

ATTACHMENT 1
E-218

CABLE DERATING

FIRE AREA AB-7

1 HR / CHR

AMBIENT TEMP 50°C

| RACEWAY | CABLE NO. | CBL SIZE | LOAD/F.L.A. | CONNECTED DEVICE | CIRCUIT NO. | CBD/ESK | C/I | D.C.A. | REMARKS | |
|--------------------------------|---|--|--------------|--------------------------------------|-------------|-----------------------|-----|--------|------------------|--|
| ICC843BA | ISWPBBC533 | 2/#12 CU 125VAC | 25W HTR/.21A | 15CV#PNL2H1 15WPA#MOV173 | - | SCV2H1 7SWP28 | C | 20 | | |
| ICC843BA1 BA2 BA3 BA4 | CABLES IN THESE CONDUITS ARE INCLUDED IN ICC843BA | | | | | | | - | - | |
| ICC843BB1 | IRHSNBC512 | 2/#12 CU 125VAC | 50W HTR/.42A | 15CV#PNL2F1 IE12#F003B-110 | - | 7RHS02 | C | 20 | | |
| | IRHSNBC513 | 2/#12 CU 125VAC | 50W HTR/.42A | IE12#F048B-110 | - | 7RHS02 | C | 20 | | |
| | ISWPNBC707 | 5/#14 CU 125VDC | 5AFU | 1#JB8088 1#JB8121 | ISWPN0527 | 10ANN17-6 | C | 14.8 | | |
| | ISWPNBC720 | | | 1#JB8121 15WPA#MOV570 | | | C | 14.8 | | |
| | ISWPNBC722 | | | 15WPA#MOV570 | | | C | 14.8 | | |
| ICC843BC | IRHSBBC527 | 2/#12 CU 120VAC | 10AFU | IE12#LVF065B IH13#P714 | IRHSB22 | RHS117 221.434-061 | C | 20 | SOLENOID CONTACT | |
| | BBC528 | 5/#12 CU 125VDC | 5AFU | 1#JB8277 IH13#P710 | IRHSB26 | ISM106 222.250-01 | C | 17.8 | SOLENOID CONTACT | |
| | BBC603 | 2/#12 CU 125VDC | 10AFU | IE12#F066B IH13#P714 | IRHSB02 | RHS103 221.44-054 | C | 20 | SOLENOID CONTACT | |
| | NBC512 | | | | | | - | - | | |
| | NBC513 | SAME CABLE IS SHOWN IN ICC843BB1 ABOVE | | | | | | | | |
| | ISWPNBC707 | | | | | | - | - | | |
| ICC843BE | IHYRNBC709 | 2/#14 CU 120VDC | 5AFU | 15WPA#MOV173 15WPA#MOV174 | IHYRND529 | 10ANN18-6 | C | 15 | | |
| | ILSVNBC702 | 2/#14 CU 125VDC | 5AFU | 15WPA#MOV174 IEHS#MCC28 | ILSVN0925 | 10ANN108-5 | C | 15 | | |
| | ILSVNBC703 | 2/#14 CU 125VDC | 5AFU | 15WPA#MOV173 15WPA#MOV174 | | 10ANN108-5 | C | 15 | | |
| | IRHSABC500 | 5/#12 CU 120VAC | 5AFU | 1#JB8276 IH13#P710 | IRHSA26 | ISM06 222.250-081 | C | 17.8 | | |
| | ISWPBBC011 | 5/#12 CU | 3AFU | IEHS#MCC2H 15WPA#MOV174 | ISWPB34 | 6SWP356 | C | 17.8 | | |
| | ISWPBBC519 | 2/#10 CU | 25W HTR/.21A | 15CV#PNL2H1 15WPA#MOV501B-4 | - | CCV2H1 7SWP28 | C | 29.6 | | |
| | ISWPBBC535 | 2/#12 CU | 25W HTR/.21A | 15WPA#MOV173-HTR 15WPA#MOV174-HTR | - | 7SWP28 | C | 20 | | |
| | ISWPNBC726 | 2/#14 CU 125VDC | 5AFU | IEHS#MCC16B IEHS#MCC2K | ISWPN0148 | 10ANN28-6 | C | 15 | | |
| ICC843BF | IEJSNBC711 | | | " | | | - | - | | |
| | 712 | CABLE SPARE/DAMAGED | | | | | - | - | | |
| | 713 | CABLE SPARE/DAMAGED | | | | | - | - | | |

ATTACHMENT 1
E-2/B

WIRE AREA C-16

CABLE RATING SUMMARY
1 HR / 3 HR AMBIENT TEMP 40°C

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| RACEWAY | CABLE | CBL SIZE | LOAD/FLA | CONNECTED DEVICE | CIRCUIT NO. | CBD/ESK | C/F | D.C.A. | REMARKS |
|---------|------------|----------------|--------------|------------------------------|-------------|---------|-----|--------|----------------|
| ITC047B | ICCPDBC001 | 9/#12CU 120VAC | 3AFU | 1EH34MCC19B 1H134P730 | ICCPD08 | 6CCP12 | C | 6.3 | |
| | ICCPNBC700 | 2/#14CU 125VDC | 3AFU | 1EH34MCC19B 1EH34MCC19B | ICCPB06 | 6CCP09 | | 6.3 | |
| | ICCPNBC701 | 2/#14CU 125VDC | | 1EH34MCC19B 1H134P730 | ICCPB06 | 6CCP09 | | 6.3 | |
| | IHVCBBC001 | 9/#12CU 120VAC | | 1EH34MCC19B 1EH34MCC19B | IHVCB04 | 6HVC04 | | 7.0 | |
| | IHVCBBC002 | 9/#12CU | | 1EH34MCC19B 1H134P730 | IHVCB03 | 6HVC03 | | 6.3 | |
| | IHVCBBC003 | 2/#12CU | | 1EH34MCC19B IHVC4FS62B | IHVCB03 | ↓ | | 8.1 | |
| | IHVCBBC004 | 2/#12CU | | 1EH34MCC19B IHVC4FS37B | IHVCB04 | 6HVC04 | | 8.1 | |
| | IHVCBBC005 | 9/#12CU | | 1EH34MCC19B 1H134P730 | IHVCB04 | ↓ | | 6.3 | |
| | IHVCBBC006 | 7/#12CU | | | IHVCB05 | 6HVC06 | | 6.2 | |
| | IHVCBBC007 | " | | | IHVCB06 | 6HVC08 | | 6.2 | |
| | IHVCBBC008 | 12/#12CU | | | IHVCB10 | 6HVC12 | | 6.1 | |
| | IHVCBBC009 | 9/#12CU | | | IHVCB11 | 6HVC13 | | 6.3 | |
| | IHVCBBC010 | 5/#12CU | | 1EH34MCC19B IHVC4MOV1B | IHVCB11 | ↓ | | 6.8 | |
| | IHVCBBC011 | 3/#12CU | | 1EH34MCC19B 1EH34MCC19B | IHVCB06 | 6HVC08 | | 7.0 | |
| | 019 | 7/#12CU | | 1EH34MCC19B 1YJB0015 | IHVCB10 | 6HVC12 | | 6.2 | |
| | 017 | 5/#12CU | | " 1YJB0027 | IHVCB10 | ↓ | | 6.8 | |
| | 500 | 3/#12CU | 5AFU | " 1H134P746 | IHVCB22 | 7HVC16 | | 7.0 | |
| | 522 | 2/#12CU | 5AFU | " 1YJB0023 | IHVCB18 | 7HVC09 | | 8.1 | |
| | 525 | 12/#12CU | 5AFU | 1YJB0037 1H134P730 | IHVCB16 | 7HVC12 | | 6.1 | |
| | 532 | 2/#12CU | 60W_HTR/.5A | 1EH34MCC19B IHVC4FN1B-HTR | IHVCB23 | 7HVC21 | | 8.1 | |
| | 534 | 2/#12CU | 60W_HTR/.5A | 1EH34MCC19B IHVC4FN2B-HTR | | | | 8.1 | |
| | 539 | 2/#12CU | 30W_HTR/.25A | " IHVC4FN8B-HTR | | | | 8.1 | |
| | 549 | 5/#12CU | 5AFU | 1EH34MCC19B 1YJB0036 | IHVCB15 | 7HVC10 | | 6.8 | |
| | 584 | 2/#10CU | 5AFU | 1SCV4PNI19B1 1EH34MCC19B | IHVCB16 | 7HVC21 | | 12.1 | |
| | 594 | 3/#12CU | 5AFU | 1EH34MCC19B 1YJB0031 | IHVCB22 | 7HVC16 | | 7.0 | |
| | 606 | 7/#12CU 125VDC | 5AFU | 1YJB0039 1H134P746 | IHVCB16 | 7HVC12 | | 6.2 | |
| | 702 | 2/#14CU | 5AFU | 1EH34MCC19B 1H134P744 | IHVCB0395 | 6HVC04 | | 6.3 | ALARM 101HAE05 |
| | 704 | 2/#14CU | 5AFU | " 1H134P730 | IHVNO574 | 6HVC03 | | 6.3 | ALARM 101HAE06 |

ATTACHMENT 1
E-218

CABLE C RATING SUMMARY

WIRE AREA C-16

1 HR / (EHR) AMBIENT TEMP 40°C

PAGE 13 OF 67

| RACEWAY | CABLE | CBL. IZE | LOAD/F.F. | CONNECTED C.E. IZE | CIRCUIT NO. | 1BD/ ESK | C/I | D.C.A | REMARKS |
|---------|------------|-------------------------------|-----------------|---|----------------|-------------|-----|-------------|----------------------------|
| ITC0478 | IHVCEBC001 | 7/#12CU 120VAC | 3A FU | 1EHS * MCL14B 1H13 * P730 | IHVCE05 | 6HVC06 | C | 6.2 | 10-IMAZ05 |
| | IHVCNBC701 | 2/#14CU 125VDC | 5A FU | 1EHS * MCL14B 1H13 * P744 | IHVCA039B | 7HVC11 | | 6.3 | |
| | IHVCNBC703 | 2/#14CU | 5A FU | | IHVCA0409 | 10ANN15 | | 6.3 | |
| | IHVCNBC704 | 2/#14CU | 5A FU | 1EHS * MCL14B 1EJS YLX1B | | | | 6.3 | |
| | IHVCNBC706 | 2/#14CU | 5A FU | 1EHS * MCL14B 1EHS * MCL14B 1EHS * MCL14B | | | | 6.3 | |
| | IHVFBBC001 | 12/#12CU | 3A FU | 1EHS * MCC08 1H13 * P730 | IHVFB03 | 6HVFO5 | | 6.1 | |
| | IHVFBBC516 | 5/#12CU 120VAC | 20A FU | 1H13 * P746 | IHVFB16 | 7HVFO7 | I | 21 | 15CM # PNL 000 CKT # 80 |
| | IHVFNBC501 | 2/#10CU 120VAC | 120W HTR / 1.0A | 1EJS * AV19B1 1EHS * MCL14B | | 7HVFO9 | C | 12.1 | IHVFNBC501 AFN18H |
| | IHVFNBC700 | 2/#14CU 125VDC | 5A FU | 1EHS * MCC08 1H13 * P744 | IHVFN046 | 10ANN23 | | 6.3 | |
| | IHVFNBC701 | " | 5A FU | | IHVFN0451 | 6HVFO5 | | 6.3 | 10-IMAZ06 |
| | IHVFNBC705 | 2/#14CU | 5A FU | | IHVFN1128 | | | 6.3 | 10-IMAZ15 |
| | IHVKBBC001 | 9/#12CU 120VAC | 3A FU | 1EHS * MCL14B 1H13 * P730 | IHVKB03 | 6HVK06 | | 6.3 | |
| | C002 | 2/#12CU | | 1EJS * LPL1B | IHVKB03 | | | 8.1 | |
| | C003 | 2/#12CU | | IHVCF * FS61B | IHVKB03 | | | 8.1 | |
| | 004 | 2/#12CU | | 1EHS * MCL14B IHVCF * FS36B | | 6HVK06 | | 8.1 | |
| | 005 | " | | IHVCF * F.66B | | | | 8.1 | |
| | 008 | 7/#12CU | | 1H13 * P730 | IHVKB09 | 6HVK09 | | 6.2 | |
| | 009 | 12/#12CU | | " | IHVKB07 | 6HVK11 | | 6.1 | |
| | 010 | 5/#12CU | | 1EHS * MCC08 IHVKA * M0V10B | | | | 6.8 | |
| | 011 | 7/#12CU | | 1H13 * P730 | IHVKB08 | 6HVK12 | | 6.2 | |
| 012 | 5/#12CU | | IHVKA * M0V11B | | | | 6.8 | | |
| 013 | 7/#12CU | | 1H13 * P730 | IHVKB04 | 6HVK13 | | 6.2 | | |
| 016 | 2/#12CU | | IHVCF * FS61B | | | | 8.1 | | |
| 017 | 2/#12CU | | IHVCF * FS36B | | | | 8.1 | | |
| 018 | 2/#12CU | | IHVCF * FS66B | | | | 8.1 | | |
| 019 | " | | IHVKA * CHL1B-A | IHVKB09 | 6HVK09 | | 8.1 | | |
| 502 | 5/#12CU | RELAY CONTACTS NEGLECTIBLE | IHVKA * CHL1B-A | IHVKB02 | 6HVK15 | | 6.8 | 216-210-005 | |
| 504 | 2/#12CU | 90W HTR / 75A | " | | 7HVK01 | | 8.1 | | |

ATTACHMENT 1
E-218

CABLE RATING SUMMARY

IRE AREA C-16

1 HR / (3 HR) AMBIENT TEMP 70°C

PAGE 14 OF 67

| RACEWAY | CABLE | CBL SIZE | LOAD/F.L.A. | CONNECTED DEVICE | CIRCUIT NO. | TRIP/ E.C. | C/I | D.C.A. | REMARKS |
|---------|----------------|-----------------|-------------------------------|---------------------------|-------------------|---------------------|-----|--------|-----------------------------------|
| ITC047B | IHVKBBC508 | 2/#12CU 120VAC | .04A | 15CV#PNL981 14JB0091 | CKT #5 | 15CV#B1 HVKS003 | C | 12.1 | SPEC 247.997 PL 3-3-1 3-3-2 |
| | 509 | 2/#12CU | .02A | 14JB0031 1HVK#TV16B | | 1HVKS003 1HVK#16 | C | 8.1 | |
| | 510 | " | .02A | 1HVK#TV17B | | 1HVK#17 | C | 8.1 | |
| | 519 | 2/#10CU | 18VA / 1.5A | 15CV#AVL#B1 1EHJ#MCC#B | | 15CV#B1 1HVK01 | | 12.1 | |
| | IHVKDBC001 | 3/#12CU | 3AFU | 1EHJ#MCC#B 1H13#P730 | IHVK005 | 6HVK08 | | 7.0 | |
| | 002 | 7/#12CU | | 1HVK#MOV20P | | | | 6.2 | |
| | 003 | 7/#12CU | | 1H13#P730 | IHVK009 | 6HVK10 | | 6.2 | |
| | 004 | 2/#12CU | | 1HVK#CNLID-AM | HVK009 | | | 8.1 | |
| | 502 | 5/#12CU | RELAY CONTACTS NEGLECTIBLE | " | IHVK002 | 6HVK15 | | 6.8 | |
| | IHVKNBC701 | 2/#14CU 125VDC | 5AFU | 1EJ5#LDC1B 1EHJ#MCC#B | IHVKN037 | 10ANN16 | | 6.3 | |
| | 704 | 2/#14CU | | 1EHJ#MCC#B 1EHJ#MCC#B | | 10ANN16 | | 6.3 | |
| | 706 | 2/#14CU | | 1HVK#MOV#B | | | | 6.3 | |
| | 707 | 2/#14CU | | 1HVK#MOV200 | | | | 6.3 | |
| | ISCCBBC545 | 12/#12CU 125VAC | 5AFU | 14JB0009 1EHJ#MCC#B | ISCCB04 | 7SCC08 | | 6.1 | |
| | ISWPBBC006 | 5/#12CU | 3AFU | 1EHJ#MCC#B 1SWP#MOV96B | ISWPB06 | 6SWP07 | | 6.8 | |
| | 041 | 7/#12CU | | 1H13#P730 | ISWPB16 | 6SWP15 | | 6.2 | |
| | 042 | 5/#12CU | | 1SWP#MOV17B | | | | 6.8 | |
| | 043 | 7/#12 | | 1H13#P730 | ISWPB17 | 6SWP16 | | 6.2 | |
| | 044 | 5/#12CU | | 1SWP#M-V506A | ISWPB17 | 6SWP16 | | 6.8 | |
| 058 | 7/#12CU | | 1EHJ#MCC#B 1H13#P730 | ISWPB27 | 6SWP27 | | 6.2 | | |
| 063 | SPARE CABLE | | | | | | | | |
| 066 | 3/#12CU 120VAC | 3AFU | 1EHJ#MCC#B 1H13#P730 | ISWPB30 | 6SWP39 | | 7.0 | | |
| 069 | " | 3AFU | 1SWP#MOV27B | ISWPB29 | 6SWP27 | | 7.0 | | |
| 071 | 5/#12CU | 3AFU | 1EHJ#MCC#B 1EHJ#MCC#B | ISWPB30 | 6SWP39 | | 6.8 | | |
| 072 | " | 3AFU | 1SWP#MOV27B | | | | 6.8 | | |
| 503 | 2/#12CU | 60W HTR/.5A | 1SWP#P3B | ISWPB52 | 7SWP25 | | 8.1 | | |
| 508 | " | 25W HTR/.21A | 15CV#PNL14B1-5 1SWP#MOV27B | | 15CV#B1 7SWP28 | | 8.1 | | |
| 526 | 1/#17CU | 60W HTR/.5A | 15CV#PNL14B1-5 1EHJ#MCC#B | | 15CV#B1 7SWP25 | | 8.1 | CNT#13 | |

ATTACHMENT 1
E-218

RE AREA C-16 CABLE C RATING SUMMARY
 JHR / CIR AMBIENT TEMP 40°C

| CABLE | CBL-1ZE | LOWV/FLA. | CONNECTED DEVICE | CIRCUIT NO. | BD/ ESK | C/I | D.C.A. | REMARKS |
|------------|----------------|----------------------------|---------------------------------|--------------------|---------------------------|-----|--------|--------------------|
| ISWPDBC004 | 7/#12CU 120VAC | 3AFU | IEHS*MC14B IH13*P730 | ISWPD29 | 6SWP28 | C | 6.2 | |
| ISWPDBC006 | 3/#12CU | 3AFU | | ISWPD30 | 6SWP40 | | 7.0 | |
| ISWPDBC007 | 5/#12CU | 3AFU | IEHS*MC14B ISWP*MOV27D | ISWPD29 | 6SWP28 | | 7.0 | |
| ISWPDBC008 | 5/#12CU | 3AFU | IEHS*MC14B | ISWPD30 | 6SWP40 | | 6.8 | |
| ISWPDBC009 | 5/#12CU | 3AFU | IEHS*MC14B | | | | 6.8 | |
| ISWPDBC500 | 2/#12CU | 60W HTR/.5A | ISWP*MOV27D ISCV*PNL14B1 | CKT # 12 | ISCV01 ISWP25 | | 8.1 | |
| ISWPDBC501 | 2/#12CU | 60W HTR/.5A | IEHS*MC14B ISWP*P0D-HTR | | | | 8.1 | |
| ISWPNBC500 | 2/#10CU | RELAY (MATS) RELEASABLE | ISCV*PNL14B1 IYJD0205 | CKT # 10 | ISCV14B1 ISWPR32 | | 12.1 | ISWPNPV4328 32D |
| ICCPNBC500 | 2/#10CU 120VAC | 25W HTR/.21A | ISCV*PNL28B1 ICCP*MOV163-HTR | | ICCP06 | | 12.1 | |
| IEGSBBC500 | 2/#10CU 120VAC | 450VA/ 3.75A | ISCV*PNL14B1 IEGS*PNL28B | CKT # 5 | ISCV14B1 E44*44.15-D11 | | 12.1 | |
| IEGSBBC618 | 9/#12CU | 30AFU | IEHS*SVG18 IH13*P746-A | IEGS003 | BEGS16 | | 6.3 | |
| IEGSBBC952 | 2/#16CU 125VDC | 5AFU | | IEGS1170 | 8EGS10 | | 7.0 | |
| IEGSBBC953 | 2/#16CU 125VDC | 5AFU | | IEGS12721 | 8EGS14 | | 7.0 | |
| IEGSBBC954 | 2/#16CU 125VDC | 5AFU | | IEGS22041 | 8EGS16 | | 7.0 | |
| IEGSNBC701 | 2/#14CU ANN | 5AFU | IEJS*LDX28 IH13*P744-E11 | IEGS0381 | 10ANN38 | | 6.3 | |
| IEGSNBC716 | 2/#14CU 125VDC | 5AFU | IEJS*SVG18 IH13*P744 | IEGSN028 | 8EGS08 | | 6.3 | |
| IEGSNBC717 | 2/#14CU 125VDC | 5AFU | IEJS*SVG18 IH13*P746 | IEGSN017 | 8EGS10 | | 6.3 | |
| IEJSBBC700 | 7/#14CU 125VDC | 1A ALARM | IEJS*LDX28 IH13*P744 -E | IEJSN018 | 11EJS01 | | 4.8 | |
| 701 | 2/#14CU | 5AFU | | IEJSN122 | 10ANN130 | | 6.3 | |
| 950 | 2/#16CU | 5AFU | IEJS*LDX28 IH13*P746 -B | IEJS13240 | 6EJS02 | | 7.0 | |
| 951 | 11 | 5AFU | | IEJS18025 | 6EJS04 | | 7.0 | |
| 953 | 4/#16CU | 5AFU | | IEJS18051 18055 | 11EJS01 | | 7.0 | |
| 954 | 8/#16CU | 5AFU | | IEJS18176 18178 | 10ANN49 | | 7.0 | |
| IEJSDBC951 | 2/#16CU | 5AFU | IEJS*LDX28 IH13*P746 | IEJS18026 | 6EJS04 | | 7.0 | |
| IEJSNBC701 | 2/#14CU | 5AFU | IEJS*LDX28 IH13*P744 | IEJSN0309 | 6EJS05 | | 6.3 | |
| IEJSNBC703 | 2/#14CU | 5AFU | | IEJSN0123 | 10ANN03 | | 6.3 | |
| IEJSNBC705 | 11 | 5AFU | | IEJSN0685 | 10ANN35 | | 6.3 | |

CABLE I RATING SUMMARY
 AIR/PHR AMBIENT TEMP 40°C

WIRE AREA C-16

| FACEWAY | CABLE | CBL. IZE | LOAD/F.L.A. | CONNECTED DEVICE | CIRCUIT NO. | IBD/ EICK | C/I | D.C.A. | REMARKS |
|-------------|----------------|----------------|-------------------------------|---|----------------|--------------|------|----------------------|----------------------|
| ITC048B | 1ENBBFC600 | 2/#12CU 125VDC | 15AFU/.04A | 1ENB*SWG018 1H13*P730 | 1ENBB01 | 11ENB07 | C | 7.0 | INDICATING LIGHTS |
| | 601 | | | | 1ENBB04 | | | 7.0 | |
| | 602 | | | | 1ENBB05 | | | 7.0 | |
| | 603 | | | | 1ENBB06 | | | 7.0 | |
| | 618 | 3/#21CU 125VDC | NEGLIGIBLE | 1ENB*PNL02B 1ENJ*BTCLZ 1ENJ*SWG018 1H13*P746 | 1ENB07 | 1ENB07 | | 7.0 | CALL E-156 |
| | 950 | 8/#16CU 125VDC | 5AFU | | 1ENB02 | | | 7.0 | |
| | 951 | | 5AFU | | 1ENB1263 | 11ENB07 | | 7.0 | |
| | 1EN1ENBC700 | 7/#14CU 125VDC | 1A ALARMS | 1ENB*SWG018 1H13*P744 | 1ENB07 | 11ENB02 | | 4.8 | |
| | 702 | 2/#14CU 125VDC | 5AFU | | 1ENB094 | 10ANN110 | | 6.3 | |
| | 703 | 2/#14CU | 5AFU | | 1ENB094L | 11ENB07 | | 6.3 | |
| 704 | 5/#14CU | 1A ALARMS | | 1ENB1064 11085 | 11 | | 4.9 | | |
| 1ENSBBCS04 | 2/#8CU 120VAC | 300VA/2.5A | 1SCV*PNL851 1ENJ*SWG09A | CKT # 10 | SCVBBT | | 19.6 | ALL CRT 1ENS12210 | |
| 950 | 8/#16CU 125VDC | 5AFU | 1ENJ*SWG018 1H13*P746 | 1ENS12190 1ENS12200 | SENS15 | | 7.0 | | |
| 951 | 2/#16CU 125VDC | 5AFU | | 1ENS12070 | SENS07 | | 7.0 | | |
| 952 | 4/#16CU 125VDC | 5AFU | | 1ENS12130 | SENS10 | | 7.0 | | |
| 955 | 4/#16CU | 5AFU | | 1ENS12155 | SENS19 | | 7.0 | | |
| 1ENSDBC950 | 8/#16CU | 5AFU | 1ENS*SWG018 1H13*P746 | 1ENS12250 | SENS17 | | 7.0 | | |
| 1ENSDBC951 | 4/#16CU | 5AFU | | 1ENS12150 | SENS11 | | 7.0 | | |
| 1ENS NBC701 | 8/#14CU | 5AFU | 1ENS*SWG018 1H13*P744 | 1ENS1210 | SENS11 | | 6.3 | | |
| 1GTSBBC203 | 3/#12CU | 35AFU/.08A | 1ENJ*SWG018 1H13*P744 | 1GTSB01 | 6GTS02 | | 7.0 | | |
| 1HVCBBC200 | 12/#12CU | 35AFU/2.3A | 1ENJ*SWG018 1H13*P730 | 1HVCB01 | 6HVC18 | | 6.1 | | |
| 1HVCBBC204 | 12/#12CU | 35AFU/2.3A | 1EJ*SWG018 1H13*P730 | 1HVCB02 | 6HVC17 | | 6.1 | | |
| 205 | 12/#12CU | 35AFU/2.3A | | 1HVCB12 | 6HVC15 | | 6.1 | | |
| 504 | 2/#12CU | 5AFU | 1EJ*SWG018 1H13*P744 | 1HVCB14 | 7HVC07 | | 8.1 | | |
| 519 | 2/#12CU | 5AFU | 1HJ*SWG036 1EJ*SWG018 | 1HVCB15 | 7HVC10 | | 8.1 | | |
| 530 | 2/#12CU 120VAC | 25VA HTR/21A | 1SCV*PNL10B1 1HVC*MOV18-HR | CKT # 6 | 7HVC22 | | 8.1 | | |
| 536 | 2/#12CU | 110W HTR/12A | 1EJ*SWG018 1HVC*SWG018-NTR | | 7HVC21 | | 8.1 | | |
| 537 | 11 | 110W HTR/17A | 1HVC*SWG018 1H13*P746 | | 7HVC21 | | 8.1 | | |

ATTACHMENT 1
E-2/B

| RACEWAY | CABLE | CBL SIZE | LOAD/F.L.A. | CONNECTED DE-VICE | CIRCUIT NO. | CBD/ESK | C/I | D.C.A. | REMARKS |
|--------------|-----------------|-------------------------------|---------------------------------------|--------------------------------------|----------------------------|----------------------------|------|------------|---|
| ITC 048E | IHV CBC 547 | 2/#10 CU 120VAC | 0.1A | 1 SCV * PNL 1481 1 X JB0106 | CKT # 4 | SCV 1481 IHVC * 36 | C | 12.1 | ATTACHMENT NO. 7 |
| | 548 | 2/#12 CU | 0.5A | 1 X JB0106 IHVC * F536B | 11 | SCV 1481 | | 8.1 | TRAISE LOADS ARE BOTH INCLUDED WITH 547 |
| | 550 | 2/#12 CU | 0.5A | 1 X JB0106 IHVC * F537B | 11 | SCV 1481 | | 8.1 | |
| | 553 | " | 300VA / 2.5A | 1 SCV * PNL 1481 IHVC * F473B-176 | CKT # 20 | SCV 1481 PIS. 220-115-6 | | 8.1 | 225.220 |
| | 585 | 2/#12 CU | 200VA / 1.67A | 1 SCV * PNL 1481 11 | CKT # 21 | " | | 8.1 | EE-3HR |
| | 703 | 2/#14 CU 125VDC | 5A Fu | 1EJS * LDC 1B 1H13 * P744 | IHV CN 545 | 6HVC 19 | | 6.3 | ALARM COMPUTER |
| | 950 | 8/#16 CU 125VDC | 5A Fu | 1EJS * LDC 1B 1H13 * P746 | IHV 19470 B99 | 6HVC 18 | | 7.0 | ALARM IHVC 23022 |
| | 951 | 2/#16 CU | 5A Fu | | IHV C 19162 | 6HVC 15 | | 7.0 | COMPUTER |
| | 952 | 8/#16 CU | 5A Fu | | IHV 19517 19163 | 6HVC 19 | | 7.0 | COMPUTER IHVC 23023 |
| | IHV CNBC 700 | 2/#14 CU | 5A Fu | 1H13 * P744 | IHV CN 0380 | 6HVC 18 | | 6.3 | ALARM |
| | IHV CNBC 705 | 2/#14 CU | 5A Fu | | IHV CN 0572 | 6HVC 15 | | 6.3 | |
| | IHV CZBC 508 | 2/#12 CU 120VAC | 5A Fu | 1RMJ * RE 13B 1 X JB 0024 | IHV CB 14 | 7HVC 07 | | 8.1 | |
| | IHV FABC 500 | 2/#10 CU | 0.05A | 1 SCV * PNL 1481 IHVF * F332A | CKT # 13 | 1 SCV 1481 IHVF * 32 | | 12.1 | ATTACHMENT NO. 7 |
| | IHV FBBC 005 | 7/#12 CU | 3A Fu | 1EJS * MCC 1B 1H13 * P730 | IHV FB 15 | 6HVF 12 | | 6.2 | |
| | IHV FBBC 200 | 9/#12 CU 125VDC | 35A Fu / 3.4 | 1EJS * LDC 1B 1H13 * P730 | IHV FB 04 | 6HVF 14 | | 6.3 | |
| 557 | 2/#12 CU 120VAC | 5A Fu | 1EJS * MCC 1B 1H13 * P730 | IHV FB 05 | 7HVF 03 | | 8.1 | | |
| 700 | 2/#14 CU 125VDC | 5A Fu | 1EJS * LDC 1B 1H13 * P744 | IHV FB 0553 | 6HVF 14 | | 6.3 | 10 IMA 214 | |
| 750 | 2/#16 CU 125VDC | 5A Fu | 1H13 * P746 | IHV F 19473 | 11 | | 7.0 | 10 IHC 211 | |
| IHV KBBC 006 | 3/#12 CU 120VAC | 3A Fu | 1EJS * MCC 1B 1H13 * P730 | IHV KB 05 | 6HVK 07 | | 7.0 | | |
| 007 | 7/#12 CU 120VAC | 11 | IHV K * MON 208 | 11 | 11 | | 6.2 | | |
| 200 | 12/#12 CU | 35A Fu / 2.3 | 1EJS * LDC 1B 1H13 * P730 | IHV KB 01 | 6HVK 02 | | 6.1 | | |
| 202 | 5/#12 CU | 35A Fu / 2.3 | IHV K * CHL 1B-PNL | 11 | 11 | | 6.8 | | |
| 501 | 4/#12 CU | RELAY CONTACTS NEGLECTIBLE | | IHV KB 02 | 6HVK 15 | | 6.3 | | |
| 505 | 2/#12 CU | 100VA ITR / .03A | 1 SCV * PNL 1481 IHV K * M 109-MTK | CKT # 7 | 7HVK 02 | | 8.1 | | |
| 509 | 2/#10 CU | ATTACH NO 7 / .02A | 1 SCV * PNL 1481 1 X JB 0081 | CKT # 5 | SCV 1481 | | 12.1 | | |
| 513 | 3/#12 CU | 220W HTR / 2A | 1EJS * LDC 1B IHV K * CHL 1B | IHV KB 16 | 7HVK 01 | | 7.0 | | |
| 514 | 2/#10 CU | 1250VA / 10.4A | 1 SCV * PNL 1481 IHV K * CHL 1B | CKT # 1 | SCV 1481-7 -10.210-05-0 | | 12.1 | | |
| 515 | 2/#10 CU | 1150VA / 10.9A | | | 11 | | 12.1 | | |

ATTACHMENT 1
E-2/8

CABLE RATING SUMMARY
 AIR/HR AMBIENT TEMP 40°C

WIRE AREA C-16

ATTACHMENT 1
 III - 218

| FACEWLY | CABLE | CBL. IZE | VOLTS | RELAY CONTACTS NEGLIGIBLE | CONNECTED DEVICE | CIRCUIT NO. | SEP/ESK | C/I | D.C.A. | REMARKS |
|------------|------------|----------|--------------|---------------------------|---------------------------|--------------------|-----------------------|-----|--|----------------------|
| ITC0488 | IHVKBBC520 | 2/#12CU | 125VAC | RELAY CONTACTS NEGLIGIBLE | IHVKXCHLID IEJSXLDCCIB | IHVKB02 | 6HVK15 | C | 8.1 | |
| | 521 | 2/#12CU | | | IEJSXLDCCIB IH13XP730 | | | | 12.1 | |
| | 531 | 2/#12CU | | | | | 6HVK15 | | 8.1 | |
| | 950 | 3/#16CU | | 5AFU | IHVKXCHLID IEJSXLDCCIB | IHVKB01 | 6HVK15 | | 7.0 | ALSO CKT IHVKB001 |
| | IHVKBBC004 | 2/#12CU | 125VAC | 3AFU | IHVKXCHLID IEJSXLDCCIB | IHVKB09 | 6HVK10 | | 8.1 | |
| | 200 | 12/#12CU | 125VAC | 35AFU/2.3 | IHVKXCHLID IEJSXLDCCIB | IHVKB01 | 6HVKB04 | | 6.1 | |
| | 202 | 5/#12CU | 125VAC | 35AFU/2.3 | IHVKXCHLID IEJSXLDCCIB | IHVKB01 | | | 6.8 | |
| | 501 | 9/#12CU | 170VAC | RELAY CONTACTS NEGLIGIBLE | IHVKXCHLID IEJSXLDCCIB | IHVKB02 | 6HVK15 | | 6.3 | |
| | 502 | 5/#12CU | | | IHVKXCHLID IEJSXLDCCIB | | | | 6.8 | |
| | 506 | 2/#10CU | | 1550VA/12.9 | IHVKXCHLID IEJSXLDCCIB | CKT # 3 | 5CV801 24.10.008-1 | | 12.1 | |
| | 507 | 11 | | 1250VA/10.4 | IHVKXCHLID IEJSXLDCCIB | CKT # 4 | 11 11 - 8 | | 12.1 | |
| | 509 | 2/#12CU | | RELAY CONTACTS NEGLIGIBLE | IHVKXCHLID IEJSXLDCCIB | IHVKB02 | 6HVK15 | | 8.1 | |
| | 510 | 2/#10CU | | | IHVKXCHLID IEJSXLDCCIB | 11 | 11 | | 12.1 | |
| | 511 | 2/#12CU | | | IHVKXCHLID IEJSXLDCCIB | IHVKB02 | 6HVK15 | | 8.1 | |
| | 950 | 8/#16CU | 125VAC | 5AFU | IHVKXCHLID IEJSXLDCCIB | IHVKB01 19477 | 6HVKB04 | | 7.0 | ALSO CKT IHVKB008 |
| IHVKNBC700 | 2/#14CU | | 5AFU | IHVKXCHLID IEJSXLDCCIB | IHVKN0357 | 10ANN16 | | 6.3 | | |
| 702 | 4/#14CU | | 5AFU | IHVKXCHLID IEJSXLDCCIB | IHVKN067 | 10ANN29 | | 6.3 | | |
| 705 | 2/#14CU | | 5AFU | IHVKXCHLID IEJSXLDCCIB | | | | 6.3 | | |
| 709 | 3/#14CU | | 5AFU | IHVKXCHLID IEJSXLDCCIB | | | | 5.4 | | |
| IHVPBBC204 | 2/#12CU | | 35AFU/12A | IHVKXCHLID IEJSXLDCCIB | IHVKB02 | 6HVKB02 | | 8.1 | | |
| 600 | 5/#12CU | | 5AFU | IHVKXCHLID IEJSXLDCCIB | IHVKB02 | 10ANN41 | | 6.8 | | |
| 950 | 2/#16CU | | 5AFU | IHVKXCHLID IEJSXLDCCIB | IHVKB02 | 6HVKB02 | | 7.0 | | |
| 951 | 7/#16CU | | 5AFU | IHVKXCHLID IEJSXLDCCIB | IHVKB02 | 10ANN41 | | 7.0 | | |
| IHVNBBC700 | 2/#14CU | | 5AFU | IHVKXCHLID IEJSXLDCCIB | IHVNB099 | 6HVNB02 | | 6.3 | | |
| IHVNBBC208 | 5/#12CU | | 35AFU/2.3 | IHVKXCHLID IEJSXLDCCIB | IHVNB02 | 6HVNB02 | | 6.8 | | |
| IHCBNBC500 | 2/#12CU | 170VAC | 20AFU | IHVKXCHLID IEJSXLDCCIB | CKT # 17 | 5CV801 UTL172EJ | | 21 | 241477 P633-6 HTR CAT 1978-190018 | |
| IHSVBC509 | | | .02A | IHVKXCHLID IEJSXLDCCIB | CKT # 23 | 5CV1951 123V10 | | 8.1 | | |
| IHSVBC020 | | | 160W/100/6CA | IHVKXCHLID IEJSXLDCCIB | IRH5878 | 6KHS25 | | 8.1 | | |

CABLE C RATING SUMMARY

IRE AREA C-16

1 HR / ~~2 HR~~ AMBIENT TEMP 40°C

PAGE 19 OF 67

| RACEWAY | CABLE | CBL SIZE | LOAD/F.L.A. | CONNECTED EQUIP | CIRCUIT NO. | FSD/ EQU | C/I | D.C.A. | REMARKS |
|---------|------------|------------------|-------------|----------------------------|----------------|-------------|-----|--------|----------|
| ITC048B | IRHSBBC950 | 4/#16 CU 125VAC | 5AFU | 1EHSYSLG18 1H134P746 | IRHS12550 | 5RHS02 | C | 7.0 | |
| | IRHSCBC951 | 2/#14 CU | 5AFU | 1H134P719 | IRHS12560 | 5RHS03 | | 6.3 | |
| | IRMSNBC508 | 2/#12 CU 25VAC | 1K | 1SCVAPNL1481 1RMSYRE13B | KKT # 16 | SCV1481 | | 8.1 | |
| | ISCCBBC500 | 9/#12 CU 25VAC | 5AFU | 1XJB0068 1H134P730 | ISCCB07 | 7SCC02 | | 6.3 | |
| | ISCCBBC501 | " | " | " | ISCCB07 | 7SCC02 | | 6.3 | |
| | 510 | 12/#12 CU 120VAC | 5AFU | 1XJB0069 1H134P730 | ISCCB04 | 7SCC03 | | 6.1 | |
| | 511 | 9/#12 CU | 3AFU | " | ISCCB08 | | | 6.3 | |
| | 512 | 12/#12 CU | 5AFU | " | ISCCB04 | | | 6.1 | |
| | 513 | 7/#12 CU | 3AFU | " | ISCCB08 | | | 6.2 | |
| | 538 | 2/#12 CU | 5AFU | " | ISCCB04 | | | 6.3 | |
| | 544 | " | 5AFU | 1EHJXMC14B | ISCCB04 | | | 6.3 | |
| | 545 | 12/#12 CU | 5AFU | 1XJB0069 1EHJXMC14B | " | 7SCC08 | | 6.1 | B |
| | 551 | 9/#12 CU | 3AFU | " | ISCCB08 | | | 6.3 | |
| | 552 | " | 3AFU | 1XJB0079 | ISCCB08 | | | 6.3 | |
| | 553 | 12/#12 CU 25VAC | 5AFU | 1H134P744 1XJB0139 | ISCCB01 | 7SCC06 | | 6.1 | |
| | 563 | 2/#12 CU 120VAC | 5AFU | 1XJB0069 1XJB0079 | ISCCB04 | 7SCC08 | | 8.1 | |
| | 566 | " | " | 1EHJXMC15B 1XJB0069 | ISCCB04 | | | 8.1 | |
| | 567 | 7/#10 CU | " | 1EHJXMC16B | ISCCB04 | | | 9.2 | |
| | 568 | 9/#12 CU | 3AFU | 1XJB0069 1H134P730 | ISCCB04 | 7SCC02 | | 6.3 | |
| | 578 | 2/#12 CU 25VAC | 3AFU | 1EHJXMC12F 1XJB0069 | ISCCB08 | 7SCC16 | | 8.1 | |
| | ISFCBBC201 | 2/#12 CU 125VDC | 35AFU/1.23 | 1EJSYLD018 1H134P730 | ISFCB01 | 6SFC02 | | 6.3 | |
| | ISFCBBC700 | 2/#14 CU | 5AFU | " | ISFCB99 | | | 6.3 | |
| | ISFCBBC701 | " | 5AFU | 1H134P746 | ISFCN044 | 10ANN26 | | 6.3 | |
| | ISFCBBC950 | 4/#16 CU | 5AFU | " | ISFCB99 | 6SFC02 | | 7.0 | 105HA201 |
| | ISFCNBC700 | 2/#14 CU | 5AFU | " | ISFCN033 | | | 6.3 | |
| | ISWPBBC042 | 2/#12 CU 120VAC | 3AFU | 1EHJXMC18B 1SWPXM077B | ISWPB16 | 6SWP15 | | 6.0 | |
| | ISWPBBC044 | " | 3AFU | 1SWPXM07506A | ISWPB17 | 6SWP16 | | 6.0 | B |
| | ISWPBBC062 | 2/#12 CU | 3AFU | 1EHJXMC18B | ISWPB17 | 6SWP15 | | 6.7 | |

ATTACHMENT 1
E-218

CABLE L RATING SUMMARY

IRE AREA C-16

1 HR / (1 HR) AMBIENT TEMP 40°C

PAGE 20 OF 67

| RAISEWAY | CABLE | CBL. IZE | LOAD/FLA. | CONNECTED DEVICE | CIRCUIT NO. | FED/ ESK | C/I | D.C.A. | REMARKS |
|----------|------------|------------------|---------------|--------------------------------|--------------------|--------------------|-----|--------|---|
| ITC048B | ISWPBBC300 | 12/#12 CU 120VDC | 35A FU/1.1A | 1ENS4 SWG18 1H13*P730 | ISWPB08 | 5SWP05 | C | 6.1 | B ALSO CWT ISWP19378 ISWP#PWC118 247.491 ALARM |
| | ISWPBBC504 | 2/#10 CU 120VAC | 25W HTR / .2A | 1SCV#PWL4B1 1SWP#MOV77B-HTR | - | 7SWP29 | | 12.1 | |
| | ISWPBBC508 | 2/#12 CU 120VAC | 25W HTR / .2A | 1SCV#PWL4B1 1SWP#MOV77B-HTR | - | 5CV#4B1 7SWP28 | | 8.1 | |
| | ISWPBBC600 | 5/#12 CU | 5A FU | 1ENS4 SWG18 1H13*P746 | ISWPB11 | 11SWP04 | | 6.8 | |
| | ISWPBBC950 | 8/#16 CU 125VDC | 5A FU | 1ENS4 SWG18 1H13*P746 | ISWP12640 19019 | 5SWP05 | | 7.0 | |
| | ISWPDBC300 | 9/#12 CU | 35A FU/1.9A | 1ENS4 SWG18 1H13*P730 | ISWPD08 | 5SWP07 | | 6.3 | |
| | ISWPDBC950 | 4/#16 CU | 5A | 1ENS4 SWG18 1H13*P746 | ISWP12660 19021 | | | 7.0 | |
| | ISWPNBC500 | 2/#10 CU 120VAC | .02A | 1SCV#PWL4B1 1#JB0305 | CKT# 10 | 5CV#4B1 12SWP32 | | 12.1 | |
| | ISWPNBC700 | 5/#14 CU 125VDC | 5A FU | 1ENS4 SWG18 1H13*P744 | ISWPN0125 ND443 | 5SWP07 | | 4.9 | |
| | ISWPNBC701 | 2/#14 CU 125VDC | 5A FU | | ISWPN0148 | 10ANN28 | | 6.3 | |
| | ISWPNBC704 | | 5A FU | | ISWPN0021 | 5SWP05 | | 6.3 | |
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ATTACHMENT 1
E-218

ATTACHMENT 1 E-218

CABLE DERATING SUMMARY

AREA G-16 FIRE-WRAP RATING IHR
3HR

AMBIENT TEMP 40 °C

PAGE 21 OF 67

| ACEWAY | CABLE NO. | CABLE / SERVICE SIZE / VOLTAGE | LOAD / FLA | CONNECTED DEVICE | CIRCUIT NO. | CBD/ESK | C/S | D.C.A. | REMARKS |
|---------------------|-------------|--------------------------------|-------------------------------|------------------------------|-------------------------------------|---------|-----|-----------|--|
| LO12B (63% full) | IHVCBBL200 | (3) 2/0 _N 480VAC | 75HP / 87 FLA 109 CSA | 1EJ5* LDC1B 1HVK* ACU1B | | IAB02 | C | 126 | Reference E-137, Rev 6 Page 30. ↓ |
| | IHVCBBL201 | (3) 2/0 _N 480VAC | 75HP / 85 FLA 107 CSA | 1EJ5* LDC1B 1HVC* ACU2B | | IAB02 | C | 126 | |
| | IHCBBL202 | (3) 2/0 _N 480VAC | 65KW / 82 FLA 103 CSA | 1EJ5* LDC1B 1HVC* PNL1B | Vendor Panel-216 200 HP and 2030 | IAB02 | | 126 | |
| | IHVKBBL200 | (3) 250 _N 480VAC | 250HP / 274 FLA 343 CSA | 1EJ5* LDC1B 1HVK* CHL1B | | IAB02 | C | 380 | |
| | IHVKBBL201 | (3) 250 _N 480VAC | (2) 250 per phase | 1EJ5* LDC1B 1HVK* CHL1B | | IAB02 | C | per phase | |
| | IHVKDBL200 | (3) 250 _N 480VAC | 250HP / 274 FLA 343 CSA | 1EJ5* LDC1B 1HVK* CHL1D | | IAB02 | C | 380 | |
| | IHVKDBL201 | (3) 250 _N 480VAC | (2) 250 per phase | 1EJ5* LDC1B 1HVK* CHL1D | | IAB02 | C | per phase | |
| 001B (0% full) | IHVCBBC533 | (2) #12 _{UN} 120VAC | 5HP / 6.8 FLA 8.5 CSA | 1EHS* MCC14B 1HVC* ACU5B | | 7HVC21 | C | 10.2 | |
| | IHVCBBK001 | (2) #12 _{UN} 600V | .33HP / .75 FLA 1.2 CSA | 1EHS* MCC14B 1HVC* MOV1B | | 321-02 | I | 9 | |
| | 002 | (3) #2 _{UN} 600V | 30 HP / 36 FLA 46 CSA | 1EHS* MCC14B 1HVC* FN 2B | | 3E1-01 | C | 57.9 | |
| | 003 | (3) #2 _{UN} 600V | 25HP / 30 FLA 37.5 CSA | 1EHS* MCC14B 1HVC* FN 1B | | 3E1-01 | C | 57.9 | |
| | 004 | (2) #10 _{UN} 600V | 5 HP / 6.8 FLA 8.5 CSA | 1EHS* MCC14B 1HVC* ACU5B | | 321-01 | C | 14.8 | |
| | 007 | (3) #12 _{UN} 600V | .5HP / .8 FLA 1.0 CSA | 1EHS* MCC14B 1HVC* FN 5B | | 321-02 | C | 9.7 | |
| | 008 | (3) #4 _{UN} 480VAC | 23KW / 28.9 FLA 36.2 CSA | 1EHS* MCC5B 1HVC* FLT5B | | 319-02 | C | 39.8 | |
| | IHVKBBC518 | (2) #12 _{UN} 120VAC | 90W / 0.75 FLA 1.0 CSA | 1EHS* MCC5B 1HVK* PID | | 7HVK01 | I | 9 | |
| | IHVKBBK003 | (3) #12 _{UN} 600V | .13HP / .45 FLA .56 CSA | 1EHS* MCC5B 1HVK* MOV20B | | 319-02 | I | 9 | |
| | 004 | (3) #12 _{UN} 600V | .33HP / .75 FLA .90 CSA | 1EHS* MCC5B 1HVK* MOV10B | | 319-02 | I | 9 | |
| | 005 | (3) #12 _{UN} 600V | .33HP / .75 FLA .90 CSA | 1EHS* MCC5B 1HVK* MOV11B | | 319-02 | I | 9 | |
| | 006 | (3) #2/0 _N 480V | 50 HP / 59 FLA 74 CSA | 1EHS* MCC5B 1HVK* PID | | 319-01 | C | 90.9 | |
| | IHVKDBK001 | (3) #12 _{UN} 600V | 1.5 HP / 3.8 FLA 4.75 CSA | 1EHS* MCC5B 1HVK* CHL1DPL | | 319-02 | C | 9.7 | |
| | 002 | (3) #12 _{UN} 600V | 0.13HP / 0.45 FLA 0.56 CSA | 1EHS* MCC5B 1HVK* MOV20D | | 319-02 | I | 9 | |
| | 003 | (3) #2/0 _N 480V | 50HP / 59 FLA 74 CSA | 1EHS* MCC5B 1HVK* PID | | 319-01 | C | 90.9 | |
| | ISWP.BBK004 | (3) #4 _{UN} 480V | 15HP / 19.5 FLA 24.5 CSA | 1EHS* MCC14B 1SWP* P3B | | 321-01 | C | 39.8 | |

CONT'D

CABLE DERATING SUMMARY

FIRE AREA C-16 FIRE-WRAP RATING 1HR
5HB

AMBIENT TEMP 40 °C

| RACEWAY | CABLE NO. | CABLE / SERVICE SIZE / VOLTAGE | LOAD / FLA | CONNECTED DEVICE | CIRCUIT NO. | CBD/ESK | C/I | D.C.A. | REMARK | | |
|-----------------------|------------|--------------------------------|----------------------------------|---------------------------------|--------------------------------|-------------------------------|---------|--------|-----------------------------|------|--|
| ITK001B (30% fill) | ISWPDBK001 | (3) #12 @ 600V | 0.13HP / 0.43 FLA 0.56 CSA | 1ENS # MCC14B 1SNP # MOV27D | | 321-01 | I | 9 | | | |
| | ISWPDBK002 | (3) #4 @ 480VAC | 15HP / 19.5 FLA 2.5 CSA | 1ENS # MCC14B 1SNP # P3D | | 321-02 | C | 39.8 | | | |
| ITK002B (51% fill) | IENBBBK002 | (3) 2/0 @ 480V | 25 KVA / 52 FLA 2 #4 @ 65 CSA | 1ENS # MCC14B 1ENB # NVO10 | | 321-01 | C | 90.9 | | | |
| | IHVCBBK535 | (2) #12 @ 120VAC | control gear | 1ENS # MCC14B 1HVC # ACUBB | | 7HVC21 | Control | | | | |
| | IHVCBBK001 | (3) #12 @ 600V | .33HP / 0.95 FLA 1.2 CSA | 1ENS # MCC14B 1HVC # NVO10 | | 321-02 | I | 9 | | | |
| | | 002 | (3) #2 @ 600V | 30HP / 36 FLA 4.9 CSA | 1ENS # MCC14B 1HVC # FN2B | | 321-01 | C | 57.9 | | |
| | | 003 | (3) #2 @ 600V | 25HP / 30 FLA 37.5 CSA | 1ENS # MCC14B 1HVC # FN1B | | 321-01 | C | 57.9 | | |
| | | 004 | (3) #10 @ 600V | 5HP / 6.8 FLA 8.9 CSA | 1ENS # MCC14B 1HVC # ACUBB | | 321-01 | C | 14.8 | | |
| | | 006 | (3) #12 @ 600V | 1.5HP / 3.5 FLA 3.2 CSA | 1ENS # MCC14B 1HVC # FN3B | | 321-02 | C | 9.7 | | |
| | | 007 | (3) #12 @ 600V | .5HP / .8 FLA 1 CSA | 1ENS # MCC14B 1HVC # FN3B | | 321-02 | C | 9.7 | | |
| | | IHVCEBK001 | (3) #12 @ 600V | 1.5HP / 2.5 FLA 3.2 CSA | 1ENS # MCC14B 1HVC # FN3B | | 321-02 | C | 9.7 | | |
| | | IHVKBBC518 | (2) #12 @ 120VAC | 90W / 0.75 FLA 1.0 CSA | 1ENS # MCC14B 1HVK # PID | | 7HVK01 | C | 9.7 | | |
| | | IHVKBK002 | (3) #12 @ 600V | 1.5HP / 3.8 FLA 4.75 CSA | 1ENS # MCC14B 1HVK # CH1BPL | | 319-02 | C | 9.7 | | |
| | | | 003 | (3) #2 @ 600V | 25HP / 30 FLA 37.5 CSA | 1ENS # MCC14B 1HVC # FN1B | | 321-01 | C | 57.9 | |
| | | | 004 | (3) #10 @ 600V | 5HP / 6.8 FLA 8.9 CSA | 1ENS # MCC14B 1HVC # ACUBB | | 321-01 | C | 14.8 | |
| | | | 005 | (3) #12 @ 600V | .33HP / 0.95 FLA 1.2 CSA | 1ENS # MCC14B 1HVK # NVO10 | | 321-02 | I | 9 | |
| | | | 006 | (3) 2/0 @ 480V | 50HP / 59 FLA 74 CSA | 1ENS # MCC14B 1HVK # P1B | | 319-01 | C | 90.9 | |
| | | IHVKDBK001 | (3) #12 @ 600V | 1.5HP / 3.8 FLA 4.75 CSA | 1ENS # MCC14B 1HVK # CH1DPL | | 319-03 | C | 9.7 | | |
| | | | 003 | (3) 2/0 @ 480V | 50HP / 59 FLA 74 CSA | 1ENS # MCC14B 1HVK # P1D | | 319-01 | C | 90.9 | |
| | IPOPNBK001 | (3) #6 @ 600V, 3R | 15KVA / 18 FLA 23 CSA | 1ENS # MCC14B IPOP-LTGRO3 | | 321-02 | C | 27.8 | | | |
| | IRPSBBK001 | (3) 250 @ 480VAC | 50KVA / 104 FLA 130 CSA | 1ENS # MCC14B IRPS # XAC10B1 | | 321-01 | C | 169 | NO. 307 IS NOT AT 1875 F-18 | | |
| | ISCVBBK001 | (3) #2 @ 480 VAC | 15KVA, 1Ø / 32 FLA 39 CSA | 1ENS # MCC14B ISCV # XDB01 | | 319-01 | C | 57.9 | | | |
| | | 002 | (3) #4 @ 480VAC | 15KVA, 1Ø / 32 FLA 39 CSA | 1ENS # MCC14B ISCV # XD14B1 | | 321 | C | 39.8 | | |

CABLE DERATING

IRE AREA

ET-1

1 HR / 3 HR

AMBIENT TEMP 50°C

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| RACEWAY | CABLE NO. | CBL SIZE | LOAD/FLA. | CONNECTED DEVICE | CIRCUIT NO. | CBD/ESK | C/I | D.C.A. | REMARKS |
|----------|------------|-------------------|--------------|---------------------------------|--|---------|-----|--------|-------------------------|
| ICC154BA | IENSBBC302 | 2/#12 CU 125Vdc | 35A FU/.04A | IENS # SWG1B IENS # SWG2B | IENSB01 | SENS15 | C | 20 | |
| | BBC311 | 7/#12 CU | 35A FU/.24A | IENS # SWG2B IH13 # P702 | IENSB06 | SENS13 | | 16 | |
| | BBC953 | 2/#16 CU | 5A FU | IH13 # P746 | IENSIB032 | | | 7.0 | |
| | DBC302 | 2/#12 CU | 35A FU/.04A | IENS # SWG1B IENS # SWG2B | IENSD01 | SENS17 | | 20 | |
| | NBC702 | 2/#14 CU | 5A FU | | IENSN0420 | SENS11 | | 15 | |
| | NBC705 | | 5A FU | | IENS ^{A046} _{N0416} | 10ANN31 | | 15 | |
| | ISCCBBC518 | 2/#12 CU 25Vdc | 3A FU | IENS # SWG2B IYJ5007B | ISCCB02 | 7SCC10 | | 20 | |
| ICC154BB | IHVPBBC508 | 2/#12 CU 120VAC | 240WHTR/2.3A | IENS # LDC1B IHVP # FN2B-HTR | IHVPOB | 7HVPO3 | | 20 | |
| ICC154BF | IEGFBBC001 | 3/#12 CU | 3A FU | IENS # MCC15B IH13 # P744 | IEGFBO1 | 6EGF02 | | 20 | |
| | IEGSBBC401 | 2/#10 CU CT LEADS | 5A MAX | IEGS # PNL2B IENS # SWG1B | IEGSB05 | 8EGS02 | | 30 | |
| | 405 | 4/#10 CU | 5A MAX | | IEGSB01 | | | 24.3 | |
| | 454 | 3/#12 CU 120VAC | .34A | IENS # SWG1B IEGS # PNL2B | IEGSB07 | 8EGS04 | | 20 | |
| | 604 | 5/#12 CU 125Vdc | 3A | IEGS # PNL2B IENS # SWG1B | IEGSB04 | 8EGS06 | | 18.2 | CALCE-156 Pg 34 |
| | 605 | 2/#12 CU | 3A | IEGS # PNL2B IH13 # P746 | IEGSB04 | | | 20 | " |
| | 607 | | 3A | | IEGSB09 | 8EGS09 | | 20 | " |
| | 609 | | 3A | IEGS # PNL2B IENS # SWG1B | IEGSB09 | | | 20 | " |
| | 617 | | 10A FU | IEGE # CAB01B IENS # SWG1B | IEGSB12 | 11EGS03 | | 20 | |
| | 950 | 2/#16 CU | 5A FU | IEGS # PNL2B IH13 # P746 | IEGS12680 | 8EGS06 | | 7.0 | 10IHC207 |
| | 951 | 2/#16 CU | 5A FU | | IEGS12700 | 8EGS08 | | 7.0 | " |
| | IEGSNBC704 | 2/#14 CU | 5A FU | IEJS # LDC1B IEGS # CAB01B | IEGSN0381 | 10ANN38 | | 15 | |
| | 711 | 2/#14 CU | 5A FU | IEGS # PNL2B IH13 # P744 | IEGSN1115 | 8EGS06 | | 15 | |
| | 712 | 2/#14 CU | 5A FU | IEGS # PNL2B IH13 # P744 | IEGSN1113 | 8EGS08 | | 15 | |
| | 714 | 5/#14 CU | 5A FU | | IEGS ^{N4877} _{N4767} | 8EGS06 | | 15 | |
| | 715 | 5/#14 CU | 5A FU | | IEGSN4768 | 8EGS08 | | 15 | |
| | 719 | SPARE | | | | | | | |
| | IENSBBC314 | 2/#12 CU 125Vdc | 35A FU/.24A | IEGS # PNL2B IENS # SWG1B | IENSB06 | SENS13 | | 20 | |
| | IENSBBC451 | 3/#12 CU 120VAC | NEGLECTIBLE | IENS # SWG1B IEGS # PNL2B | IENSB12 | 8ENS01 | | 20 | VOLT BAL RELAY IRE-6 |
| | IHVPPBC001 | 3/#12 CU 120VAC | 3A FU | IENS # MCC15B IH13 # P744 | IHVPO5 | 6HVPO7 | | 20 | |

CALCE-156
Pg 34

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10IHC207

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ATTACHMENT 1
E-218

CABLE DERATING

FIRE AREA

ET-1

(LHR)/3HR

AMBIENT TEMP 50°C

PAGE 26 OF 67

| RACEWAY | CABLE NO. | CBL SIZE | LOAD/F.L.A. | CONNECTED DEVICE | CIRCUIT NO. | CBD/ESK | C/I | D.C A. | REMARKS | |
|-------------------------|------------|-----------------|-------------|---------------------------|-------------|----------------|--------|--------|-----------------------|----|
| ICC154BF (CONTINUED) | IHVPBBC509 | 2/#12 CU 120VAC | 3A Fu | IHVP*PNL12B IH13*P744 | IHVPB10 | 7HVP04 | C | 20 | 10 IHAZIS | |
| | IHVPBBC700 | 2/#14 CU 120VAC | 5A Fu | IEHS*MC115B IH13*P744 | IHVP1120 | 6HVA7 | | 15 | | |
| | ISCCBBC505 | 2/#12 CU 25VAC | 3A Fu | IEGS*PNL2B 1*JB0056 | ISCCB02 | 75CC04 | | 20 | | |
| | ISCCBBC507 | 3/#12 CU | 3A Fu | IEGS*CA801B 1*JB0056 | | | | 20 | | |
| | ISCCBBC508 | 2/#12 CU | 3A Fu | IEHS*MC115B 1*JB0056 | | | | 20 | | |
| | ISCCBBC566 | | 120VAC | 5A Fu | 1*JB0069 | ISCCB04 | 75CC08 | | | 20 |
| ICC154BC | IEGSBBC451 | | | IEHS*SWG1B IEGS*PNL1B | IEGSB08 | 8ENS01 | | 20 | VOLTMETER CRT | |
| | 453 | 3/#12 CU | | | | IEGSB07 | | 8EGS04 | | 20 |
| | 610 | 7/#12 CU 125VDC | 10A Fu | IEGS*PNL1B IH13*P702 | IEGSB12 | 11EGS03 | | 16 | | |
| | IENSBBC301 | 12/#12 CU | 35A Fu/.2A | IEHS*SWG1B IEGS*PNL1B | IENSB01 | 5ENS02 | | 16 | | |
| | 307 | 9/#12 CU | 35A Fu/.2A | | | IENSB03 | | 5ENS07 | | 16 |
| | 450 | 3/#12 CU 120VAC | NEGLIGIBLE | IEHS*SWG1B IEGS*PNL1B | IENSB12 | 8ENS01 | | 20 | | |
| | IENSDBC301 | 9/#12 CU 125VDC | 35A Fu/.2A | IEHS*SWG1B IEGS*PNL1B | IENSD01 | 5ENS05 | | 16 | | |
| | IENSNBC706 | 5/#14 CU | 5A Fu | | IENS0416 | 10ANN31 | | 15 | | |
| | ISYDBBC450 | 3/#12 CU 120VAC | NEGLIGIBLE | | ISYDB01 | 8SYD02 | | 20 | | |
| | 451 | 3/#12 CU | | | | | | 20 | | |
| 452 | 6/#12 CU | | | IEGS*PNL1B IH13*P702 | | | 18.2 | | | |
| ICC154BE | IEGABBC601 | 2/#12 CU | 10A CKTBKR | IEGS*PNL3B IENS*SWG1B | IEGAB02 | 11EGA03 | | 20 | ATTACHMENT 1 E-2/B | |
| | 603 | 5/#12 CU 125VDC | | | | | | 18.2 | | |
| | 701 | 2/#14 CU | 5A Fu | | | IEGAB02 | | 15 | | |
| | IENSBBC315 | 5/#12 CU | 35A Fu/.2A | IEHS*SWG1B IEGS*PNL1B | IENSB03 | 5ENS07 | | 18.2 | | |
| | 317 | 2/#12 CU | | | | | | 20 | | |
| | 319 | | | | | | 5ENS02 | 20 | | |
| | IENSDBC306 | | | | | IENSD01 | 5ENS05 | 20 | | |
| | IHVPBBC200 | 12/#12 CU | 1.2A | IEGS*LOC1B IEGS*PNL3B | IHVPB02 | 6HVP02 | | 16 | | |
| ICC154BH | IENBBBC616 | 3/#12 CU | 19.1A | IENB*AVL03B IENS*SWG4A | | 12H05 EE12H | | 93 | CALL 6-156 20 34 | |

CABLE DERATING

WIRE AREA

ET-1

(1 HR) / 3 HR

AMBIENT TEMP 50°C

PAGE 27 OF 67

| RACEWAY | CABLE NO. | CBL SIZE | LOAD/FLA | CONNECTED DEVICE | CIRCUIT NO. | CBD/ESK | C/I | D.C.A. | REMARKS |
|-----------|------------|-----------------------|-------------------------------|---|--------------------------------|-----------------|-------------------------------------|--------|---|
| ICC154BK | ISWPBBC044 | 5/12 CU 120VAC | 3A FU | IEHS * MCCBB ISWP * MOV506A | ISWPB17 | 6SWP16 | C | 18.2 | 2) 25W HEATERS |
| | ISWPBBC502 | 2/12 CU 120VAC | 50W HTR / .4A | ISWP * MOV778-HTR ISWP * MOV506A-HTR | | 7SWP29 | | 20 | |
| | ISWPNBC724 | 2/14 CU 125VDC | 5A FU | 1 * JB0116 ISWP * MOV506A | ISWPN0527 | 10ANN17 | | 15 | |
| ICC154BL | IENBBBC617 | 3/2 CU 125VDC | 1A | IENB * PNL03B IENS * SW49B | | IEH05 EE18H | | 20 | CALL E-156 PG 84 |
| ICC155RA | ISWPARC044 | 5/12 CU 120VAC | 3A FU | IEHS * MCCBA ISWP * MOV506B | ISWPA17 | 6SWP16 | | 18.2 | 2) 25W HEATERS |
| | ISWPARC502 | 2/12 CU 120VAC | 50W HTR / .4A | ISWP * MOV778-HTR ISWP * MOV506B-HTR | | 7SWP29 | | 20 | |
| | ISWPNRC726 | 2/14 CU 125VDC | 5A FU | 1 * JB0115 ISWP * MOV506B | ISWPN0526 | 10ANN17 | | 15 | |
| ICC908BAI | IEGADBC600 | 5/12 CU | 10A LKT BKR | IEGS * PNL3B IH13 * P702 | IEGAD02 | IEGA04 | | 18.2 | ATTACHMENT 1 E-218 |
| | 602 | 2/12 CU | | IEGS * PNL3B IENS * SWG1B | IEGAD02 | | | 20 | |
| | 604 | 12/12 CU | | IEGS * PNL3B IH13 * P702 | IEGAD02 | IEGA06 | | 16 | |
| | 700 | 2/14 CU | | " IH13 * P744 | IEGAD3474 | IEGA04 | | 15 | |
| | IEGSBBC611 | 7/12 CU | 3A FU | " IH13 * P746 | IEGSBM | IEGS07 | | 16 | |
| | IENSBB316 | 5/12 CU | 35A FU / .2A | IENS * SWG1B IEGS * PNL3B | IENSBO3 | SENS07 | | 18.2 | |
| | 320 | 2/12 CU | 35A FU / .2A | | IENSBO1 | SENS02 | | 20 | |
| | IENSDBC307 | 2/12 CU | 35A FU / .2A | | IENSBO1 | SENS05 | | 20 | |
| | IHVPBBC205 | 2/12 CU | 35A FU / .2A | IESS * LDC1B IEGS * PNL3B | IHVPO2 | 6HVPO2 | | 20 | |
| | ICK910BA | ISWPABK001 | 3/12 CU 480VAC | 1/3 hp / .75A | IEHS * MCCBB ISWP * MOV506A | | 319-01 EE-1YB | | |
| ICK910RB | ISWPBRK001 | 3/12 CU | | | | EE-1VA | | 20 | |
| ICL051BD | IEHSBBL205 | 3/1C 500MCM AL | 316A | IEJS * LDC2B | | IAB03 | | 516 | PARALLEL FEEDERS |
| ICL051BE | IEHSBBL204 | 3/1C 500MCM AL | | IENS * MCC15B | | EE-1AB | | | |
| ICL051BG | IENBBBL603 | 2/1C 500MCM AL 125VDC | 24.25A E-156 PG 34 | IENB * SWG01B IENB * PNL03B | | IEH11 EE-18H | | 274 | CALL E-156 |
| ICL051BA | IENBBBL602 | 2/1C 500MCM AL 125VDC | 100A E-156 PG 34 | IENB * SWG01B IEGE * CAB01B | | | | 274 | |
| ICL053BA | IHVBBBL200 | 3/1C 504MCM AL 480VAC | 100 HP / 172A 1550LA / FLA | IEJS * LDC1B IHVP * FN2B | | | | 179 | CALL E-157 ROW.3, P27 |
| ICH052BA | IENSBBH303 | 3/500MCM CU 4160V | 543A | IENS * SWG1B | | 1101 | REFER TO SPECIAL CALC PAGE | 339 | CALL E-167 (SEE SPECIAL CALC-ATT. 9) |
| ICH052BB | IENSBBH304 | 3/500MCM CU 4160V | (CSA = 603A) | IEGE * CAB01B | | EE-1L | | x2 | |

CABLE DERATING

FIRE AREA

PT-1

(1HR) 3HR

AMBIENT TEMP 50°C

| RACEWAY | CABLE NO. | CBL SIZE | LOAD/FLA | CONNECTED DEVICE | CIRCUIT NO. | CBD/ESK | C/I | D.C.A. | REMARKS |
|-----------|--|--------------------------|--------------------------|-----------------------------|--------------------------------|----------------|-----|--------|---------|
| ITH200R | IENSARH308 | 4/0CU TPE 4160V | 139A | IENS*SWG1A IEJS*X3A-NV | | EEIK | C | 180 | |
| | ISWPARH300 | | 450HP/60.9 110ALP/FLA | IENS*SWG1A ISWP*P2A | | | C | 180 | |
| ITH201R | CABLES INCLUDED WITH ITH200R | | | | | | | | |
| ITK200R | ISWPAK021 | 3/#12 CU 480VAC | .7hp/23A | IEHC*MCC16A ISWP*MOV501A | | 348-2 EE1YA | I | -- | |
| | ISWPAK023 | | " / 2.3A | ISWP*MOV511A | | 348-3 EE1YA | I | -- | |
| ICK200RBI | ISWPAK019 | | 1.6HP/4A | IENS*MCC16A ISWP*MOV55A | | E-348 | I | -- | |
| | ISWPAK020 | | 1.6HP/4A | IEHC*MCC16A ISWP*MOV61A | | E-348 | I | -- | |
| | ISWPAK021 | } SEE TRAY ITK200R ABOVE | | | | | | | |
| | ISWPAK023 | | | | | | | | |
| ICK958RA1 | } CABLES ARE INCLUDED WITH ICK200RBI ABOVE | | | | | | | | |
| ICK958RA2 | | | | | | | | | |
| ICK200RA | | | | | | | | | |
| ICK200RB | | | | | | | | | |
| ICK200RA2 | | | | | | | | | |
| ICK200RA3 | | | | | | | | | |
| ICK200RA4 | | | | | | | | | |
| ICC200RA | IEJSNRC712 | 2/#14 CU 125VDC | 5AFU | IEHS*MCC16A IEJS*LDC2A | IEJSN0684 | 10ANN354 | C | 15 | |
| | IEJSNRC713 | 5/#14 CU 125VDC | 5AFU | IEJS*LDC2A IEHS*MCC16A | IEJS ^{N0118} N0096 | 11EJS01 | | 15 | |
| | ISWPARC002 | 12/#12 CU 120VAC | 3AFU | IEHS*MCC16A IRSS*PNL101 | ISWPA05 | 6SWP06 | | 16 | |
| | ISWPARC021 | 7/#12 CU 120VAC | 3AFU | IRSS*PNL101 IEHS*MCC16A | ISWPA10 | 6SWP09 | | 16 | |
| | ISWPARC033 | 5/#12 CU | 3AFU | IEHS*MCC16A ISWP*MOV501A | ISWPA14 | 6SWP13 | | 18.2 | |
| | ISWPARC040 | 5/#12 CU | 3AFU | ISWP*MOV511A | ISWPA15 | 6SWP14 | | 18.2 | |
| | ISWPNRC720 | 2/#14 CU 125VDC | 5AFU | 1*JB8120 ISWP*MOV511A | ISWPN0526 | 10ANN17 | | 15 | |
| | ISWPNRC725 | 2/#14 CU 125VDC | 5AFU | 1*JB8120 ISWP*MOV501A | | | | 15 | |
| ICC200RA2 | ALL CABLES ARE INCLUDED IN ICC200RA | | | | | | | | |

ATTACHMENT 1
E-2/B

CABLE DERATING

FIRE AREA

PT-1

J HR / 3 HR

AMBIENT TEMP 50°C

PAGE 30 OF 67

| RACEWAY | CABLE NO. | CBL SIZE | LOAD/FLA. | CONNECTED DEVICE | CIRCUIT NO. | CBD/ESK | C/I | D.C.A. | REMARKS |
|----------|-------------|------------------|-----------|--------------------------------|------------------------|----------------|--------|--------|---------------------|
| ITC 200R | IEHSARC950 | 4/#16 CU INST | 5A FU | IEHS * MCC16A IH13 * P743 | IEHS22034 | 10ANN15 | C | 7.0 | |
| | IEHSNRC700 | 2/#14 CU 125VDC | | IH13 * P750 | IEHSN1200 | | | 6.3 | |
| | IEJSNRC712 | | | IEHS * MCC16A IEJS * PDS2A | IEJSN0604 | | | 6.3 | |
| | IEJSNRC713 | | 5A FU | IEJS * LDC2A IEHS * MCC16A | IEJSN0118 IEJSN0096 | IEJS01 | | 6.3 | |
| | IHVCAARC022 | 9/#12 CU 120VAC | 3A Fu | IEHS * MCC16A IH13 * P731 | IHVCA29 | 6HVC24-5 | | 6.2 | |
| | IHVCAARC576 | 3/#12 CU 120VAC | 5A FU | 1 * JB0010 IHC * MOD7A | IHVCA22 | 7HVC15-5 | | 6.9 | |
| | IHVCNRC705 | 2/#14 CU 125VDC | 5A FU | IEHS * MCC16A IEHS * MCC16A | IHVCA040B | 10ANN15 | | 6.3 | |
| | IHVYARC001 | 9/#12 CU 120VAC | 3A Fu | IEHS * MCC16A IH13 * P750 | IHVYA06 | 6HVY07-2 | | 6.2 | |
| | IHVYARC003 | | | | IHVYA07 | 6HVY09 | | 6.2 | |
| | IHVYARC006 | 12/#12 CU 120VAC | | | IHVYA23 | 6HVY28 | | 6.0 | |
| | IHVYARC040 | 2/#12 CU | | | | | | 8.1 | |
| | IHVYARC511 | 3/#12 CU | 3A FU | | IHVYA28 | 11HVY03 | | 6.9 | 215.325- 328-02C |
| | IHVYARC950 | 2/#16 CU | 5A FU | IEHS * MCC16A IH13 * P703 | IHVY22022 | 6HVY28 | | 7.0 | |
| | IHVYARC951 | 4/#16 CU 125VDC | 5A FU | | | 22019 22015 | 6HVY07 | 7.0 | |
| | IHVYARC952 | 4/#16 CU 125VDC | 5A FU | | | 22018 22019 | 6HVY09 | 7.0 | |
| | IHVYCRC001 | 9/#12 CU 120VAC | 3A FU | IEHS * MCC16A IH13 * P750 | IHVYC06 | 6HVY07 | | 6.2 | |
| | IHVYCRC003 | 9/#12 CU 120VAC | 3A FU | | IHVYC07 | 6HVY09 | | 6.2 | |
| | IHVYNRC700 | 2/#14 CU 125VDC | 5A FU | IEHS * MCC16A IH13 * P750 | IHVYN1150 | 10ANN123 | | 6.3 | |
| | IHVYNRC702 | | 5A FU | | IHVY1160 | 10ANN124 | | 6.3 | |
| | IMHWARC001 | 8/#12 CU HOLD | 3A FU | IEHS * MCC16A IH13 * P743 | IMHWN01 | 6MHW01 | | 8.1 | |
| | ISCCARC527 | 7/#12 CU 25VAC | 5A FU | 1 * JB0067 IEHS * MCC16A | ISCCA07 | 75CC01 | | 6.1 | |
| | ISCCARC532 | 7/#12 CU 25VAC | 5A FU | | ISCCA07 | 75CC19 | | 6.1 | |
| | ISCCARC566 | 7/#10 CU 120VAC | 5A FU | IEHS * MCC16A 1 * JB4078 | ISCCA04 | 75CC07 | | 9.2 | |
| | ISCCARC579 | 3/#12 CU 25VAC | 3A FU | 1 * JB0079 IEHS * MCC16A | ISCCA02 | 75CC09 | | 6.9 | |
| | ISWPARC002 | 12/#12 CU 120VAC | 3A FU | IEHS * MCC16A IR55 * PNL101 | ISWPA05 | 6SWP06-11 | | 6.0 | |
| | ISWPARC014 | 3/#12 CU " | 3A FU | IEHS * MCC16A IH13 * P731 | ISWPA44 | 6SWP50 | | 6.9 | |
| | ISWPARC020 | 5/#12 CU " | 3A FU | " | ISWPA10 | 6SWP07 | | 6.7 | |
| | ISWPARC021 | 9/#12 CU 120VAC | 3A FU | IR55 * PNL101 IEHS * MCC16A | ISWPA10 | 6SWP07-9 | | 6.2 | |

ATTACHMENT 1
E-2/B

CABLE DERATING

IRE AREA

PT-1

LHR/3HR

AMBIENT TEMP 50°C

| RACEWAY | CABLE NO. | CBL SIZE | LOAD/F.L.A. | CONNECTED DEVICE | CIRCUIT NO. | CBD/ESK | C/I | D.C.A. | REMARKS |
|---------|------------|----------------|---------------|-----------------------------|------------------------|----------|-----|--------|---------|
| ITC200R | ISWPARC032 | 7/#12CU 120VAC | 3AFU | 1EHS+MCC16A 1H13+P731 | ISWPA14 | 6SWP13-L | C | 6.1 | |
| | ISWPARC033 | 5/#12CU | 3AFU | ISWP+MOV501A | | | | 6.7 | |
| | 034 | 7/#12CU | 3AFU | 1EHS+MCC16A 1H13+P731 | ISWPA18 | 6SWP17 | | 6.1 | |
| | 039 | | 3AFU | | ISWPA15 | 6SWP14 | | 6.1 | |
| | 040 | 5/#12CU | 3AFU | 1EHS+MCC16A ISWP+MOV511A | | | | 6.7 | |
| | 048 | 7/#12CU | 3AFU | 1EHS+MCC16A 1H13+P731 | ISWPA21 | 6SWP20 | | 6.1 | |
| | 074 | 5/#12CU | 3AFU | | ISWPA45 | 7SWP15 | | 6.7 | |
| | 076 | 2/#12CU | | 1EHS+MCC16A 1ENJ+ENG1A | | | | 8.1 | |
| | 077 | 5/#12CU | | 1H13+P731 | ISWPA46 | 7SNP17 | | 6.9 | |
| | 302 | 2/#12CU 125VDC | 3SAFU/1.1A | 1ENS+SWG1A ISWP+MOV40A | ISWPA08 | 5SWP04 | | 8.1 | |
| | 500 | 3/#12CU 120VAC | 3AFU | 1ENS+SWG1A 1EHS+MCC16A | ISWPA36 | 7SWP05 | | 6.9 | |
| | 501 | 2/#12CU 120VAC | 3AFU | 1EHS+MCC16A 1H13+P731 | | 7SWP05 | | 8.1 | |
| | 531 | 2/#10CU 120VAC | 400W HTR/3.8A | 1ENS+SWG1A ISWP+P2A-HR | ISWPA53 | 7SWP25 | | 12.0 | |
| | ISWPCRC001 | 5/#12CU | 3AFU | 1EHS+MCC16A 1ENS+SWG1A | ISWPC10 | 6SWP10 | | 6.7 | |
| | 002 | 9/#12CU | 3AFU | 1RSS+PNL101 1EHS+MCC16A | | 6SWP10-9 | | 6.2 | |
| | 010 | 3/#12CU | 3AFU | 1EHS+MCC16A 1H13+P731 | ISWPC44 | 6SWP52 | | 6.9 | |
| | 301 | 2/#12CU 125VDC | 3SAFU/1.1A | 1ENS+SWG1A ISWP+MOV40C | ISWPC08 | 5SWP06 | | 8.1 | |
| | 506 | 2/#10CU 120VAC | 400W HTR/3.8A | ISWP+P2C-HTR | ISWPC53 | 7SWP25 | | 12.0 | |
| | ISWPERC001 | 3/#12CU | 3AFU | 1EHS+MCC16A 1H13+P731 | ISWPE44 | 6SWP64 | | 6.9 | |
| | GRC001 | | 3AFU | | ISWPG44 | 6SWP56 | | 6.9 | |
| | JRC001 | | 3AFU | | ISWPL44 | 6SWP58 | | 6.9 | |
| | LRC002 | | 3AFU | | ISWPL44 | 6SWP50 | | 6.9 | |
| | NRC002 | | 3AFU | | ISWPN44 | 6SWP52 | | 6.9 | |
| | NRC704 | 2/#14CU 125VDC | 3AFU | 1EHS+MCC2A 1EHS+MCC16A | | | | 6.3 | |
| | NRC720 | | 3AFU | 1#JDB120 ISWP+MOV511A | CO526 ISWPN0526 | 10ANN17 | | 6.3 | |
| | NRC721 | | 3AFU | ISWP+MOV55A | ISWPN0526 1#WPB0526 | | | 6.3 | |
| | NRC725 | | 3AFU | ISWP+MOV501A | ISWPN0526 ISWPC0526 | | | 6.3 | |
| | GRC002 | 3/#12CU 120VAC | 3AFU | 1EHS+MCC16B 1H13+P730 | | | | 6SWP55 | 6.9 |

ATTACHMENT 1
E-218

CABLE DERATING

FIRE AREA

PT-1

1 HR / 3 HR

AMBIENT TEMP 50°C

PAGE 32 OF 67

| RACEWAY | CABLE NO. | CBL SIZE | LOAD/F.L.A. | CONNECTED DEVICE | CIRCUIT NO. | CBD/ESK | C/I | D.C.A. | REMARKS | |
|------------|---|--|-------------|----------------------------|-------------|-----------|-----|--------|---------|--|
| ITC200R | ISWPSRC002 | 3/#12 CU 120VAC | 3A FU | IEHS#MCL16A IH13#P731 | ISWPS44 | 6SWP56 | C | 6.9 | | |
| | ISWPU RC002 | 3/#12 CU 120VAC | 3A FU | | ISWPU44 | 6SWP58 | | 6.9 | | |
| ITC201R | CABLES INCLUDED WITH ITC200R | | | | | | | | | |
| ITC202R | CABLES INCLUDED WITH ITC200R ARE NOT LISTED | | | | | | | | | |
| ITC202R | ISCCARC567 | 2/#12 CU 120VAC | 5A FU | IEHS#MCL16A ISWP#MOV61A | ISCCA07 | 7SCC01 | | 8.1 | | |
| | ISWPARC003 | 5/#12 CU | 3A FU | ISWP#MOV55A | ISWPA05 | 6SWP06-II | | 6.7 | | |
| | 005 | 2/#12 CU | 3A FU | ISWP#MOV61A | | | | 8.1 | | |
| | 049 | 5/#12 CU | 3A FU | | ISWPA21 | 6SWP20-7 | | 6.7 | | |
| | 553 | 2/#12 CU | 25W HTR | ISV#PNL16A ISWP#MOV61A | - | 7SWP30 | | 8.1 | | |
| | 554 | " | 25W HTR | ISWP#MOV55A | - | | | 8.1 | | |
| | ISWPNRC729 | 2/#14 CU 125VDC | 5A FU | IEHS#MCL16A ISWP#MOV61A | ISWPN0134 | 10ANN08 | | 6.3 | | |
| | ITC203R | ISCCARC567 | } | | | | | | | |
| ISWPARC003 | | | | | | | | | | |
| 005 | | | | | | | | | | |
| 049 | | CABLES INCLUDED WITH ITC200R & ITC202R | | | | | | | | |
| 553 | | | | | | | | | | |
| 554 | | | | | | | | | | |
| ISWPNRC721 | | | | | | | | | | |
| ISWPNRC729 | | | | | | | | | | |
| ICL203RC | SAME CABLES IN ITC203R | | | | | | | | | |
| ICL203RC1 | ↓ | | | | | | | | | |
| ICL203RC2 | | | | | | | | | | |

ATTACHMENT 1
E-28

FIRE AREA PT-1 FIRE-WRAP RATING 1HR * 3HR CABLE DERATING SUMMARY
AMBIENT TEMP 50 °C

| RACEWAY | CABLE NO. | CABLE / SERVICE SIZE / VOLTAGE | LOAD / FLA | CONNECTED DEVICE | CIRCUIT NO. | CBD/ESK | C/I | D.C.A. | REMARKS |
|------------------------|--------------|--------------------------------|---------------------------|--------------------------|-------------|---------|-----|--------|--|
| 1CH9580A1 1CH9580A2 | 1SWPCOM300 | (2) 40 4160 | 650HP / 60.7FLA 76 CSA | 1B2205004 1SWP# P2C | | 1M01 | C | 201 | Dereated for 3 HR WRAP as per field request. K |
| | | | | | | | | | |
| 1TH200R ✓ | 1ENSARH508 ✓ | (2) 40 4160 | 1000 kVA / 139A | 1ENS# SW61A 1B15# X3A | | 1K01 | C | 180 | |
| 1TH201R ✓ | 1SWPARH500 ✓ | (2) 40 4160 | 450 HP / 46.6A | 1ENS# SW61A 1SWP# P1A | | 1K01 | C | 180 | |

CABLE DERATING

WIRE AREA

REACTOR BLOC

1 HR / (3 HR)

AMBIENT TEMP 40°C

| RACEWAY | CABLE NO. | CBL SIZE | LOAD/F.L.A. | CONNECTED DEVICE | CIRCUIT NO. | CBD/ESK | C/I | D.C.A. | REMARKS |
|-------------------------|--------------------------|----------------------|---------------------|--------------------------------|-------------|-----------------------|-----|--------|---|
| ICK501BB | IHVNNBK003 | 3/#12 CU 480VAC | 2 1/2 hp / 2.3A | IRCP#TCR14A IHVN#MOV10Z | | 399-03 EE-ITE | C | 20 | ATTACHMENT 1 E-218 ZCable-B, P. 27 IENS#111-2C |
| | ISWPABK005 | | 1hp / 2.8A | ISWP#MOV5A | | 421-02 EE-ITF | | 20 | |
| | ISWPBBK007 | | 1hp / 2.8A | ISWP#MOV4B | | | | 20 | |
| ICK501BBI | CABLES ARE INCLUDED WITH | | | ICK501BB | | | | - | |
| ICK501BC | IHVNBK001 | 3/#12 CU 480V | 3/4 hp 2.3A | IRCP#TCR14A IHVN#MOV22B | | | | 20 | |
| | ISWPBBK009 | 3/#6 CU | 2 1/2 hp 2.3A | ISWP#MOV502B | | 421-02 EE-ITF | | 58.3 | |
| | ISWPBBK011 | 3/#12 CU | | ISWP#MOV503B | | | | 20 | |
| ICK501BC1 BC2 BC3 | CABLES INCLUDED WITH | | | ICK501BC | | | | | |
| ICL540BB | IHVRBBL201 | 3/#10 MM AL 480V | 150HP 2250LA/FLA | IRCP#TCR14A IHVR#UCIB | | IAB04 EE-IAB | | 296 | |
| ICC504BB | IHVNBBC504 | 2/#12 CU 120VAC | 25W HTR/.21A | IRCP#TCR15A IHVN#MOV10Z-HIE | | 7HVN05 | | 20 | |
| | IHVNFBC003 | 5/#12 CU | 3A Fu | IRCP#TCR15A IHVN#MOV10Z | IHVNF02 | 6HVN11 | | 19.7 | |
| | ISLSBBC003 | " | 3A Fu | IC41#FO01B | ISLSB01 | 6SLS01 | | 19.7 | |
| | ISLSBBC005 | 2/#12 CU | | 1#JB5043 IRCP#TCR15A | | | | 20 | |
| | ISLSBBC007 | 5/#12 CU | | IRCP#TCR15A IH22#PW4P011 | ISLSB01 | | | 19.7 | |
| | ISLSBBC010 | 5/#12 CU | | | ISLSB03 | 5LS104 221.244-010 | | 19.7 | |
| | ISLSBBC012 | 2/#12 CU | | IRCP#TCR15A 1#JB5043 | ISLSB03 | | | 20 | |
| | ISLSBBC016 | 5/#12 CU | | IC41#VEXFO04B IRCP#TCR15A | | | | 19.7 | |
| | ISLSNBC504 | 4/#10 CU | 90W HTR/.75A | IRCP#TCR15A IC41#FO01B-HIE | | 7SLS01 | | 26.3 | |
| | ISLSNBC506 | 2/#12 CU | 25W HTR/.21A | IRCP#TCR15A IC41#FO01B-HIE | | | | 20 | |
| | ISWPABC005 | 5/#12 CU | 3AFU | ISWP#MOV5A IRCP#TCR15A | ISWPB25 | 65WP25 | | 19.7 | |
| | ISWPBBC059 | 5/#12 CU | 3AFU | IRCP#TCR15A ISWP#MOV4B | ISWPB24 | 65WP24 | | 19.7 | |
| | ICC504BBI | ISWPABC005 | | | | | | | |
| 059 | | CABLES INCLUDED WITH | | | ICC504BB | | | | |
| 514 | | 2 / #12 CU | 150W HTR / 1.3A | ISWP#MOV505B ISWP#MOV4B | | 75WP26 | I | 14 | |

CABLE DERATING

FIRE AREA REACTOR BLDG 1HR/3HR

AMBIENT TEMP 40°C

PAGE 35 OF 67

| RACEWAY | CABLE | CBL SIZE | LOAD/F.L.A. | CONNECTED DEVICE | CIRCUIT NO. | CBP/ESK | C/I | D.C.A. | REMARKS | |
|------------|------------|----------------------------------|---------------|--|-------------|---------|-----|--------|--------------|--|
| ICC504BB2 | ISWPBBC059 | SEE ICC504BB & ICC504BB1 (Pg 26) | | | | | C | - | | |
| | ISWPBBC514 | | | | | | | - | | |
| | ISWPBBC515 | 2/#12 CU 120VAC | 100W HTR/.95A | ISWP# MOV 4B ISWP# MOV 5A | - | 7SWP26 | | 20 | (2) 50W HTRS | |
| ICC504BB3 | IHVNBBC500 | 2/#12 CU 120VAC | 50W HTR/.42A | IHVN# MOV 102 - HTR IHVN# MOV 22B - HTR | - | 7HVN05 | | 20 | (2) 25W HTRS | |
| | ISLSBBC003 | | | | | | | - | | |
| | ISLSBBC005 | | | | | | | - | | |
| | ISLSBBC007 | | | | | | | - | | |
| | 010 | | | | | | | - | | |
| | 012 | CABLES INCLUDED WITH ICC504BB | | | | | | | - | |
| | 016 | | | | | | | - | | |
| | ISLSNBC504 | | | | | | | - | | |
| | 506 | | | | | | | - | | |
| | ISWPABC005 | | | | | | | - | | |
| ISWPBBC059 | | | | | | | - | | | |
| ICC504BC | IHVNBBC003 | 5/#12 CU 120VAC | | IRCP# TCR 15A IHVN# MOV 22B | IHVNB01 | 6HVN09 | | 19.7 | | |
| | IHVNBBC506 | 2/#10 CU | 240W HTR/2.0A | IRCP# TCR 15A IHVN# UC18-HTR | - | 7HVR18 | | 30 | | |
| | ISWPBBC038 | 5/#12 CU | 3A FU | IRCP# TCR 15A ISWP# MOV 502B | ISWPB19 | 6SWP18 | | 19.7 | | |
| | ISWPBBC047 | 5/#12 CU | 3A FU | IRCP# TCR 15A ISWP# MOV 502B | ISWPB20 | 6SWP19 | | 19.7 | | |
| | ISWPBBC553 | 2/#12 CU | 25W HTR/.21A | IRCP# TCR 15A ISWP# MOV 502B | | 7SWP26 | | 20 | | |
| ICC504BC1 | ISWPBBC047 | SEE ICC504BC | | | | | | - | | |
| | ISWPBBC514 | 2/#12 CU 120VAC | 50W HTR/.42A | ISWP# MOV 503B ISWP# MOV 4B | | 7SWP26 | | 20 | (2) 25W HTRS | |
| | ISWPBBC530 | 2/#12 CU 120VAC | 50W HTR/.42A | ISWP# MOV 502B ISWP# MOV 503B | | 7SWP26 | | 20 | | |
| ICC504BC2 | IHVNBBC003 | SEE ICC504BC | | | | | | - | | |
| | IHVNBBC500 | 2/#12 CU 120VAC | 50W HTR/.42A | IHVN# MOV 102 IHVN# MOV 22B | | 7HVN05 | | 20 | (2) 25W HTRS | |
| ICC504BC3 | ISWPBBC038 | SEE ICC504BC | | | | | | - | | |
| | ISWPBBC530 | " ICC504BC1 | | | | | | - | | |
| | ISWPBBC553 | " ICC504BC | | | | | | - | | |

ATTACHMENT F
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CABLE DERATING SUMMARY
AMBIENT TEMP 50 °C

RE AREA PTcl FIRE-WRAP RATING (1HR) 5HR

| ACEWAY | CABLE NO. | CABLE / SERVICE SIZE / VOLTAGE | LOAD / FLA | CONNECTED DEVICE | CIRCUIT NO. | CBD/ESK | C/I | O.C.A. | REMARKS |
|-------------------------------|------------|--------------------------------|-----------------------|-----------------------------|-------------|---------|-----|--------|-------------------|
| CK001ØF CK001ØFI | IHYCOC003 | (2) #12 _{CU} 120VAC | } Control Cables | 1E22#5002 1HY#FS17E | | 6HY07 | } | | CONTROL CABLES |
| | IHYCOC006 | | | 1E22#5002 1HY#FS17E | | | | | |
| | IHYCOC500 | | | 15CV#PML5002 1HY#FS17E | | | | | |
| | IHYCOC501 | | | 15CV#PML5002 1HY#FS17E | | | | | |
| | IHYCOK001 | (2) #12 _{CU} 480VAC | 7.2HP/9.5FLA 12.5A | 1E22#5002 1HY#FNIC | | 15A-02 | I | 41 | |
| | IHYNOC501 | (2) #12 _{CU} 120VAC | } Control Cables | 1E22#5002 1HY#FNIC | | 7HY02 | } | | CONTROL CABLES |
| | ISWPCOC003 | (2) #12 _{CU} 120VAC | | 1E22#5002 1SWP#MOV40C | | 8SWP10 | | | |
| | ISWPCOC001 | (2) #12 _{CU} 125VDC | | 1E22#5004 1SWP#MOV40C | | 8SWP06 | | | |
| | ISWPCOC500 | (2) #10 _{CU} 120VAC | | 1E22#5004 1SWP#P2C | | 7SWP25 | | | |
| | ISWPCOK001 | (2) #12 _{CU} 480VAC | .7HP/2.3FLA 2.8A | 1E22#5002 1SWP#MOV40C | | 15A-02 | | | 9 |
| CK200RA CK200RA2 TK200R | ISWPAK021 | (3) #12 _{CU} 480VAC | | 1EHS#MCC16A 1SWP#MOV501A | | 348-02 | I | 19 | |
| | ISWPAK023 | (3) #12 _{CU} 480VAC | | 1EHS#MCC2E 1E12#F068A | | 338-02 | | 19 | |
| CK958RA | ISWPAK019 | (3) #12 _{CU} 480VAC | | 1EHS#MCC16A 1SWP#MOV25A | | 348-02 | | 19 | |
| | ISWPAK020 | (3) #12 _{CU} 480VAC | | 1EHS#MCC16A 1SWP#MOV61A | | 348-02 | | 19 | |
| CK958RA1 | ISWPAK019 | (3) #12 _{CU} 480VAC | | 1EHS#MCC16A 1SWP#MOV55A | | 348-02 | | 19 | |
| CK200RAA | ISWPAK021 | (3) #12 _{CU} 480VAC | | 1EHS#MCC16A 1SWP#MOV50A | | 348-02 | | 19 | |
| CK200RA3 | ISWPAK023 | (3) #12 _{CU} 480VAC | | 1EHS#MCC2E 1E12#F068A | | 338-02 | | 19 | |
| CK200RBI | ISWPAK019 | | | | | | I | 19 | |
| | ISWPAK020 | | | | | | I | 19 | |
| | ISWPAK021 | | | | | | I | 19 | |
| | ISWPAK023 | | | | | | I | 19 | |

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CABLE DERATING SUMMARY
AMBIENT TEMP 50 °C

FIRE AREA RC-3/2-3 FIRE-WRAP 1 HR RATING 5 HR

| TRAYWAY | CABLE NO. | CABLE GAGE / SERVICE VOLTAGE | LOAD / FLA | CONNECTED DEVICE | CIRCUIT NO. | COB/ESK | C/I | D.C.A. | REMARKS |
|--------------------------------|------------|------------------------------|-----------------------------|--------------------------------|-------------|---------|---------------|--------|-----------------------------------|
| ITK512N (107' ft) (full) | INMSNJK024 | #12 (3) 480VAC | 125 HP / 45 FLA / 56 CSA | IRCP # TCR07A ICBI - 5001A | | 391-01 | | 8.7 | |
| | INMSNJK025 | #12 (3) 480VAC | 125 HP / 45 FLA / 56 CSA | IRCP # TCR07A ICBI - 5001M | | 391-01 | | 8.7 | |
| | IP6PNJK010 | 250 MCM (3) 480VAC | 40 KVA / 49 FLA / 61 CSA | IRCP # TCR07A IPCP - WTR07A | MCC 2A | 936-01 | | 151 | |
| | IP6PNJK016 | 250 MCM (3) 480VAC | 40 KVA / 49 FLA / 61 CSA | IRCP # TCR07A IPCP - WTR07A | MCC 2D | 936-02 | | 151 | |
| | IRCSHJK002 | #10 (3) 480VAC | 3.6 KW / 4.2 FLA / 5.25 CSA | IRCP # TCR07A IBSB - COE1AH | | 251-01 | | 13.4 | |
| | IRDSNJK002 | #12 (3) 480VAC | 133 HP / 45 FLA / 56 CSA | IRCP # TCR07A IC11 - F003 | | 974-03 | | 8.7 | |
| | ISCBANK508 | #4 (3) 240VAC | 9 KVA / 47 CSA | IRCP # TCR07A ICCA - PUL002 | | SCA002 | | 81.9 | Total remaining load listed @ 27A |
| | ISFTNNG01 | #12 (1) 120VAC | Control Cable | IRCP # TCR07A | | SFT109 | Control Cable | | |
| | ISFTNNG02 | #12 (2) 120VAC | Control Cable | IRCP # TCR07A | | SFT109 | Control Cable | | |
| | ISFTNJK009 | #8 (3) 480VAC | 5.7 KVA / 7 FLA / 9 CSA | IRCP # TCR07A IP42 - D002 | | 574-02 | | 20.6 | |
| | ISFTNJK012 | #2/0 (3) 480VAC | 5 Panel | IRCP # TCR07A IP42 - B001 | | 5 Panel | | | SPARE |
| | ISFTNJK015 | #2/0 (3) 480VAC | 25 KVA / 30 FLA / 38 CSA | IRCP # TCR07A IP42 - B001 | | 575-02 | | 81.9 | |
| | ISFTZNC517 | #12 (5) 120VAC | Control Cables | ISFT - PUL110 IRCP # TCR07A | | SFT111 | Control | | |
| | ISFTZNC585 | #12 (5) 120VAC | Control Cables | IRCP # TCR07A ISFT - PUL110 | | SFT111 | Control | | |
| | ISFTZNC586 | #12 (3) 120VAC | Control Cables | IRCP # TCR07A IP42 - B001 | | SFT109 | Control | | |

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CABLE DERATING SUMMARY
AMBIENT TEMP 50 °C

FIRE AREA R2-3/2-3 FIRE-WRAP 1 HR RATING 3 HR

| RACEWAY | CABLE NO. | CABLE / SERVICE WIRE / VOLTAGE | LOAD / FLA | CONNECTED DEVICE | CIRCUIT NO. | CODE/SK | C/S | DCA | REMARKS |
|---------|------------|--------------------------------|-----------------------------|-------------------------------|------------------------------|---------|---------|------|----------------------------------|
| ITK512N | IDERANK005 | #8 (3) 480VAC | 5HP / 6.8 FLA / 8.5 CSA | IRCP + TER08A IDER - P1A | | 256-02 | | 20.6 | |
| | IDERBNK005 | #8 (3) 480VAC | 5HP / 6.8 FLA / 8.5 CSA | IRCP + TER08A IDER - P1B | | 257-02 | | 20.6 | |
| | IDERNUC528 | #12 (8) 120VAC | 3 Control Cables | IRCP + TER08A IDER - P1A | | 70ERR18 | Control | | |
| | IDERZNC549 | #12 (8) 120VAC | | IRCP + TER08A IDER - P1B | | 70ERR18 | Cables | | |
| | IDFRANK002 | #8 (3) 480VAC | 5HP / 6.8 FLA / 8.5 CSA | IRCP + TER08A IDFR - P6A | | 874-08 | | 20.6 | |
| | IDFRANK006 | #8 (3) 480VAC | 5HP / 6.8 FLA / 8.5 CSA | IRCP + TER08A IDFR - P2A | | 896-08 | | 20.6 | |
| | IDFRBNK002 | #8 (3) 480VAC | 5HP / 6.8 FLA / 8.5 CSA | IRCP + TER08A IDFR - P2B | | 915-02 | | 20.6 | |
| | IDFRBNK006 | #8 (3) 480VAC | 5HP / 6.8 FLA / 8.5 CSA | IRCP + TER08A IDFR - P2B | | 937-02 | | 20.6 | |
| | IDFRNJC530 | #12 (2) 120VAC | | IRCP + TER08A IDFR - P2A | | 70FR05 | Control | | |
| | IDFRNJC531 | | | IRCP + TER08A IDFR - P2B | | 70FR05 | Cables | | |
| | IDFRNJC535 | | | IRCP + TER08A IDFR - P2B | | 70FR06 | | | |
| | IDFRNJC536 | | | IRCP + TER08A IDFR - P2B | | 70FR06 | | | |
| | IFNRPNK002 | #8 (3) 480VAC | 5HP / 6.8 FLA / 8.5 CSA | IRCP + TER08A IFNR - P06 | | 974-05 | | 20.6 | |
| | ILARNNK057 | #2 (3) 120VAC | 72KW / 33.6 FLA / 31.6 CSA | ILAB - PALLI218 | 7-TFF | 412-02 | | 52.2 | Load limited TO 12.5 KVA AT 240V |
| | ILARNNK059 | #2 (3) 120VAC | 2.8KW / 16.8 FLA / 31.6 CSA | ILAB - PALLI219 | 855-UMed | 414-02 | | 52.2 | |
| | IMHRNNK004 | #2 (3) 480VAC | 44KVA / 52 FLA / 6.7 CSA | IMHR - SUB8A | Load, 100% duty 85-100% THCC | 574-04 | I | 142 | |
| | INMSNNK015 | #12 (3) 480VAC | .125HP / .45 FLA / .56 CSA | ICBI - 5001A | | 831-01 | | 8.7 | |
| | INMSNNK016 | #12 (3) 480VAC | .125HP / .45 FLA / .56 CSA | ICBI - 5001C | | 831-01 | | 8.7 | |
| | INMSNNK017 | #12 (3) 480VAC | .125HP / .45 FLA / .56 CSA | IRCP + TER08A ICBI - 5001D | | 221-01 | | 8.7 | |
| | INMSNNK019 | #12 (3) 480VAC | .125HP / .45 FLA / .56 CSA | IRCP + TER08A ICBI - 5001F | | 331-01 | | 8.7 | |
| | INMSNNK021 | #12 (3) 480VAC | .125HP / .45 FLA / .56 CSA | IRCP + TER08A ICBI - 5001H | | 881-01 | | 8.7 | |
| | INMSNNK022 | #12 (3) 480VAC | .125HP / .45 FLA / .56 CSA | IRCP + TER08A ICBI - 5001J | | 881-01 | | 8.7 | |
| | INMSNNK023 | #12 (3) 480VAC | .125HP / .45 FLA / .56 CSA | IRCP + TER08A ICBI - 5001K | | 831-01 | | 8.7 | |

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ATTACHMENT 1

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CABLE DERATING SUMMARY

FIRE AREA RE-4/2-7 FIRE-WRAP RATING 1HR 5HR

AMBIENT TEMP 50 °C

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| RACEWAY | CABLE NO. | CABLE / SERVICE SIZE / VOLTAGE | LOAD / FLA | CONNECTED DEVICE | CIRCUIT NO. | CBD/ESK | C/I | D.C.A. | REMARKS |
|--|------------|--------------------------------|-----------------------------|---------------------------------|-------------|---------|-----|--------|---------|
| ITK502R ↓ 10% fill | ICCPNRK002 | #12 (3) 480VAC | .13HP / .45 FLA 1.96 CSA | IRCP + TCR15A 1CCP + MOV142 | | 422-01 | | 8.7 | |
| | ICCPNRK004 | #12 (3) 480VAC | .13HP / .45 FLA 1.96 CSA | IRCP + TCR15A 1CCP + MOV148 | | 422-01 | | 8.7 | |
| | IRDCARK501 | #4 (3) 120VAC | 3KVA / 25 FLA 32 CSA | IRCP + TCR15A IH22 + PULPOT1 | | DRC102 | | 35.8 | |
| | IRHSARK002 | #8 (3) 480VAC | 1.6HP / .4 FLA 1.5 CSA | IRCP + TCR15A IC12 + FO8TA | | 422-02 | | 20.6 | |
| | IRHSARK004 | #6 (3) 480VAC | 7.9HP / 12 FLA 1.5 CSA | IRCP + TCR15A IR12 + FO42A | | 422-02 | | 25.0 | |
| M7 ITK504R 21% ITK500R 11% ITK508R 10% ITK501R L part fill | ICPMARK002 | #12 (3) 480VAC | .13HP / .45 FLA 1.96 CSA | IRCP + TCR15A ICPM + MOV1A | | 422-01 | | 8.7 | |
| | ICPMARK004 | #12 (3) 480VAC | .13HP / .45 FLA 1.96 CSA | IRCP + TCR15A ICPM + MOV2A | | 422-01 | | 8.7 | |
| | ICPMARK006 | #12 (3) 480VAC | .13HP / .45 FLA 1.96 CSA | IRCP + TCR15A ICPM + MOV3A | | 422-02 | | 8.7 | |
| | ICPMARK008 | #12 (3) 480VAC | 1.5HP / 2.1 FLA 2.61 CSA | IRCP + TCR15A ICPM + PNA1A | | 420-01 | | 8.7 | |
| | ICPMARK010 | #12 (3) 480VAC | .13HP / .45 FLA 1.96 CSA | IRCP + TCR15A ICPM + MOV4A | | 422-08 | | 8.7 | |
| | IHVNARK002 | #10 (3) 480VAC | .7 HP / 2.3 FLA 2.9 CSA | IRCP + TCR15A IHVN + MOV22P | | 899-02 | | 13.4 | |
| | IRCSARK002 | #12 (3) 480VAC | .13HP / .45 FLA 1.96 CSA | IRCP + TCR15A IRCS + MOV60A | | 422-02 | | 8.7 | |
| | IRCSARK004 | #12 (3) 480VAC | .13HP / .45 FLA 1.96 CSA | IRCP + TCR15A IRCS + MOV61A | | 422-02 | | 8.7 | |
| | IRCSARK006 | #12 (3) 480VAC | .13HP / .45 FLA 1.96 CSA | IRCP + TCR15A IRCS + MOV62A | | 420-02 | | 8.7 | |
| | IRCSARK008 | #12 (3) 480VAC | .13HP / .45 FLA 1.96 CSA | IRCP + TCR15A IRCS + MOV69A | | 420-02 | | 8.7 | |
| | ISWPARK008 | #12 (3) 480VAC | 1HP / 2.8 FLA 3.2 CSA | IRCP + TCR15A ISWP + MOV4A | | 420-02 | | 8.7 | |
| | ISWPARK010 | #12 (3) 480VAC | .66HP / 2.3 FLA 2.9 CSA | IRCP + TCR15A ISWP + MOV60A | | 420-02 | | 8.7 | |
| | ISWPARK012 | #10 (3) 480VAC | .66HP / 2.3 FLA 2.9 CSA | IRCP + TCR15A ISWP + MOV60A | | 420-02 | | 13.4 | |
| | ISWPBRK008 | #12 (3) 480VAC | 1HP / 2.8 FLA 3.5 CSA | IRCP + TCR15A ISWP + MOV5B | | 420-02 | | 8.7 | |

ATTACHMENT 1

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CABLE DERATING SUMMARY

FIRE AREA RR-4/E-7 FIRE-WRAP RATING 1HR
3HR

AMBIENT TEMP 50 °C

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| RACEWAY | CABLE NO. | CABLE / SERVICE SIZE / VOLTAGE | LOAD / FLA | CONNECTED DEVICE | CIRCUIT NO. | CCC/ESK | C/I | D.C.A. | REMARKS |
|----------------------------|------------|--------------------------------|----------------------------|----------------------------------|--------------|----------|------|--------|---------|
| ITK500R 31% fill | ICCPNRK002 | #12 (3) 480VAC | .13HP / .45 FLA .56 CSA | IRCP + TCR 15A ICCP + MOV 142 | | 422-01 | | 8.7 | |
| | ICCPNRK004 | #12 (3) 480VAC | .13HP / .45 FLA .56 CSA | IRCP + TCR 15A ICCP + MOV 142 | | 422-01 | | 8.7 | |
| | IRDCARK501 | #4 (3) 120VAC | 3KVA / 25 FLA 22 CSA | IRCP + TCR 15A IN22 + PULPOT1 | Installation | DRC 102 | | 36.8 | |
| | IRHSARK002 | #8 (3) 480VAC | 1.6HP / 4 FLA 5 CSA | IRCP + TCR 15A IB12 + F037A | | 422-02 | | 20.6 | |
| | IRHSARK004 | #8 (3) 480VAC | 7.9HP / 12 FLA 15 CSA | IRCP + TCR 15A IB12 + F042A | | 422-02 | | 20.6 | |
| | ISLSARK002 | #12 (3) 480VAC | .13HP / .45 FLA .56 CSA | IRCP + TCR 15A IC41 + F031A | | 420-01 | | 8.7 | |
| ITK501R ^{of Full} | ICPMARCE07 | #10 (2) 120VAC | 30W / .25 FLA .31 CSA | IRCP + TCR 12A ICPM + FN1A | | 7CPM01 | | 13.4 | |
| ITK525N 71% fill | IDRSANK004 | #2/0 (3) 480VAC | 30HP / 49 FLA 41 CSA | IRCP + TCR 11A IDRS - UC1A | | 380-01 | | 81.9 | |
| | IDRSCNK004 | #2/0 (3) 480VAC | 30HP / 49 FLA 41 CSA | IRCP + TCR 11A IDRS - UC1C | | 380-01 | | 81.9 | |
| | IDRSENK004 | #2/0 (3) 480VAC | 30HP / 49 FLA 41 CSA | IRCP + TCR 11A IDRS - UC1E | | 380-01 | | 81.9 | |
| | IFNRPNK008 | #4 (3) 480VAC | 5HP / 20 FLA 23 CSA | IRCP + TCR 11A IFNR - P08 | | 336-01 | | 35.8 | |
| | IFNRPNK010 | #4 (3) 480VAC | 5HP / 20 FLA 23 CSA | IRCP + TCR 11A IFNR - P10 | | 336-01 | | 35.8 | |
| | IHVRANK002 | #12 (3) 480VAC | 2HP / 3.6 FLA 4.5 CSA | IRCP + TCR 11A IHVR - FN1A | | 358-08 | | 8.7 | |
| | IHVRSNK001 | #12 (3) 480VAC | 2HP / 3.6 FLA 4.5 CSA | IRCP + TCR 11A IHVR - FN1B | | 358-02 | | 8.7 | |
| | IJRBNK002 | #2/0 (3) 480VAC | 15HP / 33.6 FLA 42 CSA | IRCP + TCR 11A IJRB - EL1A | | 358-01 | | 81.9 | |
| | IMSSUNK008 | #12 (3) 480VAC | .34HP / .7 FLA .9 CSA | IB21 - F001 IRCP + TCR 11A | | UTR-3688 | | 8.7 | |
| | IMSSUNK010 | #12 (3) 480VAC | .34HP / .7 FLA .9 CSA | IRCP + TCR 11A IB21 - F002 | | 337-01 | | 8.7 | |
| | IRCSNNK002 | #12 (3) 480VAC | .75HP / 1.6 FLA 2 CSA | IRCP + TCR 11A IB33 - D003A | } Fan motors | 357-02 | | 8.7 | |
| | IRCSNNK004 | #12 (3) 480VAC | .75HP / 1.6 FLA 2 CSA | IRCP + TCR 11A IB33 - D003A | | 357-03 | | 8.7 | |
| | IRCSNNK014 | #2/0 (3) 480VAC | 40HP / 48 FLA 60 CSA | IRCP + TCR 11A IB33 - D003A | } P. motors | 357-01 | | 81.9 | |
| | IRCSNNK016 | #2/0 (3) 480VAC | 40HP / 48 FLA 60 CSA | IRCP + TCR 11A IB33 - D003A | | 357-03 | | 81.9 | |
| | ISLSNNK002 | #6 (3) 480VAC | 10KW / 12 FLA 15 CSA | IRCP + TCR 11A IC41 - D002 | | 336-01 | | 25.0 | |
| | ISLSNNK003 | #2/0 (3) 480VAC | 40FN / 48 FLA 60 CSA | IRCP + TCR 11A IC41 - D002 | 357-01 | | 81.9 | | |

CABLE DERATING SUMMARY

| RACEWAY | CABLE NO. | CABLE / SERVICE SIZE / VOLTAGE | LOAD / FLA | CONNECTED DEVICE | CIRCUIT NO. | CBC/ESK | C/S | DCA | ZONE / RATING / CLASS |
|----------------|------------|-----------------------------------|------------|----------------------------|------------------------|----------|-----|------|--------------------------|
| 1CC002ΦJ-2" | ICSHADC718 | 12/2 125 VDC | 1A | IC22 25004-02 PULSCO1-5 | ALARM 2347 ISOLATOR | CSH210 | | 20 | C6/1/40" |
| | IHVPCBC003 | 12/2 120 VAC | 5A FU | | IHVPC05 | GHVPII | | 20 | |
| 1CC003NA-1" | IRCSNNC730 | 14/5 125 VDC | 1A ALARM | | | RC9204 | | 15 | C17/3/40" |
| 1CC004ΦA-4" | ICSHADC713 | 14/2 125 VDC | 1A | IC22 25004-03 SC02-1 | ALARM 2356 ISOLATOR | CSH211 | | 15 | C6/1/40" |
| | IGSHCC0001 | 12/2 120 VAC | 1A FU | IC22 25004- SC02-1 | | BSHSC001 | | 20 | |
| | IGSHNC0520 | 12/2 120 VAC | 20A FU | IC22 25002-4 5004-AUX | | CSH204 | | 20 | |
| 1CC006BA-4" | ICCSABCO01 | 12/7 120 VAC | 3A FU | | ICSA02 | 6ICSO2 | | 17.3 | C6/3/40" |
| | 004 | 12/12 120 VAC | 3A FU | | ICSA02 | 6ICSO2 | | 17.3 | |
| | CBC001 | 12/7 120 VAC | 3A FU | | ICSC02 | 6ICSO3 | | 17.3 | |
| | 004 | 12/12 120 VAC | 3A FU | | ICSC02 | 6ICSO3 | | 17.3 | |
| | EBC003 | 12/12 120 VAC | 3A FU | | ICSE02 | 6ICSO1 | | 17.3 | |
| | IRHSBBC031 | 12/2 | | | IRHSB06 | 6RHS06 | | 17.3 | |
| | 032 | 12/12 | | | | | | 17.3 | |
| | 035 | 12/2 | | | | | | 20 | |
| | 036 | 12/7 | | | | | | 17.3 | |
| | 037 | 12/12 | | | | | | 17.3 | |
| 1CC006BC-2" | ICSEBC001 | 12/7 | 10A/3A FU | | | | | 17.3 | C6/3/40" |
| | ISHSBBC500 | 12/2 120 VAC | 20A FB | INST BUS B IC61 25001 | | SCV0B1 | | 20 | |
| | 700 | 14/2 125 VDC | 1A ANN | | | SH5114 | | 15 | |
| | 701 | 14/2 125 VDC | 1A ANN | ALARM 2175 | ISHSB21 | 75V03 | | 15 | |
| 1CC019BB-3/4" | IHVCBBC594 | 12/3 120 VAC | 5A FU | | IHVCB22 | 7HVC16 | | 20 | C17/3/40" |
| 1CC019BB2-1/2" | IHVCBBC593 | 12/3 120 VAC | 5A FU | | | 7HVC16 | | 20 | C17/3/40" |

CABLE DERATING SUMMARY

| RACEWAY | CABLE NO. | CABLE / SERVICE SIZE / VOLTAGE | LOAD / FLR | CONNECTED DEVICE | CIRCUIT NO. | CBD/BSK | C/E | DCA | ZONE/RATING (LNE)/RMI |
|---------------|------------|-----------------------------------|------------|------------------------------|----------------|---------|-----|------|--------------------------|
| ICCO19BC-2" | 1HVCBBC508 | 12/12 120 VAC | 5A FU | | 1HVCB18 | 7HVC08 | | 17.3 | C17/3/40° |
| | 522 | 12/2 120 VAC | ↓ | | ↓ | 7HVC08 | | 20 | |
| ICCO19BD-2" | 1HVCBBC017 | 12/5 120 VAC | 3A FU | | 1HVCB10 | 6HVC12 | | 19.7 | C17/3/40° |
| | 588 | 12/3 120 VAC | 5A FU | | 1HVCB22 | 7HVC16 | | 20 | |
| | 1HVCXBC516 | 7/2 120 VAC | 5A FU | | 1HVCB03 | 7HVC08 | | 20 | |
| ICCO19BD1-1" | 1HVCBBC572 | 12/2 120 VAC | | | 1HVCB18 | 7HVC08 | | 20 | C17/3/40° |
| | 573 | 12/2 120 VAC | | | ↓ | 7HVC08 | | 20 | |
| | 574 | 12/2 120 VAC | | | ↓ | 7HVC08 | | 20 | |
| | 589 | 12/2 120 VAC | ↓ | | 1HVCB22 | 7HVC08 | | 20 | |
| | 1HVCXBC515 | 12/2 120 VAC | 5A FU | | 1HVCB22 | 7HVC08 | | 20 | |
| ICCO19BE-3" | 1HVCBBC501 | 12/9 120 VAC | 5A FU | HVCB08BB-C, D 6B-C, D | 1HVCB14 | 7HVC07 | | 17.3 | C17/3/40° |
| | 504 | 12/2 120 VAC | | | 1HVCB14 | 7HVC07 | | 20 | |
| | 531 | 12/9 120 VAC | | HVCB08BB-C, D ADD 1F-C, D | 1HVCB14 | 7HVC07 | | 17.3 | |
| | 580 | 12/5 120 VAC | | | 1HVCB14 | 7HVC07 | | 19.7 | |
| | 1HVCZBC508 | 12/2 120 VAC | ↓ | | 1HVCB14 | 7HVC07 | | 20 | |
| ICCO19BF-1½" | 1HVCXBC500 | 12/3 120 VAC | 5A FU | | 1HVCB16 | 7HVC12 | | 20 | C17/3/40° |
| | 501 | 12/2 120 VAC | 5A FU | | 1HVCB15 | 7HVC10 | | 20 | |
| ICCO19BG-1½" | 1HVCBBC553 | 12/2 120 VAC | 20A CB | HVCB FLT 3B POWER SUPPLY | | SCV14B1 | | 20 | C17/3/40° |
| | 585 | 12/2 120 VAC | 20A CB | HVCB FLT 3B POWER SUPPLY | | SCV14B1 | | 20 | |
| ICCO21BA-¾" | 1SWPBBC080 | 12/3 120 VAC | 3A FU | | 1SWPB37 | 6SWP38 | | 20 | C17/3/40° |
| ICCO23RA1-1½" | 1HVCARCO03 | 12/2 120 VAC | 3A FU | | 1HVCA03 | 6HVC03 | | 20 | C17/3/40° |
| | 540 | 12/2 120 VAC | ↓ | | ↓ | 6HVC03 | | 20 | |

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CABLE DERATING SUMMARY

| RACEWAY | CABLE NO. | CABLE/SERVICE SIZE/VOLTS | LOAD / FLA | CONNECTED DEVICE | CIRCUIT NO. | COND. BSK | C/S | DCA | 20°C CIRCUIT |
|---------------|-------------|-----------------------------|------------|-----------------------------------|------------------|-----------|-----|------|------------------|
| ICC023RA2-1½" | IHVCA RC542 | 12/2 | — | SPARE | — | SPARE | — | 20 | 20°C |
| | IHVKA RC003 | 12/2 | — | SPARE | — | SPARE | — | 20 | C17/3/40° |
| | 016 | 12/2 | — | SPARE | — | SPARE | — | 20 | |
| ICC027BA-¾" | ICESB BC500 | 10/2 | 450 VA | ICESAPNL6B | — | — | — | 30 | C17/3/40° |
| | IQVSNVC708 | 7/2 | 1A ANN | 1BVS208 1BVS424 1BVS442-650 | 1BVS208 | 11BY506 | — | 15 | C17/3/40° |
| ICC043RA2-1½" | IHVCA RC556 | 12/2 | 5A FU | IHVC#50VBA | IHVCA14 | 7HVC01 | — | 20 | |
| | 557 | 12/2 | ↓ | IHVC#A0DBA-0 | IHVCA14 | 7HVC01 | — | 20 | C17/3/40° |
| | 558 | 12/2 | ↓ | IHVC#A0DBA-C | IHVCA14 | 7HVC01 | — | 20 | |
| ICC047BE1-1½" | 709 | 12/2 | 1A ANN | IHVC#A0DBA-0 | IHVCA97 | 7HVC15 | — | 20 | |
| | IHVCA RC531 | 12/2 | 5A FU | IHVKA50VBA | IHVCA14 | 7HVC01 | — | 20 | |
| | IHVCA BC545 | 12/2 | — | SPARE | — | SPARE | — | 20 | C17/3/40° |
| | IHVKA BC003 | 12/2 | — | SPARE | — | SPARE | — | 20 | |
| | 016 | 12/2 | — | SPARE | — | SPARE | — | 20 | |
| ICC047BE2-1½" | IHVCA BC003 | 12/2 | 3A FU | IHVKA562B | IHVCA03 | 6HVC03 | — | 20 | C17/3/40° |
| | 543 | 12/2 | 20 A CB | — | — | SCV1481 | — | 20 | |
| ICC047BE4-1½" | IHVCA BC543 | 12/2 | 20 A CB | — | — | — | — | 20 | C13 C24/3/40° |
| | 545 | 12/2 | — | SPARE | — | SPARE | — | 20 | |
| ICC047NA-1½" | IHVCA BC958 | 16/8 | 1A ANN | 900 156#A017 | IHVCA0 IHVCA3 | 10ANV43 | — | 7.0 | C17/3/40° |
| | 959 | 16/2 | 1A ANN | 580 | IHVCA7 | 10ANV43 | — | 7.0 | |
| | IHVCA BC508 | 12/2 | 5A FU | — | IHVCA14 | 7HVC07 | — | 20 | C16/3/40° |
| ICC049NA-1" | IRMSNBC508 | 8/2 | 20A CB | IRMS#RE13B | — | SCV1481 | — | 15.2 | |
| | IHVCA BC739 | 14/5 | 1A ANN | 160M 376,272 | IHVCA876 0372 | 10ANV47 | — | 15 | C17/3/40° |

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CABLE DERATING SUMMARY

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| RACEWAY | CABLE NO. | CABLE SIZE / SERVICE VOLTAGE | LOAD / FLTA | CONNECTED DEVICE | CIRCUIT NO. | CBC/BSK | C/S | DCA | 20°C / RATING |
|------------------|------------|------------------------------|-------------|---|-------------|---------|-----|--------|------------------|
| ICCO49NA3-1 1/2" | IHVCNDC737 | 14/2 125 VDC | 1A ANN | IHVC-PDS11A | IHVCAD392 | 10ANN47 | | 15 | C17/3/40° |
| | 738 | 14/2 | 1A ANN | IHVC-PDSNB | IHVCAD392 | 10ANN47 | | 15 | |
| ICCO49NE-1 1/2" | IHVCNDC732 | 14/2 | 1A ANN | | AL 401 | 10ANN43 | | 15 | C23 C24/3/40° |
| | 733 | 14/2 | 1A ANN | | 402 | 10ANN43 | | 15 | |
| | 734 | 14/2 | 1A ANN | | 403 | 10ANN43 | | 15 | |
| ICCO49NK-1 1/4" | IHVCNDC712 | 14/2 125 VDC | 1A ANN | IHVC-PDS21A IHVCAD392 IHVS-MCC001-2 IHVS-#P731-A63 | IHVCAD | 10ANN43 | | 15 | C17/3/40° |
| ICCO51NB-2" | IHVCANCO01 | 12/5 120 VAC | 3A FU | | IHVCA07 | 6HVC09 | | 19.7 | C24/3/40° |
| | IHVCBNC001 | 12/5 120 VAC | 3A FU | | IHVCB07 | 6HVC09 | | 19.7 | |
| ICCO52BC1-3" | IHVCBBC501 | 12/9 | 5A FU | | | IHVCB14 | | 7HVC07 | C17/3/40° |
| | 504 | 12/2 | 5A FU | | | | | 7HVC07 | |
| | 505 | 12/2 | 5A FU | | | | | 7HVC07 | |
| | 580 | 12/5 | 5A FU | | | | | 7HVC07 | |
| | 705 | 14/5 125 VDC | 1A ANN | | | IHVCB99 | | 7HVC16 | |
| | IHVCZBC508 | 12/2 120 VAC | 5A FU | | | IHVCB14 | | 7HVC07 | |
| ICCO52BC2-3" | IHVCBBC505 | 12/2 120 VAC | 5A FU | | | | | 7HVC07 | C17/3/40° |
| | 531 | 12/9 120 VAC | 5A FU | | | | | 7HVC07 | |
| ICCO52BC6-1 1/2" | IHVCBBC557 | 12/2 120 VAC | 5A FU | IHVCXSOV6B | | | | 20 | C17/3/40° |
| | 558 | 12/2 | 5A FU | A0D6B 33C | | | | 20 | |
| | 559 | 12/2 | 5A FU | 330 | | | | 20 | |
| | 708 | 14/2 125 VDC | 1A | ALARM (ISOLATOR) | IHVCB99 | | | 7HVC16 | |

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CABLE DERATING SUMMARY

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| RACEWAY | CABLE NO. | CABLE SIZE | SERVICE VOLTAGE | LOAD / FLA | CONNECTED DEVICE | CIRCUIT NO. | CBC/BSK | C/S | DCA | 2EUC/CRATING |
|-----------------|------------|------------|-----------------|-------------|-----------------------------|--------------|-----------|-----|------|--------------------|
| IC0052BC7-1 1/2 | IHVCBBC554 | 12/2 | 120VAC | 5A FU | IHVCN50V0B | IHVCB1H | 7HVC07 | | 20 | C17/3/40° |
| | 555 | 12/2 | | 5A FU | IHVC#A0D0B-C | | | | 20 | |
| | 556 | 12/2 | | 5A FU | IHVC#A0D0B-D | | | | 20 | |
| | 707 | 14/2 | 125VDC | 1A | A0D0B-C | ALARM (200V) | 7HUC16 | | 15 | |
| IC0052BC8-1 1/2 | IHVCBBC570 | 12/2 | | | SPARE | | SPARE | | 20 | C17/3/40° |
| | 575 | 12/2 | | | SPARE | | SPARE | | 20 | |
| | 578 | 12/2 | | | SPARE | | SPARE | | 20 | |
| IC0057RC-1 1/2 | IHVCA517 | 12/9 | 120VAC | 5A FU | 1*JB0007 1H13#PT31-663 | | 7HVC01 | | 17.3 | C17/3/40° |
| IC0062BB-3/4 | IENBNBC705 | 14/2 | 125VDC | 1A ANN | IENB#ENVOB-2 1H13#P744-3 | ENBNT126 | 10ANN133 | | 15 | C17/3/40° |
| IC0065BB-1" | IENBBC634 | 8/2 | | | SPARE | | SPARE | | 45.2 | C24/3/40° |
| IC0066NA-1" | IICSNNC601 | 12/3 | | | SPARE | | SPARE | | 17.3 | C6/3/40° |
| IC0073NA-1 1/2 | IHVCNNC725 | 14/2 | 125VDC | 1A ANN | IHVC-TS132 NO? | IHVCM0 | 10ANN43 | | 15 | C6/1/40° |
| | 956 | 16/8 | 125VDC | 1A ANN | 200, 210, 920 | IHVCM0 | 10ANN43 | | | |
| IC0074NA-1 1/2 | IICSNNC602 | 12/9 | 125VDC | 10A FU | | IICSNN12 | 11ICS11 | | 17.3 | C6/3/40° |
| IC0076RA-3" | IHVFA507 | 12/2 | 120VAC | 5A FU | IRMS#CAB5A | | 7HVFO1 | | 20 | C6/3/40° EE-11A |
| | IHVFA573 | 12/3 | 120VAC | 1A ALARM | | | 7HVRO4 | | 20 | |
| | IRMSARC503 | 12/2 | | | SPARE | | SPARE | | 20 | |
| | 507 | 12/3 | 120VAC | 20A FU | | | RMS500-12 | | 20 | |
| | 508 | 10/2 | 120VAC | GROUND WIRE | | | RMS500-10 | | 30 | |
| | IRMSNRC505 | 12/2 | | 20A CB | IRMS#CAB10A | | SCV14A1 | | 20 | |
| | 506 | | | 20A CB | IRMS#CAB16A | | | | 20 | |
| | 507 | | | 20A CB | IRMS#CAB21A | | | | 20 | |
| | 519 | | | 2.5 A FU | | | RMS500-09 | | 20 | |
| | 520 | 10/2 | | GROUND WIRE | | | | | | |

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| RACEWAY | CABLE NO. | CABLE SIZE / VOLTAGE | LOAD / FLTA | CONNECTED DEVICE | CIRCUIT NO. | COF/ISK | C/S | DCA | ZUC / CA 100% |
|-----------------|-------------|----------------------|-------------|--|-------------|-----------|-----|------|---------------|
| ICC076RB-3/4 | IRMSNRC526 | 12/2 120VAC | 60 VA | IRMS # JB270 | | SCV141 | | 20 | C6/S/40 |
| ICC127NC-2" | IHVCAJNC629 | 12/2 120VAC | 20A CB | IHVC-TIS42A POWER SUPPLY IRMS # JE272 | | 7HUC01 | | 20 | |
| | IRMSNNC587 | 12/2 120VAC | 20A CB | IRSS # PAL102 RECEPT. | | SCA10A1 | | 20 | C24/3/40 |
| ICC127NE-3/4 | IRSSNNC501 | 12/2 120VAC | 20A CB | IRSS # PAL102 | | SCA10A1 | | 20 | |
| | IHVCAJNC526 | 12/2 120VAC | 20A CB | CHRG FLT-PNL IHVC # PLS38 | | VBA0104 | | 20 | C17/3/40 |
| ICC129NA-12" | FIGSNNC502 | 12/7 120VAC | 5A FU | | FIGSP26 | FIG503 | | 17.3 | |
| | IRHSAJNC502 | 12/2 120VAC | 20A CB | IRMS-CAB170 | | SCA10B1 | | 20 | C24/3/40 |
| ICC129NB-3/4 | 503 | 12/7 120VAC | 3A FU | | IRH5NB4 | 7AM504 | | 17.3 | |
| | IHVCAJNC531 | 12/2 120VAC | 20A CB | IRMS-CAB170 | | 7HVC21 | | 20 | C24/3/40 |
| ICC129NC-3/4 | IHVCAJNC526 | SEE ICC127NF | 20A CB | | IHVCA23 | | | 20 | C24/3/40 |
| ICC154BM-3/4 | IEGSNDC700 | 14/2 125VDC | 1A ANN | IRMS-APN1-RS2 IEGS # PAL28 | | 10ANN20 | | 15 | ET11/1/50 |
| | IENBBBC635 | 8/2 125VDC | 10A FU | IRMS-APN1-RS2 IEGS # PAL28 IRSS # PAL102 | | 7SVV03 | | 41.8 | C24/3/40 |
| ICC154BN-1 1/2 | IHVCAJNC520 | 12/2 120VAC | 20A CB | IRMS-APN1-RS2 IEGS # PAL28 IRSS # PAL102 | | SCV15B1 | | 20 | ET11/1/50 |
| | IHVYJNC705 | 14/2 125VDC | 1A ANN | IRMS-APN1-RS2 IEGS # PAL28 IRSS # PAL102 | | 10ANN26 | | 15 | PT11/1/50 |
| ICC270NH1-1 1/2 | IHVYJNC501 | 12/2 120VAC | 20A CB | IRMS-APN1-RS2 IEGS # PAL28 IRSS # PAL102 | | SCABCI | | 20 | PT11/1/50 |
| | NO CABLE | | | | | | | | |
| ICC600NA6-3/4 | IHVYZJNC547 | 12/2 120VAC | 20A CB | IRMS-APN1-RS2 IEGS # PAL28 IRSS # PAL102 | | SCABCI | | 20 | PT11/1/50 |
| | IHVFNJNC007 | 12/5 120VAC | 3A FU | IRMS-APN1-RS2 IEGS # PAL28 IRSS # PAL102 | | 6HVF16 | | 19.7 | FBI-22/3/40 |
| ICC604NC3-2" | D10 | 12/9 120VAC | 3A FU | IRMS-APN1-RS2 IEGS # PAL28 IRSS # PAL102 | | 6HVF16 | | 19.3 | FBI-22/3/40 |
| | I5SRUNNC519 | 12/9 120VAC | 5A FU | IRMS-APN1-RS2 IEGS # PAL28 IRSS # PAL102 | | 7SSRD4-02 | | 15.6 | AB7/3/50 |
| ICC836RP-1 1/2 | IJPBNJRC501 | 12/2 120VAC | 20A CB | IRMS-APN1-RS2 IEGS # PAL28 IRSS # PAL102 | | 9CV1G1 | | 20 | ABL-22/3/50 |
| | I5WPARC082 | 12/2 120VAC | 3A FU | IRMS-APN1-RS2 IEGS # PAL28 IRSS # PAL102 | | 65WP35 | | 20 | ABL-22/3/50 |

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| RACEWAY | CABLE NO. | CABLE/SERVICE SIZE/VOLTS | LOAD / FLA | CONNECTED DEVICE | CIRCUIT NO. | COND/INS | C/I | DCA | ZEDC/KA (100% R ₉₀) | | |
|-------------|-------------|--------------------------|---|------------------|-------------|----------|---------|------|------------------------------------|------|----------|
| ICC843BH-1½ | 1SWPBC086 | 14/2 120 VAC | 3A FU | | | 65WP36 | | 20 | AB7/3/50° | | |
| | | | 3A FU | IDFA-L32E | | 65WP35 | | 20 | | | |
| ICC869NA-1½ | IDFRFNC950 | 16/2 125 VDC | 1A ANN | | | 10ANN44 | | 7.0 | AB7/3/50° | | |
| | | 16/2 125 VDC | 1A ANN | IDFR-L32E | | 10ANN44 | | 7.0 | | | |
| ICC869NB2+3 | IDFRANC706 | 7/4/2 125 VDC | 1A ANN | IDFR-L32E | IDFR0836 | 10ANN44 | | 15 | AB7/3/50° | | |
| | IDFRANC957 | 7/6/2 125 VDC | 1A ANN | IDFR-L32E | | 10ANN44 | | 7.0 | | | |
| | IDFRANC950 | 16/2 125 VDC | 1A ANN | IDFR-L32D | | 10ANN44 | | 7.0 | | | |
| | | 16/2 125 VDC | 1A ANN | IDFR-L32D | | 10ANN44 | | 7.0 | | | |
| | IDFRANC950 | 16/2 125 VDC | 1A ANN | IDFR-L32E | | 10ANN44 | | 7.0 | | | |
| | | 14/2 125 VDC | 1A ANN | IDFR-L32E | | 10ANN44 | | 7.0 | | | |
| | IDFRANC703 | 14/2 125 VDC | 1A ANN | IDFR-L32D | IDFR0836 | 10ANN44 | | 15 | | | |
| | | 14/2 125 VDC | 1A ANN | IDFR-L32E | IDFR0836 | 10ANN44 | | 15 | | | |
| | ICC907RA1-3 | IEGAARC601 | 12/2 125 VDC | 10A FU | | IEGA002 | 11EGA01 | | | 20 | C6/3/40° |
| | | IEGACRC600 | 12/5 125 VDC | 10A FU | | IEGAC02 | 11EGA02 | | | 19.7 | |
| | | 12/2 125 VDC | 10A FU | | IEGAC02 | 11EGA02 | | 20 | | | |
| | | 12/12 125 VDC | 10A FU | | IEGAC02 | 11EGA02 | | 17.3 | | | |
| | | 14/2 125 VDC | 1A ANN | ALM 0473 | IEGAC02 | 11EGA02 | | 15 | | | |
| IEGARC6H | | 12/7 125 VDC | 3A FU | | IEGSA14 | 11EGS06 | | 17.3 | | | |
| IENSARC319 | | 12/5 125 VDC | 7A ^{BRK} _{TOP} | | | SEN506 | | 19.7 | | | |
| | | 12/2 | | SPARC | | SPARE | | 20 | | | |
| | | 12/2 | | SPARC | | SPARE | | 20 | | | |
| | | 12/2 125 VDC | 1A ^{CONTROL} _{RELAYS} | IEGSA013A | | SHVP01 | | 20 | | | |

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CABLE DERATING SUMMARY

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| RACEWAY | CABLE NO. | CABLE SURFACE AREA / VOLUME | LOAD / FLA | CONNECTED DEVICE | CIRCUIT NO. | COND/ESK | C/I | DCA | ZUC / WATTAGE |
|-------------|------------|-----------------------------|---------------|------------------------------|--------------------------|-----------|-----|------|---------------|
| ICC9090A1-4 | ICSHAPC705 | 14/2 125VDC | 1A | 1571 5004 1022.5 CDR 0218 | ALARM 2347 | CSH210 | 1 | 15 | |
| | 712 | 14/2 125VDC | 1A | | 2508 | C9H211 | | 15 | |
| | 714 | 14/2 125VDC | 1A | | 2558 | CSH211 | | 15 | |
| | ICSHAPC310 | 12/5 125VDC | 1A 515 10A | | ICSHM13 | CSH206 | | 19.7 | |
| | 400 | 10/4 | 35A FU | | | C9H205 | | 26.3 | 06/3/40 |
| | 451 | 12/5 | 10A FU | | | C9H206 | | 20 | |
| | 604 | 12/2 125VDC | 15A FU | | | C9H200 | | 20 | |
| | 606 | 12/2 125VDC | 15A FU | | | CSH200 | | 20 | |
| | 610 | 12/6 125VDC | 15A FU | | | CSH202 | | 19.7 | |
| | 611 | 12/6 125VDC | 15A FU | | | CSH202 | | 19.7 | |
| ICC9090A2-4 | 612 | 12/2 125VDC | 15A FU | | | CSH202 | | 20 | |
| | 613 | 12/2 125VDC | 15A FU | | | CSH202 | | 20 | |
| | ICSHAPC506 | 12/2 | | SPARE | | SPARE | | 20 | |
| | ICSHAPC701 | 14/2 125VDC | 1A | | ALARM 2347 | CSH210 | | 15 | |
| | 708 | 14/5 125VDC | 1A | | ALARM 2357 ALARM 2357 | CSH211 | | 15 | |
| | ICSHAPC600 | 12/2 | | SPARE | | SPARE | | 20 | |
| | 614 | 12/2 | | SPARE | | SPARE | | 20 | |
| | 615 | 12/2 | | SPARE | | SPARE | | 20 | |
| | ICSHAPC706 | 14/2 125VDC | 1A | | ALARM 2360 | C9H211 | | 15 | |
| | 711 | 14/2 125VDC | 1A | | ALARM 2360 | CSH211 | | 15 | 06/3/40 |
| ICC9090A3-3 | 716 | 14/2 125VDC | 1A | | ALARM 2353 | CSH210 | | 15 | |
| | ICSHAPC525 | 12/2 120VAC | 1A FU | | | CSH200-02 | | 20 | |
| | 620 | 12/2 125VDC | 20A C.B | | ICSHM43 | CSH213 | | 20 | |

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CABLE DERATING SUMMARY

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| RACEWAY | CABLE NO. | CABLE / SERVICE CABLE / VOLTAGE | LOAD / FLA | CONNECTED DEVICE | CIRCUIT NO. | CED / BSK | C/J | OCA | 200 / 1000 K |
|----------------------|---------------|------------------------------------|--|--------------------------------|----------------|-----------|------|------|-----------------|
| ICC909A3 (CONT'D) | 1CSMNC621 | 12/2 125 VDC | 10A FU | | | CSH213 | | 20 | |
| | 1EGFC002 | 12/7 120 VAC | 1A FU | | 1EGFC02 | 6EGF03 | | 17.3 | |
| | 1EN8C0600 | 12/7 125 VDC | .4A ^{6 IND} _{4TB} | | | 11EN808 | | 17.3 | |
| | 1HVPC0004 | 12/9 120 VAC | 5A FU | 1HVPC012C | | 6HVP11 | | 17.3 | |
| | 005 | 12/7 120 VAC | 3A FU | | | 6HVP08 | | 17.3 | |
| | 501 | 12/2 125 VDC | 20A CB | 1HVP X FU 3A No | 1HVPC06 | 7HVPO3 | | 20 | |
| | 502 | 10/2 125 VDC | 3A FU | | 1HVPC07 | 7HVPO5 | | 30 | |
| | 503 | 12/2 125 VDC | 3A FU | | 1HVPC07 | 7HVPO5 | | 20 | |
| | 1CSMNC600 | 12/5 125 VDC | 15A FU | | 1CSM03 | CSH201 | | 19.7 | |
| | 704 | 12/7 125 VDC | 1A | MAEM 334, 335, 336 ISOLATOR | | CSH210 | | 14.4 | |
| ICC909A9-4 | 715 | 12/5 125 VDC | 1A | MAEM 334, 335, 336 ISOLATOR | | CSH210 | | 15 | |
| | 1CSMNC600 | 12/5 125 VDC | 10A FU | | 1CSM03 | CSH201 | | 19.7 | |
| | 1CSMNC302 | 12/5 125 VDC | 5A FU | | 1CSM11 | CSM203 | | 19.7 | |
| | 308 | 12/2 125 VDC | 15A FU | | 1CSM13 | CSH206 | | 20 | |
| | 309 | 12/5 125 VDC | 15A FU | | | CSM206 | | 19.7 | |
| | 450 | 12/3 120 VAC | 10A FU | | 1CSM12 | CSM204 | | 20 | |
| | 456 | 12/3 120 VAC | 10A FU | | 1CSM12 | CSH204 | | 20 | |
| | 519 | 10/2 120 VAC | 10A FU | | | CSH212 | | 30 | |
| | 521 | 12/2 120 VAC | 15A CB | | | CSM000-03 | | 20 | |
| | 523 | 12/9 120 VAC | 1A FU | | | CSM500-02 | | 17.3 | |
| 524 | 12/2 120 VAC | 1A FU | | | CSM500-02 | | 20 | | |
| 526 | 12/12 120 VAC | 1A FU | | | CSM500-02 | | 17.3 | | |
| 601 | 12/5 125 VDC | 15A FU | | 1CSM07 | CSH200 | | 19.7 | | |

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| RACEWAY | CABLE NO. | CABLE SIZE GAGE/VOLTS | LOAD / FLA | CONNECTED DEVICE | CIRCUIT NO. | CED/BSK | C/I | CCA | ZUC/CA/BSK/APP |
|-----------------------|-------------|--------------------------|------------------|---------------------|----------------|---------|-----|------|----------------|
| 1CC909A19 (CONT'D) | 1CSHN0C602 | 12/3 125VDC | 15A FU | | 1CSHN09 | CSH200 | | 20 | |
| | 606 | 12/2 125VDC | 15A FU | | 1CSHN09 | CSH200 | | 20 | 06/3/40° |
| | 607 | 12/2 125VDC | 15A FU | | 1CSHN09 | CSH200 | | 20 | |
| 1CC909B01-1/2 | 1CSHN0C319 | 12/3 125VDC | 1A 40Y 1A 1ST | | | CSH107 | | 20 | |
| | 1EGFN0C705 | 12/2 125VDC | < 1A ANN | | | 11EEF03 | | 15 | 06/1/40° |
| | 1EGNB0C0603 | 12/2 125VDC | SHUNT TRIP | | | 11ENB08 | | 20 | |
| 1CC909B07-1/2 | 1CSHN0C321 | 12/2 125VDC | 15A FU | | | CSH204 | | 20 | 06/1/40° |
| | 322 | 12/2 125VDC | 15A FU | | | CSH204 | | 20 | |
| | 1RCSB0C600 | 12/2 125VDC | 5A FU | 1RNSB36 RCSB36 | 1RCSB32 | RPS12B | | 20 | 06/3/40° |
| 1CC918KA-1/2 | 1RPSCKC600 | 12/2 120VAC | 15A 5BFU | | | RPS11B | | 20 | |
| | 573 | 12/2 120VAC | 15A 5BFU | | | RPS11B | | 20 | 06/1/40° |
| | 580 | 12/2 120VAC | 15A 5BFU | | | RPS11B | | 20 | |
| 1CC918KB-2° | 587 | 12/2 120VAC | 15A 5BFU | | | | | 20 | |
| | 1NNSCKC600 | 16/4 20VDC | 1A FU | | | NMS202 | | 7.0 | 06/1/40° |
| | 602 | 12/2 120VAC | 1A FU | | | | | 7.0 | |
| 1CC918BA-1/2 | 604 | 12/2 120VAC | 1A FU | | | | | 7.0 | |
| | 1CSHN0C500 | 12/7 120VAC | 10A FU | | | CSH100 | | 17.7 | 06/1/40° |
| | 502 | 12/3 120VAC | 1A FU | | | CSH100 | | 20 | |
| 1CC918UA-1/2 | 1RPSCKC511 | 12/2 120VAC | 5A FU | 1CUBLSN13C | 1RPS001 | RPS105 | | 20 | 06/1/40° |
| | 1HVCXBC512 | 12/2 120VAC | 5A FU | 1HVC#50V107 | 1HVCB16 | THUC12 | | 20 | 017/5/40° |
| | 1HVCZBC506 | 12/2 120VAC | 5A FU | 1HVC#0D107C | 1HVCB16 | THUC08 | | 20 | |

CABLE DERATING SUMMARY

| RACEWAY | CABLE NO. | CABLE/SERVICE SIZE/VOLTAGE | LOAD/FLA | CONNECTED DEVICE | CIRCUIT NO. | CBC/BSK | C/S | DCA | 200/1000 |
|---------------|------------|-------------------------------|----------|---------------------|----------------|---------|-----|-----|-----------|
| ICC920BD4-1/2 | 1HVCBBC566 | 12/2 120 VAC | 5A FU | 1HVCXSOV148 | | 7HVC08 | | 20 | C17/3/40° |
| | 567 | ↓ | ↓ | ADD148-C | | ↓ | | 20 | |
| | 568 | ↓ | ↓ | - | | ↓ | | 20 | |
| | 1HVCXBC511 | 12/2 120 VAC | ↓ | -C | | 7HVC08 | | 20 | |
| ICC920BE-3/4 | 1LACNBC500 | 12/2 120 VAC | 20A CB | | | 5CVBB1 | | 20 | C24/5/40° |
| ICC920BF-2 | 1HVCBBC560 | 12/2 120 VAC | 5A FU | 1HVCXSOV19B | 1HVCB14 | 7HVC07 | | 20 | C17/3/40° |
| | 561 | ↓ | ↓ | 1HVCXADD19B-C | ↓ | ↓ | | 20 | |
| | 562 | ↓ | ↓ | 1HVCXADD19B-O | ↓ | ↓ | | 20 | |
| | 590 | 12/2 120 VAC | | 1HVCXADD19B-C | 1HVCB22 | 7HVC07 | | 20 | |
| | 1HVCXBC513 | 12/2 120 VAC | | 1HVCXADD19B-O | ↓ | 7HVC07 | | 20 | |
| ICC920BF3-2 | 1HVCBBC569 | 12/2 120 VAC | | 1HVCXADD19F-O | 1HVCB14 | 7HVC07 | | 20 | C17/3/40° |
| | 571 | ↓ | ↓ | 1HVCXADD19F-O | 1HVCB22 | ↓ | | 20 | |
| | 576 | ↓ | ↓ | 1HVCXSOV19F | 1HVCB14 | ↓ | | 20 | |
| | 577 | ↓ | ↓ | 1HVCXADD19F-C | 1HVCB14 | ↓ | | 20 | |
| | 1HVCXBC514 | 12/2 110 VAC | ↓ | 1HVCXADD19F-C | 1HVCB22 | 7HVC07 | | 20 | |
| ICC920BF4-2 | NO CABLES | | | | | | | 20 | C17/3/40° |
| ICC920BF5-2 | 1HVCBBC560 | } SEE ICC920BF | | | | --- | | 20 | C17/3/40° |
| | 561 | | | | | --- | 20 | | |
| | 562 | | | | | | --- | 20 | |
| | 569 | } SEE ICC920BF3 | | | | | --- | 20 | |
| | 576 | | | | | | --- | 20 | |
| | 577 | | | | | | --- | 20 | |

CABLE DERATING SUMMARY

| RACEWAY | CABLE NO. | CABLE / SERVICE SIZE / VOLTAGE | LOAD / FLA | CONNECTED DEVICE | CIRCUIT NO. | CBC/BSK | C/I | BCA | 200/100 |
|--------------|-------------|--------------------------------|-------------------------|---------------------------------------|-------------|----------|-----|------|-----------------|
| CC920BLI-1/2 | 1EGADBC602 | 12/2 125VDC | 10A CB | | | 11EGA04 | | 20 | C6/1/40 |
| | 1ENSBBC316 | 12/5 125VDC | 7A ^{BACK} TRIP | | | SENS07 | | 20 | |
| CC920NJ-3 | 1BYSBNC500 | 12/2 120VAC | 200VA 7.5A | COMP. HTS 1BYSASW610 | | SCA10B1 | | 20 | C23 C24/3/40 |
| | 1CESNNC528 | 12/2 | | SPARE | | SPARE | | 20 | |
| | 1HVCBNC504 | 12/2 120VAC | 20A CB | 1HVC-TS24B | | SCA10B1 | | 20 | |
| | 1HVCNNC506 | 10/3 240VAC | 2000VA/30A CB | SUCT HTS 1HVC-CH4 | | SC 11 | | 30 | |
| | 519 | 10/2 120VAC | 20A CB | 1HVC-TIS ^{40B, 45B} 141 | | SCA10B1 | | 30 | |
| | 557 | 12/2 | 20A CB | 1HVC-FN7, 10, 11 ^{HTS} | | SCA10B1 | | 30 | |
| | 558 | 12/2 | 20A CB | CONTROL POWER 1HVC-FRT2 | | ↓ | | 20 | |
| CC920NJ2-3/4 | 1CESNNC528 | 12/2 | | SPARE | | SPARE | | 20 | |
| CC920NJ4-1 | 1HVCNNC506 | SEE 1CC920NJ | | | | | | 20 | ↓ ↓ ↓ |
| CC920NJ5-3/4 | 1HVCBNC504 | SEE 1CC920NJ | | | | | | 30 | |
| CC920NJ8-3/4 | 1HVCNNC579 | SEE 1CC920NJ | | | | | | 20 | |
| CC920NR7-1/2 | 1HVCBNC511 | 12/2 120VAC | 1A ANN | 1HVC-TIS24B | | 10ANN43 | | 20 | C17/3/40 |
| | 952 | 14/2 125VDC | 1A ANN | ↓ | | 10ANN43 | | 15 | |
| | 1HVCNNC727 | 14/2 125VDC | 1A ANN | ↓ | | 10ANN43 | | 20 | |
| CC920NXL-3/4 | 1HVCANNC515 | 12/2 120VAC | 20A CB | 1HVC-TIS45A | | HVC44406 | | 20 | C6/1/40 |
| CC920NY-3/4 | 1HVCNNC514 | 12/2 120VAC | 20A CB | 1HVC-TIS ^{131, 132} 133, 134 | | SCA10B1 | | 20 | C24/3/40 |
| CC920RG-1/2 | 1HVCARCS26 | 12/2 | DELETED | ? | | | | 20 | C17/3/40 |
| CC9398B-1/2 | 1MSIBBC011 | 12/7 120VAC | 3A FU | | | 6MSI04 | | 17.3 | C17/3/40 |
| | 513 | 12/2 120VAC | 10A FU | | | MSI04 | | 20 | |

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CABLE DERATING SUMMARY

| RACEWAY | CABLE NO. | CABLE/SOURCE GAGE/VOLTS | LOAD / FLTA | CONNECTED DEVICE | CIRCUIT NO. | CEC/BSK | C/I | DCA | 200/1000 |
|----------------|------------|----------------------------|-------------|-------------------------------|----------------|---------|-----|-----|----------|
| ICC940JB-1 1/2 | 1M55BJC502 | 12/3 120 VAC | 5A FU | 1B21 # ADVF021A 30V | 1M55B06 | ISM108 | | 20 | 06/3/40 |
| | 503 | | | 1B21 # ADVF021B 30V | | | | 20 | |
| | 504 | | | 1B21 # ADVF021C 30V | 1M55B06 | ISM109 | | 20 | |
| | 505 | | | 1B21 # ADVF021D 30V | | | | 20 | |
| | 1M55AJC502 | 12/4 120 VAC | | 1B21 # ADVF021A 30V | 1M55A06 | ISM108 | | 20 | |
| ICC940JE - 3 | 503 | | | 1B21 # ADVF021B 30V | | | | 20 | 06/3/40 |
| | 504 | | | 1B21 # ADVF021C 30V | 1M55A06 | ISM109 | | 20 | |
| | 505 | | | 1B21 # ADVF021D 30V | | | | 20 | |
| | 514 | 12/5 | | 1B21 # ADVF021A 30V, 30V-C | 1M55A06 | ISM108 | | 20 | |
| | 515 | | | 1B21 # ADVF021B 30V, 30V-C | 1M55A06 | ISM108 | | 20 | |
| | 516 | | | 1B21 # ADVF021C 30V, 30V-C | 1M55A06 | ISM109 | | 20 | |
| | 517 | | | 1B21 # ADVF021D 30V, 30V-C | 1M55A06 | ISM109 | | 20 | |
| ICC940JK-2 | 1M55BJC600 | 16/18 20VDC | 1A FU | | | NM5201 | | 7.0 | 06/3/40 |
| | 1RPSBTC500 | 12/2 120VAC | 5A FU | | | RPS132 | | 20 | |
| | 501 | | | | | | | 20 | 06/3/40 |
| ICC940TD - 2" | 502 | | | | | | | 20 | |
| | 503 | | | | | | | 20 | |
| | 1ISMNTC507 | 12/2 120 VAC | | 1G33 # F001 | 1B21M004 | ISM119 | | 20 | |
| | 1RPSATC500 | 12/2 | | | | RPS132 | | 20 | 06/3/40 |
| | 501 | | | | | | | 20 | |
| | 502 | | | | | | | 20 | |
| | 503 | | | | | | | 20 | |
| 1RPSBTC511 | | | | 1C11 # F009 | 1RPSB01 | RPS103 | | 20 | |

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CABLE DERATING SUMMARY

| RACEWAY | CABLE NO. | CABLE / SERVICE SIZE / VOLTAGE | LOAD / FLTA | CONNECTED DEVICE | CIRCUIT NO. | COD / BSK | C/S | DCA | ENE / INK / 122° |
|---------------|-----------------|-----------------------------------|--------------|---------------------|------------------|--------------------|--------|-----|-----------------------|
| ICK001F2-3 | IHVYCP005 | 2C/12 120VAC | FUSE 2A | IHVY-FS17E | 1E22* 5002 | 6HXY07 | | 20 | PT 1 1 INK 122° |
| | 006 | | FUSE 2A | IHVY-FS17F | | | | 20 | |
| | 500 | | 20A CB | IHVY-FS17E | 13CV* PMS002 | | | 20 | |
| | 501 | | 20A CB | IHVY-FS17F | | | | 20 | |
| | IHVYCPK001 | 3C/4 480VAC | 7.5HP / 9.5A | IHVY-FNIC | 1E22* 5002-5 | EE-15A | | 70 | |
| | IHVYANC501 | 2C/12 120VAC | 30W / 0.25A | IHVY-FNIC-HTR | 1E22* 5002-5 | 7HXY02 | | 20 | |
| | ISWPCPC003 | 7C/12 120VAC | FUSE 2A | 15WP-MOV40C | 1E22* 5002-5 | 6SWP10 | | 16 | |
| | 006 | 2C/12 120VAC | DELETE | 15WP-MOV40C -HTR | 1E22* 5004-5 | 7SWP25 | | - | |
| | 301 | 2C/12 125VDC | FUSE 15A | 15WP-MOV40C | | -5 | 5SWP06 | 20 | |
| | 500 | 2C/18 120VAC | 400W / 3.2A | 15WP-P2C | | | 7SWP25 | 48! | |
| | ISWPCCK001 | 3C/12 480VAC | 0.7HP / 2.3A | 15WP-MOV40C | 1E22* 5002-5 | EE-15A | | 20 | |
| | ICK600NAH-3 | IDFMANK009 | 3C/12 600V | 2HP / 3AA | IDFM-P8 | 1NH3- TKL8B-3 | EE-17B | | |
| IHVYANC503 | | 2C/12 120VAC | 28W / 0.23A | IHVY-FN9-HTR | 1NH3- TKL8A-4 | 7HXY03 | | 20 | |
| IHVYANC511 | | 2C/12 120VAC | 28W 0.23A | IHVY-FN10-HTR | 1NH3- TKL8A-4 | 7HXY03 | | 20 | |
| IHVYANK011 | | 3C/12 600V | 2HP / 3.2A | IHVY-FN9 | 1NH3- TKL8A-4 | EE-17A | | 20 | |
| 012 | | 3C/12 600V | 2HP / 3.2A | IHVY-FN10 | 1NH3- TKL8A-4 | EE-17A | | 20 | |
| 037 | | 3C/12 480V | 30KW / 36A | IHVY-CH13 | 1NH3- TKL8B-4 | EE-17A | | 93 | |
| IHVYANC547 | | 2C/12 120VAC | 1/2A RELAY | IHVY-CH13 | 15CA- ANLAC1 | 216 130 295 178 | | 20 | |
| ICK600NA6-1/2 | IHVYANC511 | SEE ICK600NA6 | | | | | | | PT 1 1 INK 122° |
| | IHVYANK012 | SEE ICK600NA6 | | | | | | | |
| ICK600NA7-1/2 | SEE ICK600NA6 - | SAME CABLES | | | | | | | PT 1 / INK / 122° |
| ICK600NA9-1/2 | IHVYANK037 | SEE ICK600NA6 | | | | | | | PT 1 / INK / 122° |

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CABLE DERATING SUMMARY

| TRACWAY | CABLE NO. | CABLE SERVICE TYPE/VOLTAGE | LOAD / FLA | CONNECTED DEVICE | CROSS NO. | COND/BRK Q/S | PCA | ZUC/ M/C/1/2/3/4 | |
|-----------------|------------|-------------------------------|-----------------|---------------------------|---------------------------|--------------------|-------------------------|---------------------|---------------------|
| CK600ND2-3 | 1LAHNNK004 | 3C/2 600V | 15KVA / 18A | 1LAX-XLS1 | NHS- MCCB-1-1 | EE-1JC | 93 | PT1/1M/178° | |
| | 1HVYNNK042 | 3C/6 480VAC | 14.1KN / 17A | 1HVY-CH14 | NHS- MCCB-2 | EE-1JA | 70 | | |
| | | 043 | | 14.1KN / 17A | 1HVY-CH18 | | | 70 | |
| | CK600UM1-4 | 044 | 3C/8 480VAC | 4KW / 4.8A | 1HVY-UH15 | NHS- MCCB-4 | EE-1JB | 37.3 | |
| | | 045 | 3C/8 480VAC | 4KW / 4.8A | 1HVY-UH16 | NHS- MCCB-3 | EE-1JB | 37.3 | |
| | | 046 | 3C/8 480VAC | 5KW / 6A | 1HVY-UH17 | NHS- MCCB-2 | EE-1JB | 37.3 | PT1 |
| | | 047 | 3C/8 480VAC | 5KN / 6A | 1HVY-UH18 | NHS- MCCB-2 | EE-1JB | 37.3 | 1M 122° |
| | 1CK602NC-2 | 1HVYBNC544 | 2C/12 120VAC | 1/2 A RELAY | 1HVY-CH14 | 15CA- PNLBI | 24-30 24-30 24-30 | 20 | |
| | | 545 | 2C/12 120VAC | 1/2 A RELAY | 1HVY-CH18 | 15CA- PNLBI | 24-30 24-30 | 20 | |
| | | 1HVFNNC031 | 2C/2 120VAC | FUSE 3A | 1HVF-UC3 | NHS- MCCB-3 | 60NVL6 | 20 | FBI/EZ 3M 96° |
| 525 | | 2C/2 120VAC | 30W / 2.5A | 1HVF-UC3-MIX | NHS- MCCB-3 | 2HVF09 | 20 | | |
| 1HVFNNK002 | | 3C/12 600V | 3HP / 4.0A | 1HVF-UC3 | NHS- MCCB-3 | EE-1JA | 20 | | |
| 1CK8150C2-1 1/2 | 1DFRFNK002 | 3C/10 600V | 1.5HP / 2.6A | 1DFA-PSF | NHS- MCCB-3 | EE-1CC | 28 | AD7 3M 122° | |
| | 1DFRNNC544 | 2C/12 120VAC | SPARE | 1DFA-PSF-MIX | NHS- MCCB-3 | 7DFR06 | - | | |
| | 1C3HNNK015 | 3C/6 480VAC | 15KN / 18A | 1E22SKP50N DAN -ELE | 1E22SKP50N DAN -ELE | 1E22M500Z -2A | EE-15A | 60 | C6 1M 106° |
| | | 016 | 3C/12 480VAC | 3KN / 3.6A | 1E22K501-E1B 53N | 1E22+500Z -3A | EE-15A | 20 | |
| 1CK920B8-3 | 017 | 3C/12 480VAC | 1MP / 1.8A | 1E22+500V-E1B 60P | 1E22+500Z-2 0 | EE-15A | 20 | | |
| | 1HVCBBC502 | 3C/12 120VAC | FUSE 16A | 1HVC+CM10 | 1HVC+ PNLBI | 216-200 112-032 | 20 | C17 3M 90° | |
| | | 1HVCBBK200 | 3C/6 480VAC | 65KN / 78.2A | 1HVC+CH18 | 1HVC+ PNLBI | EE-1AD | 58 | |
| | 201 | | PARALLEL CABLES | | | | 58 | | |
| 1CK920BC-3 | 1SCMBBK500 | 3C/350VAC 350VAC NXP-57 | 22.5AMP | 1SCM+PNL01B | 1SCM+XRC LAB1 | | 235 | CE4/3M/90° | |
| | 1HVKBXK001 | 2C/12 120VAC | FUSE 3A | 1HVKB+CH10 | NHS- MCCB-3 | 6MVK17 | 20 | C24 3M 90° | |
| 1CK920BK001 | 3C/12 600V | 2HP / 3.4A | 1HVKB+CH10 | NHS- MCCB-3 | EE-1LA | 20 | | | |

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CABLE DERATING SUMMARY

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| TRACWAY | CABLE NO. | CABLE/SURFACE AREA/VOLUME | LOAD / FLTA | CONNECTED DEVICE | CIRCUIT NO. | COOLING | ETA | TYPE / MARK |
|---------------|--------------|---------------------------|----------------------------|------------------|-----------------|------------------------|------|---|
| CK920NM-2 | 002 | 2C/12 120VAC | RISE 3A | IDEM-SWCAA | INHS-MCC-1082-3 | GDFM03 | 17.3 | C23, 24 3MC 3MC 90° 90° |
| | 003 | 2C/12 120VAC | RISE 3A | IDEM-LS107 | INHS-MCC-1082-3 | GDFM03 | 20 | |
| | 001 | 3C/12 480VAC | 1.5MP / 2.6A | IDFM-P4A | INHS-MCC-1082-3 | EE-1LA | 20 | |
| | 001 | 3C/4 480VAC | 15KVA / 18A | ISCA-XD10A1 | INHS-MCC108-1 | EE-1LA | 75 | |
| | 001 | 2C/12 120VAC | RISE 3A | INVKXCHLIA-PBC | INHS-MCC108-1 | GANNK6 | 20 | C24 3MC 90° |
| | 001 | 2C/12 120VAC | RISE 3A | INVKACHLIC-PBC | INHS-MCC108-1 | GANNK6 | 20 | |
| | 002 | 3C/12 600V | 2MP / 3.4A | INVKXCHLIA-PBC | INHS-MCC108-1 | EE-1LA | 20 | |
| | 003 | 3C/12 600V | 2MP / 3.4A | INVKACHLIC-PBC | INHS-MCC108-1 | EE-1LA | 20 | |
| | 005 | 3C/4 240VAC | 15KVA / 18.5PLA 6.9 CSA | ISCA-PNL10A1 | ISCA-XD10A1 | ASSUME 1.1 AFLA=CSA | 75 | C23 3MC 90° C24 3MC 90° |
| | 011 | 3C/4 480V | 25KVA / 30A | ILAC-XLC6 | INHS-MCC108-1 | EE-IDF | 75 | C24 3MC 90° C23 3MC 90° C24 3MC 90° |
| CK921NM-1 1/2 | 003 | 3C/4 480VAC | 15KVA / 18A | ISCA-XD10B2 | INHS-MCC108-1 | EE-KA | 75 | |
| | 004 | 3C/8 480V | 5.3MP / 7.5A | IE22*PO15 | IE22*S002-4 | EE-1SA | 36.4 | AB7 3MC 12.2 |
| CK921NM-1 1/2 | 004 | 3C/10 480V | 3.2MP / 5.2A | IE22*FP12 | IE22*S002-4 | EE-1SA | 28 | |
| | 007 | 3C/6 480VAC | 10.5MP / 15.1A | IE22*FO04 | IE22*S002 | EE-1SA | 52 | |
| | 012 | 3C/8 480VAC | 10 HP / 14.5A | IE22*FO23 | IE22*S002-4 | EE-1SA | 36.4 | |
| | 005 | 2C/12 120VAC | 90W / 0.75A | INVR-UK5-MTR | IE22*S002-1 | THVR19 | 20 | |
| | 001 | 3C/26 480VAC | 40HP / 45A | INVR-UC5 | IE22*S002-1 | EE-1SA | 111 | |
| | 027 | 2C/12 120VAC | 30W / 0.25A | IE22*CO03-HTR | IE22*S002-2 | TCSHD1 | 20 | AB7 |
| | 002 | 3C/12 480VAC | 2.7 HP / 2.3 AMP | IE22*FO01 | IE22*S002-2 | EE-1SA | 20 | 3MC 12.2 |
| | 008 | 3C/10 480VAC | 5HP / 6.5A | IE22*CO03 | IE22*S002 | EE-1SA | 28 | |
| | 010 | 3C/4 480VAC | 13HP / 19 AMP | IE22*FO10 | IE22*S002 | EE-1SA | 68 | |
| | 011 | 3C/4 480VAC | 13HP / 19 AMP | IE22*FO11 | IE22*S002-3 | EE-1SA | 68 | |
| 013 | 3C/12 480VAC | 1.2KW / 1.5 AMP | IE22*CO01 | IE22*S002-1 | EE-1SA | 20 | | |

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CABLE DERATING SUMMARY

| RACEWAY | CABLE NO. | CABLE/SERVICE SIZE/VOLTAGE | LOAD / FLTS | CONNECTED DEVICE | CIRCUIT NO. | COND. SK. | C/S | DCA | ΔUc / U _{100%} |
|---------------|-------------|-------------------------------|---------------|---|----------------|-----------|-----|-----|-------------------------|
| ICL004NC - 4 | 1E1NBANL600 | 300KCM X 3 125VDC | | 1BYS-300G01P-3 1E11# PNL501-0 1BYS-300G01P-3 1BYS-PNL024Z | | EE-12J | C | 242 | C6/1/40° |
| ICL027NC - 4 | 1BYSANL605 | 300KCM X 3 125VDC | 75A | | | EE-12E | C | 296 | C24/3/40° |
| | 618 | 300KCM X 3 125VDC | | | | | | 296 | |
| ICL062NA - 4 | 1BYSBANL605 | | 100A | 1BYS-300G01B-4 1BYS-PNL020Z | | EE-12F | C | 296 | C24/3/40° |
| | 618 | | | | | | | 296 | |
| ICL110NC - 4 | 1NH5BANL216 | 500KCM X 3 480VAC | 250KVA / 300A | 1026-LDC10V 1NH5-MCC15B-1 1NH5-LDC10V 1NH5-MCC15B-1 | | EE-1AV | C | 274 | E11/1/50° |
| ICL110ND - 4 | 1NH5BANL235 | 500KCM X 3 480VAC | | | | | | 274 | E11/1/50° |
| ICL9090AI - 3 | 1HVPADL001 | 250KCM X 3 480VAC | 100HP / 114A | 1HVP-4FN3A | | EE-1SA | C | 198 | C6/1/40° |
| ICL9191NF - 4 | 1IHSANL603 | 750KCM X 3 125VDC | | 1BYS-300G01B-1 1BYS-300G01D-2 1E10-F-MCC14B-3 1SCM-XXC4N01 | | EE-12J | C | 476 | C6/1/40° |
| ICL9208E - 3 | 1SCMBL001 | 2/0 X 3 480VAC | 50KVA / 104A | | | E-321 | C | 124 | C24/3/40° |

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CABLE DERATING SUMMARY

| TRACWAY | CABLE NO. | CABLE SERVICE GAGE/VOLTS | LOAD / FLTA | CONNECTED DEVICE | CIRCUIT NO. | COND. BSK. | Q/2 | OC | ZUC/REMARKS |
|---------------|--------------|-----------------------------|--------------|---------------------|--------------------|----------------|-----|-----|-------------------|
| TTCC001φ-3X18 | 1CSHAφC710 | 5C/14 125VDC | < 1A ANN | 1H13*P712 -D25 | 1E22* 5002-1 | 221 414 Q60 | | 5.4 | C6 1hr 104° |
| | 1CSHNC319 | 3C/12 125VDC | .4A 2x MEH | 1N22*ANL028 | 1E22* 5004-4 | 221 414 Q51 | | 7.7 | |
| | 321 | 2C/12 125VDC | .021A 1x HMA | 1N22*ANL028 | 1E22* 5004-AUX | 221 414 Q52 | | 9.0 | |
| | 322 | | .014A 1x HMA | | | | | 9.0 | |
| | 516 | 2C/10 120VAC | SPARE | 1H13*P702 -A25 | 1E22* 5002-1 | 221 414 Q51 | | - | |
| | 608 | 2C/12 125VDC | SPARE | 1H13*P712 -D25 | 1E22* 5004-AUX | 221 414 Q52 | | - | |
| | 1EGFNAφC705 | 2C/14 INST | < 1A ANN | 1H13*P712-025 | 1E22*ANL 5001 | 1E6P03 | | 7.0 | |
| | 1E08CφC603 | 2C/12 125VDC | SHUNT TRIP | 1H13*P751-A | 1E22*ANL 5001-4 | 1E6B08 | I | 9.0 | |
| | 1HVPNAφC600 | 2C/12 125VDC | < 1A ANN | 1H13*P712 | 1E22*5002 -7 | 10ANN42 | | 9.0 | |
| | 1SWPNφC601 | 2C/12 125VDC | < 1A ANN | 1H13*P751-A | 1E22*5004 -05 | 55WP06 | | 9.0 | |
| | 1CSHAφC600 | 5C/12 125VDC | 1/3 HP 4.1A | 1H13*P751-001 | 1E22*ANL 5001-7 | 221 414 Q52 | I | 7.5 | |
| | 700 | 2C/14 125VDC | < 1A ANN | 1H13*P712-025 | 1E22*5004 -04 | 221 414 Q60 | | 7.0 | |
| | 701 | | | | 1H22*ANL A028 | | | 7.0 | |
| | 702 | | | | 1E22*5004 -02 | | | 7.0 | |
| 703 | | | | 1E22*5004 -AUX | | | 7.0 | | |
| 704 | 7C/14 125VDC | | | 1E22*ANL 5001-5 | | | 7.0 | | |
| 705 | 2C/14 125VDC | | | 1E22* 5004-02 | | | 5.3 | | |
| 706 | 2C/14 125VDC | | | 1H13* PT12-025 | | | 7.0 | | |
| 707 | 2C/14 125VDC | | | 1H13*P7-12 -025 | 1E22*5004 AUX | | 7.0 | | |
| 708 | 5C/14 125VDC | | | 1H13* PT12-025 | | | 5.4 | | |
| 711 | 2C/14 125VDC | | | 1E22* 5001C68 | | | 7.0 | | |
| 712 | 2C/14 125VDC | | | 1E22* 5004-03 | | | 7.0 | | |
| 714 | 2C/14 125VDC | | | 1E22*5004 -AUX | | | 7.0 | | |

ATTACHMENT I
E-2/18

CABLE DERATING SUMMARY

PAGE 61 OF 67

| RACEWAY | CABLE NO. | CABLE SERVICE SIZE / VOLTAGE | LOAD / FLT. | CONNECTED DEVICE | CIRCUIT NO. | COOLING C/S | DCA | 200/1000 |
|---------------------|--------------|---------------------------------|---------------|---------------------|--------------------|----------------|-----|----------|
| 17C0020 (CONT'G) | 1CSHAD0C715 | 5C/14 125VDC | < 1A ANN | 1H13P712-D25 | 1E22*PNL 5001-7 | 221 414 060 | 5.4 | |
| | 716 | 2C/14 125VDC | | 1H13P712-D25 | 1E22*PNL 5001-4 | | 7.0 | |
| | 717 | 2C/12 125VDC | | 1H13P712-B | 1E22* 5004-AUX | | 9.0 | |
| | 718 | 2C/12 125VDC | | 1E22*PNL 5001-5 | 1E22* 5004-02 | | 9.0 | |
| | 720 | 2C/14 125VDC | | 1H13P712-B | 1E22* PNLAC | | 7.0 | |
| | 1CSHAD0C600 | 5C/12 125VDC | 1.1A 2xHFA | 1H13P751 -A01 | 1E22*PNL 5001-7 | 221 414 052 | 7.5 | |
| | 1CSHAD0C002 | 9C/12 120VAC | FUSE 1AMP | 1H13P712-B | 1E22*5002 | 6CSND1 | 6.9 | |
| | 004 | 9C/12 120VAC | FUSE 1AMP | 1H13P712-B | 1E22*5002 -4 | 6CSND1 | 6.9 | |
| | 008 | 9C/12 120VAC | FUSE 2AMP | | 1E22*5002 -3 | 6CSND2 | 6.9 | |
| | 010 | | FUSE 3AMP | | -3 | | 6.9 | |
| | 013 | | FUSE 1AMP | | -4 | 6CSND4 | 6.9 | |
| | 015 | | FUSE 2AMP | | -2 | 6CSND3 | 6.9 | |
| | 017 | | FUSE 1AMP | | -4 | 6CSND3 | 6.9 | |
| | 302 | 5C/12 125VDC | | 1E22*PNL5001 | 1E22*5004 -4 | 221 414 054 | 7.5 | |
| | 308 | 2C/12 125VDC | | 1H13P751-A01 | 1E22*PNL 5001-7 | 221 414 056 | 9.0 | |
| | 309 | 5C/12 125VDC | | 1E22*PNL5001-7 | 1E22*5004-1 | | 7.5 | |
| | 310 | 5C/12 125VDC | | 1H22*PNL P028 | 1E22*5004 -1 | | 7.5 | |
| 314 | 2C/12 125VDC | | 1H13P712-D25 | 1E22*5004 -02 | 221 414 057 | 9.0 | | |
| 400 | 4C/10 | | 1H22*PNL P028 | 1E22*5004 -01 | 221 414 058 | 11.5 | | |
| 450 | 3C/12 120VAC | 3A FU | 1E22*PNL5001 | 1E22*5004 -AUX | 221 414 055 | 7.7 | | |
| 451 | | | 1H22*PNL P028 | | 221 414 058 | 7.7 | | |
| 456 | | 3A FU | 1E22*PNL5001 | | 221 414 055 | 7.7 | | |
| 500 | 7C/12 120VAC | 4 INB LBS 424A 25V | | 1H13P712 625 | 221 414 076 | 6.8 | | |

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ATTACHMENT 1
E-218

CABLE DERATING SUMMARY

| CABLE NO. | CABLE/SURFACE AREA/VOLUME | LOAD / FLTA | CONNECTED DEVICE | CIRCUIT NO. | COOLING | CL/S | DECL |
|-----------|---------------------------|--------------------|------------------|-----------------|---------|------|------|
| 502 | 3C/12 120VAC | .1A 2 IND LTS | 1E22*PNL5001-8 | 1H13*P751-851 | 221 414 | 7.7 | 7.7 |
| 519 | 2C/12 120VAC | | | 1E22*5002-1 | 221 414 | 13.3 | 13.3 |
| 521 | 2C/12 120VAC | 1.7A 2 X 100W LAMP | | | 221 415 | 9.0 | 9.0 |
| 523 | 2C/12 120VAC | .6A 2 IND LTS | | | 221 415 | 6.9 | 6.9 |
| 524 | 2C/12 120VAC | 5AMP FUSE | | | 221 415 | 9.0 | 9.0 |
| 525 | | .51A | 1E22*5001-8 | | | 9.0 | 9.0 |
| 526 | 2C/12 120VAC | .91A 2 IND LTS | 1E22*PNL5001-8 | | | 9.0 | 9.0 |
| 600 | 1/2 125VDC | SPARE | 1H13*P751-A01 | 1H22*PNL P028 | 221-414 | - | - |
| 601 | 5C/12 125VDC | .064A 1 X 702LPE | | 1E22*PNL 5001-7 | 052 | 7.5 | 7.5 |
| 602 | 3C/12 125VDC | .064A 1 X 702LPE | | | | 7.7 | 7.7 |
| 604 | 2C/12 125VDC | .12A 2 X MFA | 1H22*PNL P028 | 1E22*5004-01 | | 9.0 | 9.0 |
| 605 | | .12A 2 X MFA | | | | 9.0 | 9.0 |
| 606 | | .062 1 X MFA | 1E22*PNL5001-7 | | | 9.0 | 9.0 |
| 607 | | .12A 2 X MFA | | | | 9.0 | 9.0 |
| 610 | 5C/12 125VDC | 2.25A 5 RLYS | | | 221 414 | 7.5 | 7.5 |
| 611 | | 2.0A 4 RLYS | | | 053 | 7.5 | 7.5 |
| 612 | 2C/12 125VDC | .024A 1 RLY | | | | 9.0 | 9.0 |
| 613 | | .062A 1 RLY | | | | 9.0 | 9.0 |
| 614 | | SPARE | | | | 9.0 | 9.0 |
| 615 | 2C/12 125VDC | SPARE | | | | - | - |
| 616 | | .05A 1 X 100LJ | 1H13*P712-525 | 1H13*P712-025 | 221-414 | 9.0 | 9.0 |
| 620 | | .1A 6E 180 MTR | 1H13*P751-A01 | 1E22*PNL 5001-8 | 221-414 | 9.0 | 9.0 |
| 621 | | .074A 1 RLY | 1H13*P702-A25 | | | 9.0 | 9.0 |

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TRACWAY
TC002
(CONT'D)

ATTACHMENT I E-218

CABLE DERATING SUMMARY

| TRACWAY | CABLE NO. | CABLE / SOURCE GAGE / VOLTAGE | LOAD / FLA | CONNECTED DEVICE | CIRCUIT NO. | CONC. BSK | C/I | DCA | 20°C / 100°C |
|-------------------|------------------------|----------------------------------|-----------------------|-------------------------------|----------------|-------------------|-----|------|--------------|
| TC002 (CONT'D) | 1CSHMPC700 | 2C/14 125VDC | .1A 2 IND LTS | 1H13P712-B25 | 1E22P502-2 | 221 410 025 | | 7.0 | |
| | 1CSMRDC505 | | SPARE | | | | | - | |
| | 950 | 2C/14 125VDC | < 1A ANN | 1H13P712-B25 | 1E22P5004-02 | 221 414 022 | | 7.0 | |
| | 1EGFCPC002 | 7C/12 120VAC | RISE LAMP | 1EGFPANL101-B | 1E22P5002-3 | 656F03 10ANN21 | | 6.8 | |
| | 1EGFNPC704 | 2C/14 125VDC | < 1A ANN | 1H13P712-B25 | 1E22P5002-5 | 11E5F03 | | 7.0 | |
| | 705 | 2C/14 INST | DUP SEE 1EGFC002 | | 1E22P5001 | 11E5F03 | | 7.0 | |
| | 1ENBPC600 | 9C/12 125VDC | .4A 8 IND LTS | 1H13P751-A08 | 1E22P5001-4 | 11ENB08 | | 6.9 | |
| | 1HVPCC002 | | SPARE | | | | | - | |
| | 003 | 2C/12 120VAC | FUSE 3AMP | 1E22PANL5001-5 | 1E22P5002-7 | 6HVP11 | | 9.0 | |
| | 009 | 9C/12 120VAC | FUSE 3AMP | 1HVPANL12C | 1E22P5002-7 | 6HVP11 | | 6.9 | |
| | 005 | 7C/12 120VAC | FUSE 3AMP | | | 6HVP08 | | 6.8 | |
| | 501 | 2C/12 120VAC | 2A0W 2A | 1HVPANL12C | | 7HVP03 | | 9.0 | |
| | 502 | 2C/10 120VAC | .3A 3 IND LTS 150V | 1HVPANL12C | | 7HVP05 | | 13.3 | |
| | 503 | 2C/12 120VAC | .2A 150V | 1HVPANL12C | 1H13P712-B25 | 7HVP05 | | 9.0 | |
| | 700 | 2C/14 125VDC | < 1A ANN | 1H13P712-B25 | 1E22P5002-6 | 6HVP08 | | 7.0 | |
| 1HVPNCC700 | 2C/14 125VDC | | | | 6HVP11 | | 7.0 | | |
| 1HVRNCC701 | 2C/14 125VDC | | | | 10ANN18 | | 7.0 | | |
| 1SCCCPC500 | NSP-13 5C/12 25VAC | 3A FU | | | | | 25 | | |
| 502 | NSP-11 3C/12 125VDC | 3A FU | | | | | 9.0 | | |
| 15WPC0004 | 3C/12 120VAC | .1A 2 IND LTS | 1H13P712-D | 1EG5P PNL5C 1E22P5004-5 | 6SWP10 | | 7.7 | | |
| 300 | 12C/12 125VDC | .7H | | | 5SWP06 | | 6.7 | | |
| 307 | 2C/12 125VDC | .04A 1 RLY | | | | | 9.0 | | |
| 15WPNPC600 | | < 1A ANN | | | | | 9.0 | | |
| 703 | 5C/14 125VDC | < 1A ANN | | | | | 5.4 | | |

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ATTACHMENT 1
E-218

CABLE DERATING SUMMARY

| RACEWAY | CABLE NO. | CABLE SERVICE TYPE / VOLTAGE | LOAD / FLT | CONNECTED DEVICE | CIRCUIT NO. | CED/ESK | C/S | DCA | ZONE/ DATE/NO |
|-------------|------------|---------------------------------|---------------|---------------------|----------------|--------------------|-----|-----|--------------------|
| T1230A-3x16 | ICSHC0H301 | 3 / 480VAC 1500VA | 250HP / 315A | 1E22V C001 | | CBD-11401 EE-1A | | 414 | 04/14/104 |
| | IRDSBNH300 | 3 / 480VAC 4100V | 400HP / 52A | 1C11-C001B | | EE-1B | | 218 | 07/14/122 |
| T1230A-3x16 | IRCSANJ300 | 3 / 480VAC 15800 | 7500VA / 314A | IRCS-X1A -HV | | EE-1D | | 375 | 07/14/122 |
| | BNJ300 | 3 / 480VAC 15800 | 7500VA / 314A | IRCS-X1B -HV | | EE-1E | | 375 | 07/14/122 |
| T1012B-3x30 | IHVCEBL200 | 3 / 480VAC 201 | 75HP / 87 | IHVX-ACU1B | | EE-1AB | | 126 | C10 3 hr 90° |
| | 201 | 3 / 480VAC 201 | 75HP / 85 | IHVX-ACU2B | | EE-1AB | | 126 | |
| | 202 | 3 / 480VAC 202 | 65KW / 78.2A | IHVX-CHL1B | 1E3-1001B | EE-1AB | | 126 | |
| | IHVKBBL300 | 3 / 480VAC 201 | 250HP / 214A | IHVX-CHL2B | | EE-1AB | | 190 | |
| | 201 | 3 / 480VAC 201 | PARALLEL 200 | IHVX-CHL1B | | EE-1AB | | x 2 | |
| | DBL200 | 3 / 480VAC 201 | 250HP / 214A | IHVX-CHL2B | | EE-1AB | | 190 | |
| | 201 | 3 / 480VAC 201 | PARALLEL 200 | IHVX-CHL1B | | EE-1AB | | x 2 | |

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CALCULATION SHEET

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| CALCULATION IDENTIFICATION NUMBER | | | | PAGE <u>1</u> OF <u>12</u> |
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| J.O. OR W.O. NO. | DIVISION & GROUP | CALCULATION NO. | OPTIONAL TASK CODE | |
| 12210 | ELECTRICAL | E-218 | N/A | |

ATTACHMENT 2

THE ESK'S LISTED ON PAGE 2 HAVE BEEN EVALUATED FOR THEIR CONTINUOUS / INTERMITTENT LOADING. PAGE 2 OF THIS ATTACHMENT IS A SUMMARY OF ASSOCIATED CIRCUITS WITH THE F.L.A. LISTED. DETAILED INFORMATION ON EACH CIRCUIT IS SHOWN AS CALC A THRU I ON PAGES 3 THRU 9

NOTES:

1. ONLY CONTINUOUS LOADS ARE USED FOR DERATED CABLE SIZING, THE INTERMITTENT LOADS WILL NOT BE ENERGIZED LONG ENOUGH FOR HEAT BUILD-UP.
2. JUSTIFICATION FOR AMPACITY OF DEVICES ON ESK'S IS SHOWN ON PAGE

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| CALCULATION IDENTIFICATION NUMBER | | | | PAGE <u>2</u> OF <u>12</u> |
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| J.O. OR W.O. NO. 12210 | DIVISION & GROUP ELECTRICAL | CALCULATION NO. E-218 | OPTIONAL TASK CODE N/A | |

ATTACHMENT 2

| <u>ESK</u> | <u>CKT NO</u> | <u>EQUIPMENT</u> | <u>CONTINUOUS F.L.A.</u> | <u>CALC/PAGE</u> |
|------------|---------------|--|--------------------------|--|
| 8EGS16 | 1EGSB03 | | | K, PAGE 11 |
| 6GTS02 | 1GTSB01 | 1ENS*SWG1B | 0.08 | H, PAGE 9 |
| 6HVC18 | 1HVCB01 | <div style="border-top: 1px solid black; width: 100%; margin-bottom: 5px;"></div> <div style="border-left: 1px solid black; border-right: 1px solid black; height: 100%; margin: 0 auto;"></div> <div style="border-bottom: 1px solid black; width: 100%; margin-top: 5px;"></div> | 2.3 | A, PAGE 3 |
| 6HVC19 | 1HVCB02 | | 2.3 | |
| 6HVC15 | 1HVCB12 | | 2.3 | |
| 6HVF14 | 1HVFB04 | | 1.2 | B, PAGE 4 |
| 6HVK02 | 1HVKB01 | | 2.3 | C, PAGE 5 |
| 6HVK04 | 1HVKB01 | | 2.3 | C, PAGE 5 |
| 6HVPO2 | 1HVPO2 | | 1.2 | D, PAGE 6 |
| 6HVR10 | 1HVRB02 | | 2.3 | C, PAGE 5 |
| 6SFC02 | 1SFCB01 | | 1.2 | B, PAGE 4 |
| 5SWP05 | 1SWPB08 | | 1ENS*SWG1B | 1.1 |
| 5SWP07 | 1SWPDO8 | 1ENS*SWG1B | 1.1 | <div style="border-top: 1px solid black; width: 100%; margin-bottom: 5px;"></div> <div style="border-left: 1px solid black; border-right: 1px solid black; height: 100%; margin: 0 auto;"></div> <div style="border-bottom: 1px solid black; width: 100%; margin-top: 5px;"></div> |
| 5SWP04 | 1SWPA08 | 1ENS*SWG1A | 1.1 | |
| 5SWP06 | 1SWPC03 | 1ENS*SWG1A | 1.1 | |
| 5ENS15 | 1ENSB01 | 1ENS*SWG1B | 0.04 | F, PAGE 8 |
| 5ENS17 | 1ENSD01 | <div style="border-top: 1px solid black; width: 100%; margin-bottom: 5px;"></div> <div style="border-left: 1px solid black; border-right: 1px solid black; height: 100%; margin: 0 auto;"></div> <div style="border-bottom: 1px solid black; width: 100%; margin-top: 5px;"></div> | 0.04 | F, PAGE 8 |
| 5ENS07 | 1ENSB03 | | 0.24 | G, PAGE 8 |
| 5ENS02 | 1ENSB01 | | 0.24 | <div style="border-top: 1px solid black; width: 100%; margin-bottom: 5px;"></div> <div style="border-left: 1px solid black; border-right: 1px solid black; height: 100%; margin: 0 auto;"></div> <div style="border-bottom: 1px solid black; width: 100%; margin-top: 5px;"></div> |
| 5ENS05 | 1ENSD01 | | 0.24 | |
| 5ENS13 | 1ENSB06 | | 0.17 | |
| 5RCS03 | 1RCSA03 | 1ENS*SWG3A | 0.3 | J, PAGE 10 I, PAGE 9 |

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| CALCULATION IDENTIFICATION NUMBER | | | | PAGE <u>3</u> OF <u>12</u> |
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| J.O. OR W.O. NO. | DIVISION & GROUP | CALCULATION NO. | OPTIONAL TASK CODE | |
| 12210 | ELECTRICAL | E-218 | N/A | |

ATTACHMENT 2

CALCULATION A -

REFERENCE ESK: 6HVC18
6HVC19
6HVC15

CABLE NO: 1HVCB5C200

CIRCUIT NO: 1HVCB01

| <u>LOAD ID</u> | <u>TYPE</u> | <u>LOAD</u> | <u>F.L.A.</u> | <u>C/I</u> | |
|-----------------------------|-------------------|-------------|---------------|------------|-------------------------|
| 74 ALARM RELAY | CR120BD | 138VA | | I | |
| 50 OVERCURRENT | ITE-50 | | 0.05 | C | |
| W WHT LAMP | | | 0.04 | C | |
| 1CX | CR120BD | | - | I | |
| 1X | CR120BC | | - | I | |
| TX | CR120BD | | - | I | |
| 62 TIME DELAY | AGASTAT TRTDPU | 6WATTS | 0.05 | C | |
| 52XX | | 138VA | 1.1 | C | |
| TC | | | - | I | |
| 3 LIGHTS AT SWGR | 0.05AMPS EACH) | | .05 | C | ONLY 1 LIGHT OPERATES C |
| 3 LIGHTS AT PGCC | 0.04AMPS EACH) | | .04 | C | ↓ |
| NEW RELAY (E30UR P.40, B08) | | | 1.1 | C | |
| CONTINUOUS LOAD TOTAL | | | 2.34A | | |

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| CALCULATION IDENTIFICATION NUMBER | | | | PAGE <u>4</u> OF 12 |
|-----------------------------------|------------------|-----------------|--------------------|------------------------|
| J.O. OR W.O. NO. | DIVISION & GROUP | CALCULATION NO. | OPTIONAL TASK CODE | |
| 12210 | ELECTRICAL | E-218 | N/A | |

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ATTACHMENT 2

CALCULATION B

REFERENCE ESK: 6HVF14

ESK'S WITH SIMILAR CIRCUITS: 6SFC02

CIRCUIT NO. 1HVFBO4

| <u>LOAD ID</u> | <u>TYPE</u> | <u>LOAD</u> | <u>F.L.A.</u> | <u>C/I</u> |
|------------------|-------------|-------------|---------------|------------|
| 74 ALARM RELAY | CR120BD | | 1.1 | C |
| 1 LIGHT AT SWGR | | | .05 | C |
| 1 LIGHT AT PGCC | | | .04 | C |
| 1CX RELAY | | | - | I |
| 52XX RELAY | | | - | I |
| 1X RELAY | | | - | I |
| 2 LIGHTS AT PGCC | | | - | I |
| 2 LIGHTS AT SWGR | | | - | I |
| TC TRIP COIL | | | - | I |

TOTAL CONTINUOUS LOAD 1.19 A

STONE & WEBSTER ENGINEERING CORPORATION
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| CALCULATION IDENTIFICATION NUMBER | | | | PAGE <u>5</u> OF <u>12</u> |
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| J.O. OR W.O. NO. 12210 | DIVISION & GROUP ELECTRICAL | CALCULATION NO. E - 218 | OPTIONAL TASK CODE N/A | |

ATTACHMENT 2

CALCULATION C

REFERENCE ESK : GHVK02
 GHVK04

ESK WITH SIMILAR CIRCUIT: GHVR10

CIRCUIT NO.: 1HVKB01

| <u>LOAD ID</u> | <u>TYPE</u> | <u>LOAD</u> | <u>F.L.A.</u> | <u>C/I</u> |
|------------------|-------------|-------------|---------------|------------|
| 2 LIGHTS @ PLCC | | | .08 | C |
| 74 ALARM RELAY | CR120BD | | 1.1 | C |
| 62X | CR120BD | | 1.1 | C |
| LIGHT @ LOAD CTR | | | 0.05 | C |
| 62-1 | | | - | I |
| 1CX | | | - | I |
| 1X | | | - | I |
| TX | | | - | I |
| 50 | | | - | I |
| BAX | | | - | I |
| TC | | | - | I |
| 62A | | | - | I |

TOTAL CONTINUOUS LOAD 2.33A

STONE & WEBSTER ENGINEERING CORPORATION
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| CALCULATION IDENTIFICATION NUMBER | | | | PAGE <u>6</u> OF <u>12</u> |
|-----------------------------------|------------------|-----------------|--------------------|-------------------------------|
| J.O. OR W.O. NO. | DIVISION & GROUP | CALCULATION NO. | OPTIONAL TASK CODE | |
| 12210 | ELECTRICAL | E-218 | N/A | |

ATTACHMENT 2

CALCULATION D

REFERENCE ESK: 6HVPO2

CIRCUIT NO. 1HVPB02

| <u>LOAD ID</u> | <u>TYPE</u> | <u>LOAD</u> | <u>F.L.A.</u> | <u>C/I</u> |
|----------------|-------------|-------------|---------------|------------|
| 74 | CR120BD | | 1.1 | C |
| TR-62B | | | 0.05 | C |
| LIGHT AT SWGR | | | 0.04 | C |
| LIGHT AT PGCC | | | 0.05 | C |
| TX | CR120BD | | | I |
| TR-62A | | | | I |
| 50 | | | | I |
| 62X | | | | I |
| 62- | | | | I |
| 1CX | | | | I |
| 52XX | | | | I |
| 1X | | | | I |
| TC | | | | I |

TOTAL CONTINUOUS LOAD 1.24 A

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| CALCULATION IDENTIFICATION NUMBER | | | | PAGE <u>7</u> OF <u>12</u> |
|-----------------------------------|--------------------------------|--------------------------|---------------------------|-------------------------------|
| J.O. OR W.O. NO. 12210 | DIVISION & GROUP ELECTRICAL | CALCULATION NO. E-218 | OPTIONAL TASK CODE N/A | |

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ATTACHMENT 2

CALCULATION E

REFERENCE ESK: 5SWP05

ESK'S WITH SIMILAR CIRCUIT: 5SWP07
5SWP04
5SWP06

CIRCUIT NO. 1SWPB08

| <u>LOAD ID</u> | <u>TYPE</u> | <u>LOAD</u> | <u>F.L.A.</u> | <u>C/I</u> |
|------------------------|-------------|-------------|---------------|------------|
| WHT LIGHT (PULL) | | | .04 | C |
| WHT LIGHT (SWGR) | | | .05 | C |
| 74 RELAY | | | 1.1 | C |
| 4 LIGHTS | | | | H |
| 1X RELAY J14 | | | | H |
| TC | | | | H |
| BRKR CLOSING MECHANISM | | | | H |

NOTE: THE WORST CASE F.L.A. IS 1.1A

STONE & WEBSTER ENGINEERING CORPORATION
 CALCULATION SHEET

5010 85

| CALCULATION IDENTIFICATION NUMBER | | | | PAGE <u>8</u> OF <u>12</u> |
|-----------------------------------|--------------------------------|--------------------------|---------------------------|-------------------------------|
| J.O. OR W.O. NO. 12210 | DIVISION & GROUP ELECTRICAL | CALCULATION NO. E-218 | OPTIONAL TASK CODE N/A | |

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ATTACHMENT 2

CALCULATION F

REFERENCE ESK'S: 5ENS15, 5ENS17

CABLE NO. 1ENSBBC302

CIRCUIT NO. 1ENSBO1 KG0 } 1 RELAY 94-J13
 KG1 }

HOLDING VA = 5 \Rightarrow .04 AMP

NOTE: ONLY CONTINUOUS LOADS IDENTIFIED

CALCULATION G

REFERENCE ESK'S : 5ENS07
 5ENS02
 5ENS05

CABLE NO. 1ENSBBC307

CIRCUIT NO. 1ENSBO3

| <u>LOAD ID</u> | <u>F.L.A.</u> |
|-----------------------|---------------|
| RELAY 74-J13 | 0.04 |
| (2) WHT LIGHTS (PGCL) | 0.08 |
| (3) RED LIGHTS (SWGR) | 0.12 |
| TOTAL | <u>0.24 A</u> |

NOTE: ONLY CONTINUOUS LOADS IDENTIFIED

STONE & WEBSTER ENGINEERING CORPORATION
CALCULATION SHEET

A 5010 86

| CALCULATION IDENTIFICATION NUMBER | | | | PAGE <u>9</u> OF <u>12</u> |
|-----------------------------------|------------------|-----------------|--------------------|-------------------------------|
| J.O. OR W.O. NO. | DIVISION & GROUP | CALCULATION NO. | OPTIONAL TASK CODE | |
| 12210 | ELECTRICAL | E-218 | N/A | |

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ATTACHMENT 2
CALCULATION H

REFERENCE ESK: 66TJ02

CABLE NO. 16TSBBC203

CIRCUIT NO. 16TSB01 PCO
K00
T00

LIGHT
RELAY 62-TR
LIGHT

| <u>LOAD</u> |
|-----------------|
| 0.04 AMP |
| INTERMITTANT |
| <u>0.04 AMP</u> |

TOTAL .08A

CALCULATION I

REFERENCE ESK: 5RCS03

CABLE NO: 1RCSARC300, 1RCSARC301

CIRCUIT NO: 1RCSA03

CONTINUOUS LOADS LISTED ONLY:

| <u>LOAD ID</u> | <u>F.L.A.</u> |
|--|---------------|
| 74-J13 | 0.04 |
| 74A-J13 | 0.04 |
| K169A AGAJTAT-6P (6WATT) | 0.05 |
| K168A AGAJTAT-6P (6WATT) | 0.05 |
| ISOLATOR OUTPUT CURRENT (K169A & K168A) | .04A |
| ISOLATOR INPUT CURRENT ($4 \times 8.8 \times 10^3$) | .035A |

} REFERENCE
ISOLATOR
APPLICATION DATA
224.302-000-003B

TOTAL .255A

STONE & WEBSTER ENGINEERING CORPORATION
 CALCULATION SHEET

A 5010 85

| CALCULATION IDENTIFICATION NUMBER | | | | PAGE <u>10</u> OF <u>12</u> |
|-----------------------------------|---------------------------------------|---------------------------------|----------------------------------|--------------------------------|
| J.O. OR W.O. NO. <u>12210</u> | DIVISION & GROUP <u>ELECTRICAL</u> | CALCULATION NO. <u>E-218</u> | OPTIONAL TASK CODE <u>N/A</u> | |

ATTACHMENT 2

CALCULATION J

REFERENCE ESK: 5ENS13

CABLE NO: 1ENSBBC311
314

CIRCUIT NO: 1ENSB06

LOADS:

ID

FLA

74- J13

0.04

TC

INTERMITTENT

BRKR CLOSING MECH

INTERMITTENT

4 LIGHTS - DGP

.08 (MAX 2 LAMPS CONTINUOUS)

4 LIGHTS - PGCC

.08 (MAX 2 LAMPS CONTINUOUS)

3 LIGHTS - SWGR

.04 (1 LAMP CONTINUOUS)

TOTAL CONTINUOUS .24 A
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STONE & WEBSTER ENGINEERING CORPORATION
 CALCULATION SHEET

▲ 5010 05

| CALCULATION IDENTIFICATION NUMBER | | | | PAGE <u>11</u> OF <u>12</u> |
|-----------------------------------|---------------------------------------|---------------------------------|----------------------------------|--------------------------------|
| J.O. OR W.O. NO. <u>12210</u> | DIVISION & GROUP <u>ELECTRICAL</u> | CALCULATION NO. <u>E-218</u> | OPTIONAL TASK CODE <u>N/A</u> | |

ATTACHMENT 2

CALCULATION K

REFERENCE ESK: 8EGS16

CABLE NO: 1EGSBBC618

CIRCUIT NO: 1EGSB03

LOADS:

| | <u>ID</u> | <u>FLA</u> |
|-------|-----------|-------------|
| 3-1 | J13 | 0.04 |
| 3-1X | J13 | 0.04 |
| 3-2 | J13 | 0.04 |
| 3-3 | J13 | 0.04 |
| 62-5 | ITE 62K | 0.02 |
| 62-5X | J13 | 0.04 |
| 62-6 | ITE 62L | 0.02 |
| 62-6X | J13 | <u>0.04</u> |

TOTAL CONTINUOUS 0.28A
 LOAD

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STONE & WEBSTER ENGINEERING CORPORATION
 CALCULATION SHEET

A 5010 85

| CALCULATION IDENTIFICATION NUMBER | | | |
|-----------------------------------|--------------------------------|--------------------------|---------------------------|
| J.O. OR W.O. NO. 12210 | DIVISION & GROUP ELECTRICAL | CALCULATION NO. E-218 | OPTIONAL TASK CODE N/A |
| | | | PAGE 12 OF 12 |

ATTACHMENT Z

REFERENCE DATA

| DESCRIPTION | F.L.A. | JUSTIFICATION |
|----------------------------|--------|--------------------------------------|
| 50 INST OVER CURRENT RELAY | 0.05A | ITE-BULLETV 7.2.2-18 |
| LIGHTS AT SWGR | .04A | BILL OF MATERIAL 242.533-265-003D |
| RELAY CR120BC,BD (GE) | 1.1A | INSTRUCTION MANUAL 242.533-265 |
| LIGHT AT SWGR (ET-16) | 0.05A | ↓ |
| LIGHT AT PGCC (GE #387) | 0.04A | GE. CATALOG INFO |
| 62 AGASTAT TRTDPU (6WATTS) | 0.05 | AGASTAT CAT |
| 74-J13 RELAY | 0.04 | GOULD CONTROL FAX 1982 |

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A 5015 85

| CALCULATION IDENTIFICATION NUMBER | | | | PAGE <u>15</u> V |
|-----------------------------------|--------------------------------|--------------------------|--------------------|---------------------|
| J.O. OR W.O. NO. 12210 | DIVISION & GROUP Electrical | CALCULATION NO. 6-137 | OPTIONAL TASK CODE | |

APPENDIX A

AVERAGE O.D. FROM SPECIFICATION 241.234-12EVI DATED 1-22-91
INSULATED 600V POWER CABLE

| | |
|-----------------|--------|
| 3/4" #12 AWG Cu | 0.542" |
| 3/4" #10 AWG Cu | 0.626 |
| 3/4" #8 AWG Cu | 0.756 |
| 1" #6 AWG Cu | 0.739 |
| 1" #4 AWG Cu | 0.840 |
| 1" #2 AWG Cu | 0.968 |
| 1" #2/0 AWG AL | 1.352 |

ICEA PUB NO P-54-440 (2ND ED)

TABLE 5 TRIPLEX CABLE W/ JACKETED COND.
CABLE DIAMETER, do

| |
|-------------|
| #6G - 0.74" |
| #4 - 0.84" |
| #2 - 0.97" |

TABLE 6 3/4" JACKETED CABLE W/
JACKETED COND.
CABLE DIA, do

| |
|--------------|
| #12G - 0.69" |
| #10 - 0.57" |
| #8 - 0.71" |

TABLE 21 TRIPLEX CABLE W/ JACKETED COND.
CABLE DIAMETER, do

2/0 AL - 1.36"

FROM SPECIFICATION 241.320 - CABLE TRAY

TRAY CROSS SECTIONS ARE:

FOR 12" → 12" x 3" = 36" FOR 18" → 18" x 3" = 54" FOR 30" x 2" = 60"

PER ASSUMPTION 2A, ALLOWABLE K-TRAY FILL = 40%

12": 40% x 12" x 3" = 14.4 sq. in

18": 40% x 18" x 3" = 21.6 sq. in

30": 40% x 30" x 2" = 24 sq. in

STONE & WEBSTER ENGINEERING CORPORATION
CALCULATION SHEET

CALC NO E-218
ATTACHMENT 3
PAGE 2 OF 3

4 2010.05

| CALCULATION IDENTIFICATION NUMBER | | | | PAGE 2 OF 3 |
|-----------------------------------|--------------------------------|--------------------------|--------------------|-------------|
| J.O. OR W.O. NO. 12210 | DIVISION & GROUP Electrical | CALCULATION NO. E-137 | OPTIONAL TASK CODE | |

NO OF CABLES REQUIRED TO FILL CABLE TRAY TO 40%, ETC XI-17-0

$$\% \text{ OF ALLOWABLE FILL} = \frac{\pi}{4} \frac{(\text{SUM OF THE CABLE DIA})^2 \times 100\%}{0.40 \times 3 \times \text{RACEWAY DEPT.}}$$

FOR 3/16" E12 AWG Cu:

$$12": \frac{4.4 \text{ sq. in.}}{\frac{\pi}{4} (0.542)^2} = 63 \text{ CABLES.}$$

$$15": \frac{21.6 \text{ sq. in.}}{\frac{\pi}{4} (0.542)^2} = 94 \text{ CABLES.}$$

$$30": \frac{36 \text{ sq. in.}}{\frac{\pi}{4} (0.542)^2} = 156 \text{ CABLES.}$$

CALCULATED DEPTH OF CABLES IN TRAYS ICSD P-54-060

$$\text{CALC. DEPTH INCH.} = \frac{n_1 d_1^2 + n_2 d_2^2 + \dots + n_n d_n^2}{W}$$

WHERE d_1, d_2, \dots, d_n = dia of cables, in.
 n_1, n_2, \dots, n_n = no. of cables of diameters
 d_1, d_2, \dots, d_n , respectively

W = WIDTH OF TRAY, INCHES

$$12": \text{C.D.} = \frac{63 (0.542)^2}{12} = 1.54 \approx 2.0$$

$$15": \text{C.D.} = \frac{94 (0.542)^2}{15} = 1.53 \approx 2.0$$

$$30": \text{C.D.} = \frac{156 (0.542)^2}{30} = 1.53 \approx 2.0$$

STONE & WEBSTER ENGINEERING CORPORATION
 CALCULATION SHEET

CALC NO E-218
 ATTACHMENT 3
 PAGE 3 of 3

A 9010.05

| CALCULATION IDENTIFICATION NUMBER | | | | PAGE 3 of 3 |
|-----------------------------------|--------------------------------|--------------------------|--------------------|-------------|
| J.O. OR W.O. NO. 12216 | DIVISION & GROUP Electrical | CALCULATION NO. E-137 | OPTIONAL TASK CODE | |

NOTICE THAT WHEN THE ALLOWABLE FILL (in this case 40%)
 IS ESTABLISHED, THEN THE CALCULATED DEPTH CAN BE DETERMINED
 VERY SIMPLY AS FOLLOWS:

$$C.D. = \frac{(\text{SUM OF CABLE DIA})^2}{W.}$$

WHERE (SUM OF CABLE DIA)² = $\frac{.40 \times 3 \times \text{RACEWAY WIDTH}}{\pi/4}$

HENCE SUBSTITUTING,

$$C.D. = \frac{.40 \times 3}{\pi/4}$$

$$C.D. = 1.53 \approx 2.0"$$

C-TRAY
 ALLOWABLE FILL 50%

$$C.D. = \frac{.50 \times 3}{\pi/4} = 1.91$$

CD \approx 2.0

∴ WHEN THE % ALLOWABLE FILL IS 40% THEN THE CALCULATED
 DEPTH OF 2.0" SHOULD BE USED TO SIZE CABLE IN K. TRAY.
 BECAUSE IT DOESN'T MATTER WHAT SIZE CABLE OR TRAY
 IS USED THE C.D. BASED ON 40% ALLOWABLE FILL WILL ALWAYS
 BE 2.0.

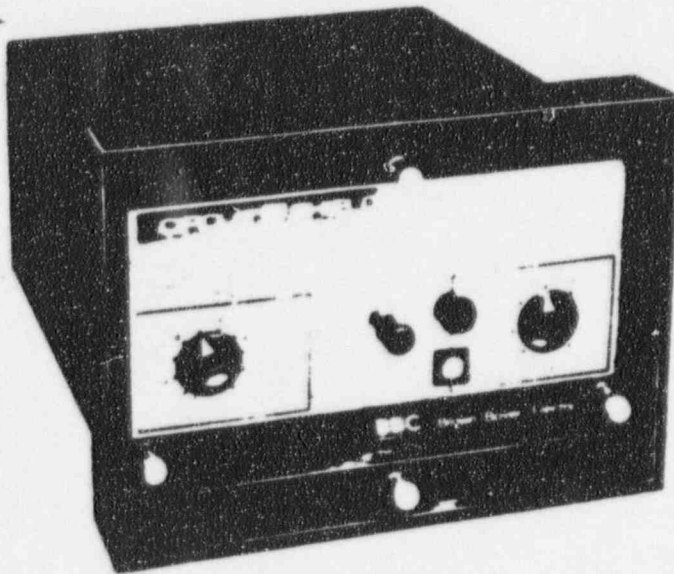
CONCLUSION:

ADDED FOR THIS CALCULATION

CALCULATED DEPTH OF 2.5" WILL BE USED FOR SIZING
 6000V POWER CABLE IN K TRAY. THIS ALLOWS FOR FUTURE ADDITIONS
 AND DERATING CAUSED BY FIREPROOFING IN SOME CASES.

**I-T-E Type Protective Relays
Drawout**

**I-T-E—50D, I-T-E—50H
High Dropout
Overcurrent Relays**



Features

- 98% dropout to pickup ratio
- Narrow band - virtually no overreach
- Instantaneous or time delayed operation
- Built-in test
- Seismic capability to 6g ZPA
- Transient immunity



Application

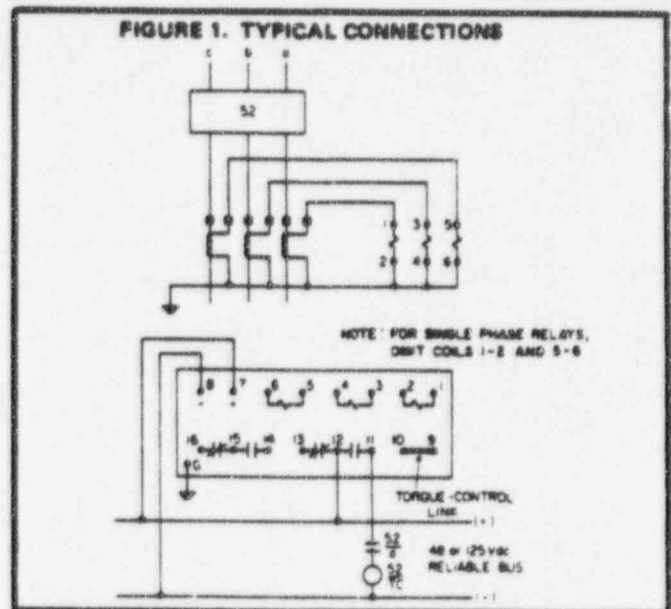
These overcurrent relays find application in backup protection, load alarm, and other schemes where the overcurrent relay must be self-resetting and have a high dropout-to-pickup ratio.

The ITE-50H is an instantaneous overcurrent relay designed with solid state measuring circuitry, but with an electromechanical output.

The ITE-50D consists of the same instantaneous overcurrent circuitry, but also includes a built-in solid state timer.

Both types have a 98% dropout-to-pickup ratio, and a 10 to 1 range of pickup adjustment. In addition, both types are available as single phase or three phase models.

"Torque control" is provided on both types as a standard feature. To torque control the relay, remove the link between terminals 9 and 10 (see figure 1). Connect the controlling contact across terminals 9 and 10 in place of the link.



I-T-E—50D, I-T-E—50H High Dropout Overcurrent Relays

SPECIFICATIONS

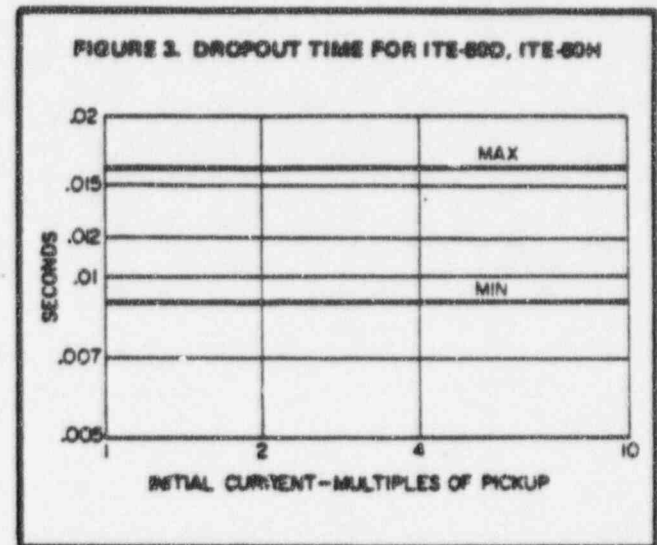
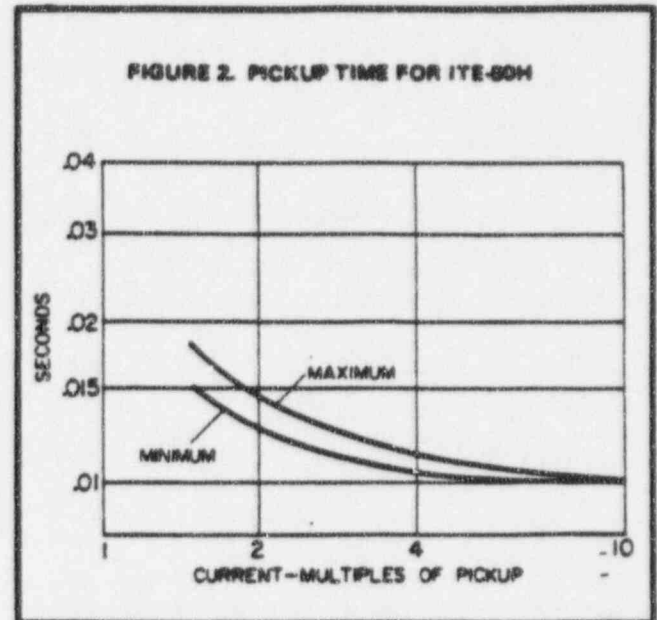
| | |
|-------------------------------|--|
| Pickup: | Models available for 0.1-1A 0.2-2A 0.8-8A 2-20A 8-80A 20-200A |
| Input Circuit Rating: | 200 amperes, one second |
| Burden: | Less than 1 VA at 5 Amps (Any Model, Any Setting) |
| Control Power: | Models available for: 48/125 Vdc at .05A; 120 Vac at .05A. |
| Output Circuit: | 2 Form C Contacts |
| Output Circuit Rating: | Each contact, at 125 Vdc 30 amps. Tripping Duty 5 amps, Continuous 1 amp, Opening Resistive 0.3 amp, Opening Inductive |
| Temperature Range: | Minus 20° to Plus 75°C |
| Seismic Capability: | More than 5g ZPA (IEEE-501), without damage or malfunction. |
| Transient Immunity: | More than 3000V, 1 MHz bursts at 50 Hz repetition rate, continuous |
| Operating Time: | |
| ITE-50H | See figure 2 |
| ITE-50D | Adjustable, models available for: 0.01-0.3 seconds, 0.1- 3 seconds 1-30 seconds, 10-300 seconds |

HOW TO SPECIFY

Relay shall be type ITE 50 or equal. Relay shall be capable of withstanding 5g ZPA seismic stress without malfunction. An operation indicator shall be provided. Built-in means shall be provided to allow operational tests without additional equipment.

ADDITIONAL INFORMATION

| | |
|------------------------|----------|
| Instruction Book | 18.2.7-5 |
| Relay Selection Sheet | 7.2.0.3 |
| ITE—50B Fault Detector | 7.2.5-1 |
| Prices | 7.10.0.5 |



HOW TO ORDER

For a complete listing of available overcurrent relays, see selection Sheet 7.2.0.3.

To place an order, or for further information, contact the nearest District Office, or the Sales Manager, Protective Relays.

INSTRUCTION MANUAL
480V STANDBY LOAD CENTERS
By
POWELL ELECTRICAL MANUFACTURING CO.
For
GULF STATES UTILITIES COMPANY
RIVER BEND STATION - UNIT 1
1983

J.O. No. 12210
P.O. No. RBS-242.533-265

| | |
|----------------|---|
| S.O. No. 61650 | Equip. No. 1EJS * LDC 1A 1EJS * LDC 1B |
| S.O. No. 61651 | Equip. No. 1EJS * LDC 2A 1EJS * LDC 2B |

TABLE OF CONTENTS

- I. CIRCUIT BREAKERS - GENERAL ELECTRIC COMPANY
 - A. Low Voltage Power Circuit Breakers, AKR
Installation and Operation Manual, GEI-86150
 - B. Low Voltage Power Circuit Breakers, AKR
Installation Manual, GEI-86150A
 - C. Low Voltage Power Circuit Breakers, AKR
Maintenance Manual, GEX-64459

- II. RELAYS
 - A. Solid State Overcurrent Relay, ITE-50D
Instruction Manual, IB 18.2.7-8, Issue B
 - B. Solid State Voltage Relays, ITE-27H, ITE-59G
Instruction Manual, IB 18.4.7-2, Issue D
 - C. Time Delay Relay, Westinghouse TD-5
Installation, Operation, Maintenance Manual,
IL 41-579.1M
 - D. 600V Industrial Relay - DC, G.E. CR1208D
Instruction Manual, GEH-4143C
 - E. Mechanical Latch Relay, G.E. CR1208L
Instruction Manual, GEH-4120D

- II. SWITCHES
 - A. Control and Transfer Switch, G.E. Type SBM
Instruction Manual, GEH-2038C

- III. TRANSFORMERS
 - A. Ventilated Dry Type Transformers, Southern
Transformer Company
Installation and Maintenance Manual
 - B. Instrument Transformers, G.E. Types JAS-0 (CT),
JVA-0 (PT)
Instruction Manual, GEH-230AE (General)

- V. MISCELLANEOUS
 - A. Ammeters and Voltmeters, G.E. Type AB-40
Instruction Manual, 198 4555K10-001E
 - B. Indicating Lamps, G.E. Type ET-16
Instruction Manual, GEH-3500A
 - C. Economy Portable Crane, Economy Engr. Co.
Operating, Maintenance and Parts Manual



Instructions

CR120BD, CR120BC Series A 600 Volt Industrial Relay

CAUTION: Before installing in a nuclear application, determine that the product is intended for such use.

DESCRIPTION

The General Electric CR120BD Series A industrial relay is the dc form of the standard CR120B relay. This dc relay is furnished with a dual winding coil and a special contact is supplied in the coil circuit to make available the higher current needed during the first part of the armature stroke. This contact should be replaced only with a CR120BX1A contact module. Because of the higher watts used during pickup, the relay should not be operated continuously more than 80 operations per minute.

The CR120BC catalog numbers designate the latch forms of the dc relay. Since these relays have an intermittent rating on the unlatch coil it should be limited to a 25 percent duty cycle.

CAUTION—The center post on the latch relay has been factory adjusted and should not be turned or tampered with.

RATINGS

Ac — NEMA AB00

| Max. Ac Voltage | Max. Continuous Current | Max. Voltage Rating | | Max. Current Rating | |
|-----------------|-------------------------|---------------------|------|---------------------|------|
| | | Mkts | Snub | Mkts | Snub |
| 600 | 16 AMP | 7200 | 720 | 80 | 8 |

Dc — NEMA P200

| Dc Max. Current Rating | | Dc Max. Voltage Rating |
|------------------------|-------|------------------------|
| 120 V | 300 V | 300 V or Less |
| 1.1 | .85 | 120 |

COIL CONNECTION DIAGRAM

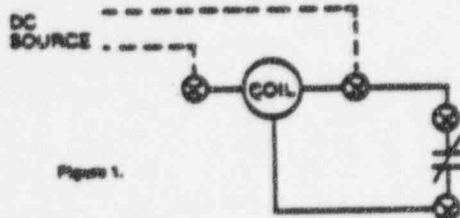


Figure 1.

INSTALLATION

1. Disconnect power from source.
2. Remove all packing.

3. Operate the magnet and operating arm by pulling the manual operator to assure free movement.
4. Mount the relay on a vertical panel.
5. Make all electrical connections. Normally open contacts are indicated by gold and normally closed by white.

COIL REMOVAL

SEE REVERSE SIDE FOR INSTRUCTIONS—UNLATCH COIL

1. Disconnect power.
2. Disconnect all wires.
3. Remove from panel.
4. Insert a screwdriver blade between magnet and magnet retaining clip. Twist blade to force retaining clip away from magnet. Push down on screwdriver, dislodging magnet; then applying firm pressure with screwdriver, push magnet through coil to position shown in Figure 2.
5. Grasp the coil terminals and pull out.



Figure 2.

TO REASSEMBLE:

6. Insert coil and center in housings.
7. Slide magnet back through coil and center with housing window. Insert blade of screwdriver through window, perpendicular to magnet. Using blade of screwdriver, push retaining clip away from magnet and apply pressure on magnet from opposite side. Snap

magnet back into position under retaining clip. Magnet must be centered in housing window in order for it to seat properly.

CONTACT REMOVAL/CONVERSION SEE REVERSE SIDE FOR LATCH RELAY INSTRUCTIONS—CONTACT REMOVAL/CONVERSION

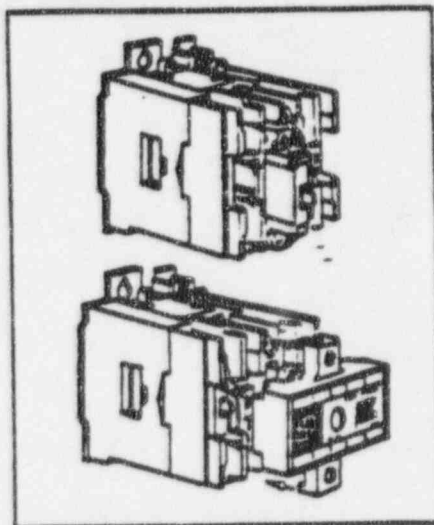


Figure 3.

1. Disconnect power.
2. Loosen cover screws or screws above the appropriate deck and remove.
3. Lift out contact module. Contacts may be inspected through gold transparent side of module.
4. To convert from normally open to normally closed, or vice versa:
 - a. Remove contact module terminal screws and reassemble on opposite side.
 - b. Replace contact module in back.
5. Reassemble.

INSTALLING ADDER BLOCKS

Additional decks of contact modules may be added to the relay making a relay with up to eleven poles. Up to seven poles may be normally closed.

To install additional adder decks:

These instructions do not purport to cover all details or variations in equipment nor to provide for every possible contingency to be met in connection with installation, operation or maintenance. Should further information be desired or should particular problems arise which are not covered sufficiently for the Purchaser's purposes, the matter should be referred to the nearest General Electric Sales Office.

1. Disconnect power.
2. Loosen cover screws and remove cover.
3. Unscrew steel post and replace with the longer post supplied with the adder deck. If adding two decks, only the extra long post supplied with the second adder deck should be used.
4. Add the deck to the relay using the screws provided.

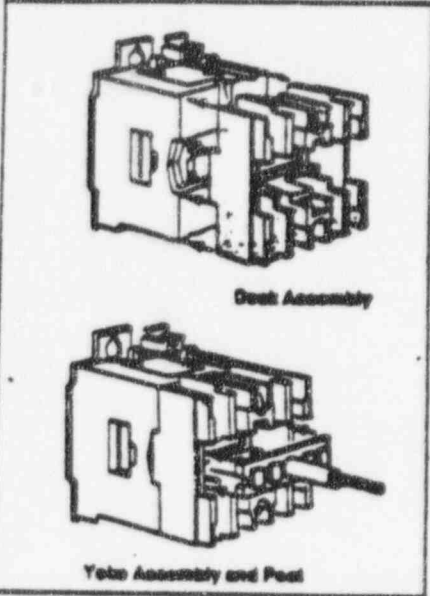


Figure 4.

- A. Slip the T-shaped yoke over the steel post.
- Add the contact modules. For a normally open contact, assemble with gold tabs up. A normally closed contact should have the white side up. Make sure the screws are on the top side of each module.
7. If another adder deck is being used, repeat steps 4, 5, and 6.
8. Reassemble the cover.

INSTALLING OVERLAPPING CONTACTS

Standard contacts are non-overlapping, i.e., during pickup and dropout there is a period where all contacts are open. If overlapping contacts are required, contact modules CR120BX1A may be used. These contacts will overlap with each other but not necessarily with standard contacts.

Normally open and normally closed overlapping contacts will all be closed for a period of time during pickup and dropout. For installing the contact modules, see section on CONTACT REMOVAL/CONVERSION.

CONTACT MODULE IDENTIFICATION

The type of contact module can be identified by the terminal color, even after installation. Standard modules have a brass terminal, overlapping modules have a gray color, and gold-plated contact modules have red on the terminal.

LATCH RELAY COIL REMOVAL—UNLATCH COIL

1. Disconnect power.
2. Remove four screws and cover of latch.
3. Lift out spring washer and core assembly.
4. Remove coil.
5. To install, reverse procedure.

CONTACT REMOVAL/CONVERSION

1. Disconnect power.
2. Loosen the two screws above the appropriate deck.
3. Pull the release lever of the latch attachment toward the coil and pull the top portion of the relay off the post.
4. Lift out contact module. Contacts may be inspected through gold transparent side of module.
5. To convert contact from normally open to normally closed, or vice versa:
 - a. Remove contact module terminal screws & reassemble on opposite side.
 - b. Replace contact module in deck.
6. To reassemble, pull the release lever toward the coil and slip the top portion of relay over the post.
7. Secure to the relay with the two screws.

TIME DELAY RELAYS

Time-delay relays are available as complete relays or timer attachments. See General Purpose Control Catalog, GEP-1283, for Ordering and Pricing information.

ACCESSORY

| | |
|--|-----------|
| Standard Contact | |
| Overlapping modules | CR120BX1A |
| Gold-plated Contact Modules | CR120BX1B |
| First Adder Deck (Can accommodate up to eight 10A contact modules) | |
| Includes one contact module | CR120BX3 |
| Second Adder Deck (Can accommodate up to eight 10A contact modules) | |
| Includes two contact modules | CR120BX14 |
| Mounting Trunk (46 in. long for 16 relays) | |
| Breakaway Type | CR120BX4 |
| Non-Breakaway Type | CR120BX18 |
| Indicator Light | |
| 115V 50/60 Hz | CR120BX5 |
| 220V 50/60 Hz | CR120BX6 |
| 480V 50/60 Hz | CR120BX7 |
| Surge Suppressor | |
| 115V 50/60 Hz | CR120BX2 |
| Wiring Trough Covers | |
| 1 1/2 in. wide X 6 ft. | CR120X15A |
| 2 in. wide X 6 ft. | CR120X16A |
| 2 1/2 in. wide X 6 ft. | CR120X17A |
| NEIGH 1 Enclosure | |
| (Per up to three-pole relays) | CR120BX19 |
| (Per up to seven-pole relays) | CR120BX18 |
| Retaining Shields—6 ft. long for use with mounting trunk | CR120BX9 |
| without mounting trunk | CR120BX10 |
| Retaining Shields Enclosure (Per up to eight relays for use with mounting trunk) | CR120BX11 |
| without mounting trunk | CR120BX12 |

RENEWAL PARTS

Coils
(Order Relay Coils 55-51388G*** plus suffix number per table below).
(Order Unlatch Coils 55-52028G*** plus suffix number per table below).

| De Voltage | Suffix No. *** |
|------------|----------------|
| 12 | 044 |
| 18 | 045 |
| 30 | 046 |
| 32 | 048 |
| 36 | 047 |
| 48 | 049 |
| 64 | 048 |
| 72 | 050 |
| 96 | 051 |
| 125 | 041 |

Instantaneous Contacts

| | |
|-----------------------------|-----------|
| Standard Contact Modules | CR120BX1 |
| Overlapping Contact Modules | CR120BX1A |
| Gold-plated Contact Modules | CR120BX1B |

INSTRUCTIONS



Mechanical Latch Relays

CR120BL Series A

Caution: Before installing in a nuclear application, determine that the product is intended for such use.

Warning: Disconnect power before installing or servicing.

Description

The CR120BL Series A mechanical latch relay is designed so that when energized, the relay latches in the picked up position and remains in this position even when power is removed. Energization of the unlatch coil will allow the relay to drop out. This dropout action may also be accomplished by the use of the manual release lever.

The relay is designed so that if a normally open contact should weld closed, the normally closed contacts will not close and vice versa. When correctly designed into the circuit, this feature can be used in critical applications such as punch press applications where a check of each relay operation is required.

Ratings

Ac-NEMA A600

| Maximum Voltage | Maximum Continuous Current | Max. Voltamp Rating | | Max. Current Rating | |
|-----------------|----------------------------|---------------------|-------|---------------------|-------|
| | | Make | Break | Make | Break |
| 600 | 10 | 7200 | 720 | 60 | 6 |

Dc-NEMA PB33

| Maximum Current Rating | | Maximum Voltamp Rating |
|------------------------|-------|------------------------|
| 125 V | 250 V | 300 V or Less |
| 1.1 | .56 | 138 |

Installation

1. Disconnect power from device.
2. Remove all packing.
3. Operate relay by pulling the manual operator and releasing with the manual release lever to assure free movement.
4. Mount the relay on a vertical plane.
5. Make all electrical connections. Normally open contacts are indicated by gold and normally closed by white.

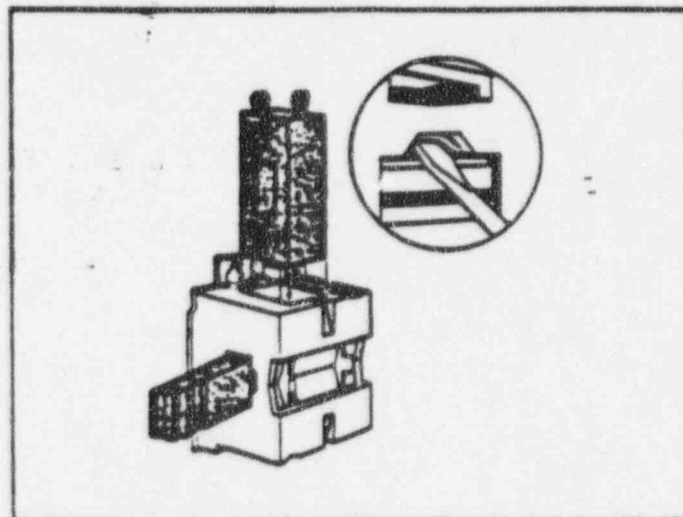
Coil Removal-Relay Coil

1. Disconnect power from device.
2. Remove from panel, if so mounted.
3. Insert a screwdriver blade between magnet and magnet retaining clip. Twist blade to force retaining clip away from magnet. Push down on screwdriver, dislodging magnet; then applying firm pressure with screwdriver, push magnet through coil to position shown in Figure 1.
4. Grasp the coil terminals and pull out.

To Reassemble:

5. Insert coil and center in housing.

6. Slide magnet back through coil and center with housing window. Insert blade of screwdriver through window, perpendicular to magnet. Using blade of screwdriver, push retaining clip away from magnet and apply pressure on magnet from opposite side. Snap magnet back into position under retaining clip. Magnet must be centered in housing window in order for it to seal properly.



Coil Removal-Unlatch Coil

1. Disconnect power from the device.
2. Remove four screws and cover of latch.
3. Lift out spring washer and core assembly.
4. Remove coil.
5. To install, reverse procedure.

Contact Removal/Conversion

1. Disconnect power from the device.
2. Loosen the two screws holding the latch attachment to the relay.
3. Pull the release lever of the latch attachment toward the coil and pull the latch attachment off the post.
4. Unscrew the steel center post.
5. Remove cover.
6. Lift out the contact module. Contacts may be inspected through the transparent side of the module.
7. To convert contacts, remove terminal screws and reassemble on opposite side. Replace module in deck and replace cover.
8. Screw in the steel center post. Post should be tightened until retaining ring meets the return yoke.



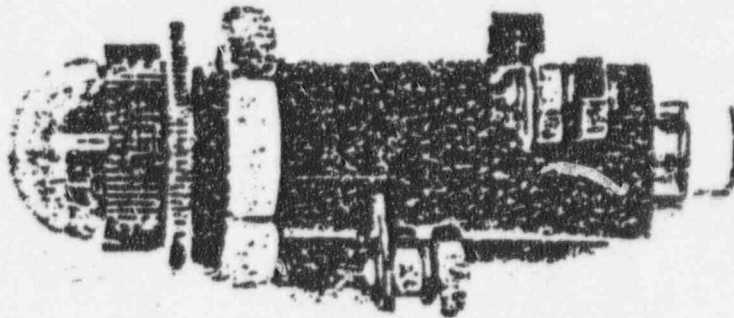
INSTRUCTIONS

GEH-3500 A
CALC NO. E-218
ATTACHMENT 5
PAGE 6 of 9

INDICATING LAMPS TYPE ET-16 and ET-17



ET-16 INDICATING LAMP



ET-17 INDICATING LAMP

POWER SYSTEMS MANAGEMENT DEPARTMENT

GENERAL  ELECTRIC

PHILADELPHIA, PA.

GEH-3500

CALL NO. E-218
ATTACHMENTS
PAGE 7 OF 9

CONTENTS

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INTRODUCTION

The ET-16 (incandescent) and ET-17 (neon) indicating lamps consist of a common receptacle, plug in type resistors and lamps, escutcheon and color cap. Available for mounting on switchboard panels up to and including 1/4 inch thickness.

APPLICATION

These lamps can be used whenever a panel mounted signal or indicating lamp is desired.

The ET-16 is available for either one brilliance, or dim bright operation. The ET-17 can be used when extra long life is a factor and brilliance is not. It also can be used when low current is desired.

FEATURES

1. The simple "push-twist" type plug has been adopted for both the bulb and the resistor. This was accomplished by incorporating a bayonet base on both components.
2. A common receptacle for both the ET-16 and ET-17 coupled with the plug-in resistor and bulb makes it easy to change on the panel without disassembling.
3. The resistor is in series with the bulb, and the ohmic value for the different circuit voltages is designed at 80% of the rated bulb voltage to give it longer life. Changing voltages is easily accomplished by changing the series resistor. (See listed tables for the proper resistor).
4. A short circuit plug is available when a series resistor is not required or if an external resistor is to be used.
5. Standard GE extra-long-life bulbs are specified for all lamps. The ET-16 uses GE Cat. No. 1819 for the 24 d-c lamp and GE Cat. No. 1835 for the balance of the ratings. ET-17 uses GE Cat. No. 81A.
6. Terminals are readily available. They are designed for either AMP "FASTON" type connectors, solder, or screws.
7. Nine basic color caps designed for maximum visibility are available for ET-16: Translucent-red, green, yellow, white. Transparent-amber, red, green, blue, and clear.

ET-17: Because of the special properties of neon, only amber, transparent red, and clear lenses are suitable.

The color caps have a knurled O.D. for easy removal.

8. The ET-16 is also available for dim bright applications.
9. When special voltages or resistance is required other than those listed, a special lamp may be ordered with the proper design, or designated series resistor.
10. A 2 inch insulating washer is supplied with each indicating light. It should be mounted on the inside of the panel as illustrated in Figures 2,3, and 4. The function of this washer is to provide additional insulation between the terminal and ground (panel) if a surge were to be induced on one of the potential leads.

If a bulb other than those listed above is required, the lamp will be furnished less the bulb.

Listed tables give some of the specials made available.

These instructions do not purport to cover all details or variations in equipment nor to provide for every possible contingency to be met in connection with installation, operation or maintenance. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, the matter should be referred to the General Electric Company.

RATINGS

Resistors ET-16 12.5 Watts
ET-17 1 Watt

| BULB | DESIGN VOLTAGE | DESIGN AMPS | CANDLE POWER | AVERAGE LIFE (HOURS) |
|------|----------------|-------------|--------------|----------------------|
| 1819 | 28 | .04A | Approx. .34 | 2500 |
| 1835 | 55 | .05A | Approx. 1.1 | 5000 |
| B1A | 105-125 | .3 MA | - | 15,000 |

CONNECTIONS

See Figure 1A and 1B for typical tell-tale and dim-bright connections.

RECOMMENDED PANEL ASSEMBLY

Thread the pal nut against the shoulder of the receptacle. Install the 2" insulating washer on the front of the receptacle against the pal nut. Insert the receptacle thru the panel and thread escutcheon nut against panel. Install color cap; hand tighten (do not force). Turn escutcheon nut back up against color cap, then back off 1/2 to 3/4 turn (recommend 3/4 turn) to give at least 1/64" clearance but not more than 1/32" clearance between color cap and escutcheon nut (for up to 3/16" panel). For 1/4" panel color cap will be flush with escutcheon nut. Tighten the pal nut against panel to 10-12 inch pound torque.

TABLE 1

ET-16 - INDICATING LAMP

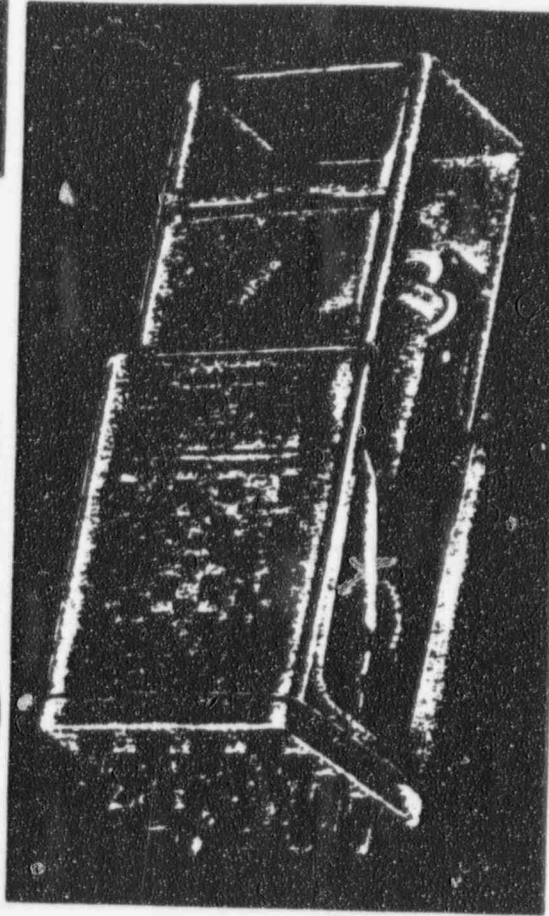
| CIRCUIT VOLTAGE RATED | MIN. | MAX. | CAT. NO. (INCLUDES LAMP, COLOR CAP, & RESISTOR) | RESISTOR 0165A7844 | | BULB GE CAT. NO. | RECEPTACLE | COLOR CAP + | CAR- TON | OUT- LINE |
|--------------------------|------|------|---|-----------------------|----------------|------------------------|-------------|------------------------------------|-------------|--------------|
| | | | | PART NO. | OHMIC VALUE | | | | | |
| 24 D-c | 22 | 28 | 011686708G1 | 1 | 10 | 1819 | 011686709G1 | SEE ORDER- ING TABLE 1 | 0165A9257P1 | 0165A7859 |
| 48 D-c | 44 | 56 | 011686708G2 | 2 | 200 | | | | | |
| 125 D-c | 110 | 140 | 011686708G3 | 3 | 2000 | | | | | |
| 250 D-c | 220 | 280 | 011686708G4 | 4 | 5100 | 1835 | | | | |
| 120 A-c | 95 | 130 | 011686708G5 | 5 | 1900 | | | | | |
| 240 A-c | 195 | 260 | 011686708G6 | 6 | 4800 | | | | | |

TABLE 2

ET-16 - FOR DIM-BRIGHT APPLICATION

| CIRCUIT VOLTAGE RATED | MIN. | MAX. | CAT. NO* (INCLUDES LAMP, COLOR CAP, AND RESISTOR) | RESISTOR 0165A9217 | | | BULB GE CAT. NO. | RE- CEP- TACLE | COLOR CAP + | CAR- TON | C L |
|--------------------------|------|------|---|-----------------------|--------------------|------|------------------------|----------------------|------------------------------------|-----------------|-----------|
| | | | | PART NO. | RESISTANCE OHMS | | | | | | |
| | | | | | TOTAL | TAP | | | | | |
| 48 D-c | 44 | 56 | 012788108G1 | 1 | 450 | 50 | 1835 | 011686709 G3 | SEE ORDER- ING TABLE 1 | 0165A9257 P2 | 0165A9216 |
| 125 D-c | 110 | 140 | 012788108G2 | 2 | 2550 | 1700 | | | | | |
| 250 D-c | 220 | 280 | 012788108G3 | 3 | 6000 | 4400 | | | | | |
| 120 A-c | 95 | 130 | 012788108G4 | 4 | 2450 | 1600 | | | | | |
| 240 A-c | 195 | 260 | 012788108G5 | 5 | 5700 | 4200 | | | | | |

control relays



This line of AGASTAT Control Relays introduces a number of significant advances over existing control relay designs. It provides unusually high contact density without sacrificing current carrying capacity, and a unique contact operating mechanism offering life expectancies of 100 million mechanical operations.

The heart of this mechanism is an articulated moving arm assembly which amplifies the movement of the solenoid core. This permits the use of an efficient, short stroke coil to produce an extremely wide contact gap. At the same time, it eliminates the need for long flexible arms which support the movable contacts in conventional relays. The result is increased current switching capacity and high tolerance to shock and vibration.

The movable contacts are connected to nylon links which provide low-friction transmission of movement from the magnet core without metal-to-metal contact. Together with a plastic core stop, this also eliminates heavy impacts at the end of the core stroke, adding to the extended life expectancy inherent in this design.

CUSICK ELECTRICAL SALES, INC.

514 N. EASTON ROAD

P. O. BOX 509

WILLOW GROVE, PA. 19090

215-659-6656

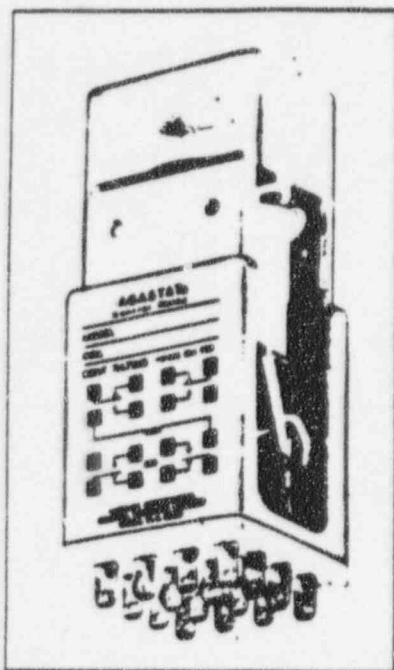


CONTROL PRODUCTS
DIVISION

AGASTAT



features



AGASTAT Control Relays are suitable for: relay logic switching operations as well as for heavier duty applications where small contactors would normally be used. In industrial applications it can be used for the control of inductive loads of several kilowatts such as solenoid valves, small motors, etc. It lends itself to a variety of installation methods, due to the various options of electrical connections and mounting styles. It may be wired from the front or rear of a panel, and is available with a variety of sockets and mounting hardware. It occupies a very small area of panel space and may be mounted singly, in continuous rows, or in groups.

The relay is available with a screw-terminal or quick-connect molded socket.

Operating coils are available in a variety of D.C. or A.C. voltages. In the latter case a built-in rectification circuit insures efficient operation of the relay without noise or

chatter. The unit is protected by a transparent plastic cover which keeps out dust and facilitates inspection of the relay's operation.

The nominal rating of the contacts is 10 amps on inductive A.C. circuits and 1 amp for resistive loads at 125 volts D.C. For overload performance in a resistive circuit each contact will break 40 amps at 240 volts A.C. or 48 volts D.C. The adjacent curve shows the number of operations versus current.

With the addition of an integral magnetic blow-out device (Option N) the D.C. current carrying capacity is increased approximately ten times for both NO and NC contacts. In both A.C. and D.C. operation, the addition of this device will normally double the contact life, due to reduced arcing.

AGASTAT Control Relays are operated by a moving core electro magnet whose main gap is at the center of the coil. A shoe is fitted to the core which overlaps the yokes and further increases the magnetic attraction.

The coil itself is in the form of an elongated cylinder, which provides a low mean turn length and also assists heat dissipation. Since the maximum travel of the electro magnet does not provide optimum contact movement, an ingenious amplifying device has been designed.

This consists of a W shaped mechanism, shown at the right. When the center of the W is moved vertically, the lower extremities move closer to each other as can be seen in the illustration. The center of the W mechanism is connected to the moving core of the electro magnet and the two lower points are connected to the moving contacts.

Two of these mechanisms are placed side by side to actuate the four contact sets of the relay. The outer arms of the W mechanisms are leaf springs, manufactured from a flat piece of non-ferrous metal. Each of these outer arms act as return springs for their corresponding contacts. This provides each contact with its own separate return spring, making the contacts independent.

The mechanical amplification of the motion of the electro magnet permits a greater distance between the contacts, while the high efficiency of the electro magnet provides a nominal contact force in excess of 100 grams on the normally open contacts.

All the contacts are positioned well away from the cover and are well ventilated and separated from each other by insulating walls.

The absence of metal to metal friction, the symmetrical design of the contact arrangement and the lack of heavy impacts provides a mechanical life of 100,000,000 operations.

For use on A.C. circuits the relay is supplied with a built-in rectification circuit, thus retaining the high D.C. efficiency of the electro magnet. The current peak on energizing is also eliminated and consequently the relay can operate with a resistance in series for

for high voltages or for drop-out by shorting the coil). The use of the rectification circuit offers still other advantages. The same model can operate at frequencies ranging from 40 to 400 cycles. Operation of the relay is crisp; even with a low A.C. voltage, there is a complete absence of hum and vibration.

The plastic cover has two windows through which the iron yoke protrudes to facilitate cooling and also to allow direct mounting of the relay irrespective of the terminals.

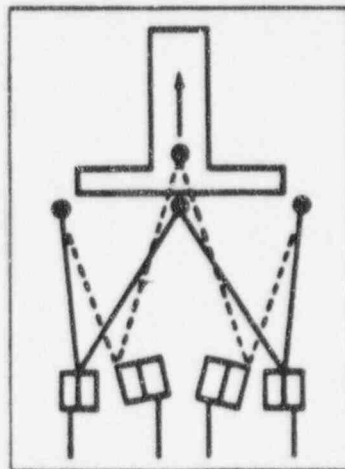


Diagram illustrating amplification obtained by articulated operating mechanism

specifications

Coil

Nominal Rating

12 to 250 volts D.C.
24 to 220 volts A.C.

See table for coil operating voltages

For 380 volts A.C.

Use 6800 ohms 4 watt resistor in series with 220 volts A.C. relay

For 440 volts A.C.

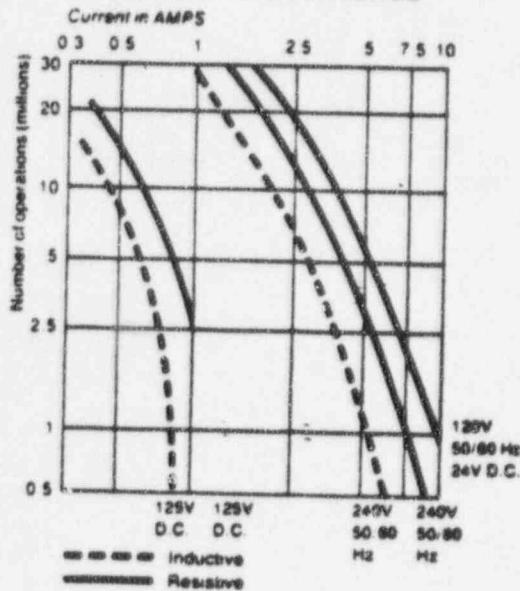
Use 8200 ohms 6 watt resistor in series with 220 volts A.C. relay

Coil drop-out voltages are between 10% and 40% of the rated operating voltages for both D.C. and A.C. (For example: in a 120V unit drop-out will occur between 12 and 48 volts.) D.C. relays will function with unfiltered D.C. from a full-wave bridge rectifier.

Coil Operating Voltages

| | D.C. | | | | | 50/60 Hz | | | |
|------------------------------------|------|----|----|-----|-----|----------|----|-----|-----|
| | 12 | 24 | 48 | 125 | 250 | 24 | 48 | 120 | 220 |
| Nominal Coil Voltage | | | | | | 24 | 48 | 120 | 220 |
| Minimum Pick-up voltage at 20°C | 9 | 18 | 36 | 94 | 187 | 19 | 37 | 92 | 175 |
| Minimum Pick-up voltage at 40°C | 9.5 | 19 | 38 | 100 | 200 | 20 | 41 | 102 | 188 |
| Maximum voltage for continuous use | 13.5 | 27 | 53 | 143 | 275 | 27 | 53 | 137 | 245 |
| Code Letter | A | B | C | D | F | G | H | I | J |

Load life characteristics



| Voltage | Current (Amps) | Power Factor or Time Constant | Number of Operations | Remarks |
|-----------|----------------|-------------------------------|----------------------|------------------------|
| 540V A.C. | 3 | $\cos \phi = 0.5$ | 15 000 | 2 contacts in series |
| 380V A.C. | 15 | Resistive | 10 000 | 2 contacts in parallel |
| 380V A.C. | 10 | Resistive | 200 000 | |
| 380V A.C. | 3 x 3.3 | $\cos \phi = 0.8$ | 200 000 | 3hp motor |
| 220V A.C. | 20 | Resistive | 20 000 | 2 contacts in parallel |
| 220V A.C. | 15 | $\cos \phi = 0.5$ | 20 000 | 2 contacts in parallel |
| 220V A.C. | 10 | Resistive | 400 000 | |
| 220V A.C. | 3 x 6 | $\cos \phi = 0.8$ | 200 000 | 3hp motor |
| 220V A.C. | 5 | | 1 500 000 | Filament lamps |
| 220V A.C. | 5 | Resistive | 3 000 000 | |
| 220V A.C. | 2.5 | $\cos \phi = 0.25$ | 2 000 000 | |
| 220V A.C. | 2 | Resistive | 15 000 000 | |
| 220V A.C. | 1.25 | Resistive | 30 000 000 | |
| 120V D.C. | 1.5 | Resistive | 20 000 000 | with blow-out device |
| 48V D.C. | 10 | Resistive | 1 000 000 | |
| 48V D.C. | 1.5 | 5 ms | 18 000 000 | |



specifications

Power consumption

Typical power consumption at rated voltage is 6VA for A.C. coils and 6 Watts for D.C. coils. There is no surge current during operation.

Contacts

| | |
|--|-----------------------------------|
| <i>Number of contacts</i> | 4 single pole double throw |
| <i>Nominal rating</i> | 10A @ 120 Volts A.C. |
| <i>Typical pressure between moving contact and</i> | |
| Normally closed contact: | 30 grams |
| Normally open contact: | 100 grams |
| <i>Contact resistance measured at terminals</i> | |
| | 250 milliohms @ 125V D.C., 1 amp. |

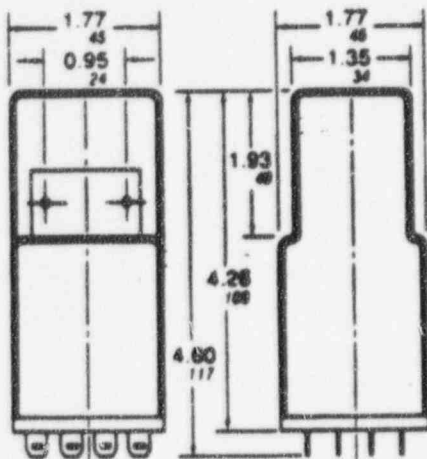
Insulation resistance

Between all non-connected terminals as well as between non-connected terminals and the relay yoke: 1000 megohms at 500 volts D.C.

Dielectric

2000 volts RMS 60 Hz between points specified above.

Dimensions



Operate time

Operate time at 20°C and rated voltage:

Between energizing and opening of normally closed contacts/less than 18 milliseconds on A.C. and less than 15 milliseconds on D.C.

Between energizing and closing of normally open contacts/less than 35 milliseconds on A.C. and less than 30 milliseconds on D.C.

Between de-energizing and opening of normally open contacts/less than 70 milliseconds on A.C. and less than 8 milliseconds on D.C.

Between de-energizing and closing of normally closed contacts/less than 85 milliseconds on A.C. and less than 25 milliseconds on D.C.

Operating temperature range

0°C to 60°C.

Shock

The relay, when kept energized by means of one of its own contact sets, will withstand 40g shock load when operating on D.C. and 150 g shock load on A.C.

Vibration

Single axis fragility curve data are available on request at frequencies from 5 Hz to 33 Hz.

Life

100,000,000 mechanical operations.

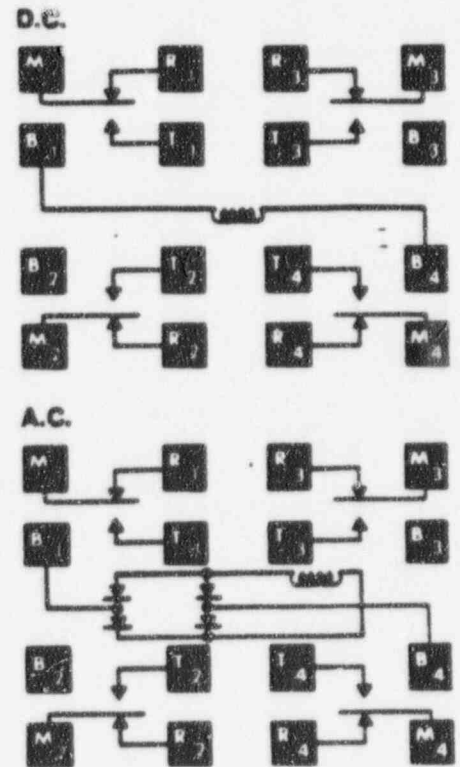
Weight

Relay complete with cover: 10.9 oz. Net.

Wiring and connections

The 16 flat base pins are arranged in four symmetrical rows of four pins; the pitch in both directions being .394". Connection may be made to the relay by soldering. Sockets are available with screw terminals or quick-connect lugs.

The internal wiring of the relay is also symmetrical as shown in the adjacent figure, allowing the relay to be inserted into its base in either of two positions. Terminals B2 and B3 are provided as extra connections for special applications.



UL Recognized, CSA Certified

Agastat GP Series control relays are UL Recognized under Guide NLDX2, File No. E15631; they are CSA Certified under Guide 380-W-1.14, File No. 29186.

features



This new TR Series combines the compactness of the AGASTAT GP Series relay with the traditional accuracy and dependability of AGASTAT solid state timing relays. The basic relay mechanism offers most of the features found in this unique relay series:

- high contact density • 100 million mechanical operations •
- large contact gap • high contact pressure • short stroke, articulated mechanism

Coupled with this advanced electromechanical design is a field proven solid state timing network, an adaptation of the circuit used in the AGASTAT premium grade timer.

A new transistorized voltage-sensing circuit does away with large-value dropping resistors, reducing the internal heat which destroys the accuracy and shortens the life of conventional designs. Current drain is correspondingly minimized.

This unique circuit also obviates the need for supplementary temperature-compensation components, affording unusual stability over a realistically broad operating temperature range. It also provides transient protection and protection against premature switching of the output contacts due to power interruption during timing. Under typical industrial ambient conditions, repeat accuracy is $\pm 2\%$ or better.

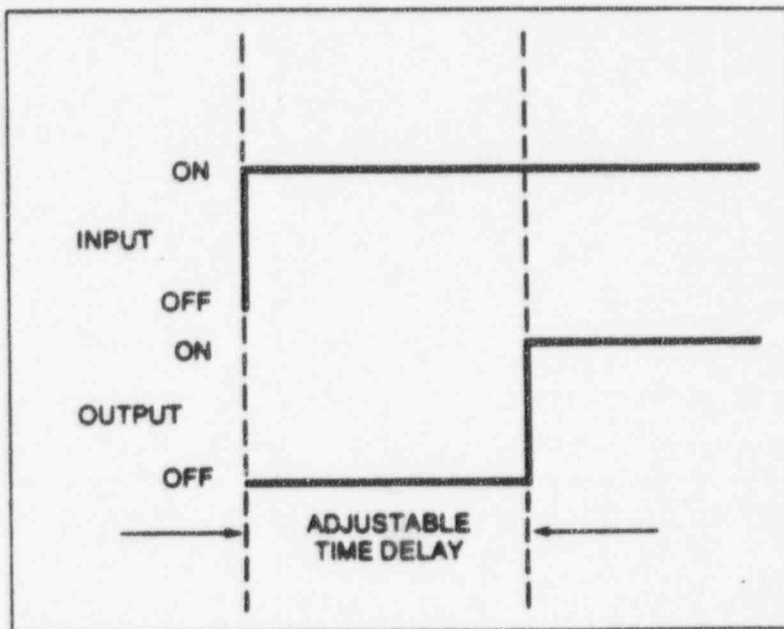
operation

Delay on energization (On Delay)

Applying line voltage initiates the time delay, at the expiration of which the output relay contacts transfer.

Recycle Time

To recycle the timer, input voltage must be removed and reapplied. Voltage must be removed for at least:
 .075 second during timing
 .075 second after time-out.



specifications

Operating voltage

+10% - 15%

D.C. A.C.
24 VDC 120V 50 - 60 Hz
125 VDC

Timing ranges

.15 to 3 Sec. 4 to 120 Sec.
.55 to 15 Sec. 10 to 300 Sec.
1 to 30 Sec. 2 to 60 Min.
2 to 60 Sec. 1 to 30 Min.

Repeat Accuracy

Repeat accuracy at any fixed temperature is defined as:

*The repeat accuracy deviation (A_n) of a time-delay relay is a measure of the maximum deviation in the time-delay that will be experienced in 100 successive operations at any particular time setting of the relay and for any particular operating voltage or current.

Repeat accuracy is obtained from the following formula:

$$A_n = 100 \frac{(T_1 - T_2)}{(T_1 + T_2)}$$

Where —

T_1 = Maximum observed time.
 T_2 = Minimum observed time.

*NEMA part ICS 2-218 .07

Repeat Accuracy $\pm 2\%$ at fixed temperature, voltage, and off-time.

Overall Accuracy $\pm 5\%$ over combined rated extremes of temperature and voltage.

Contacts

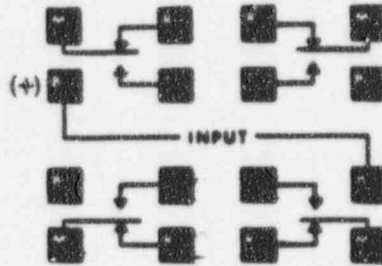
Relay 4 PDT 10 amps
See GP series specifications: "Contacts."

Operating temperature range

0°C to 50°C

Wiring Diagram

A.C. and D.C.



Timing Adjustment

Internal Fixed.
Internal potentiometer.

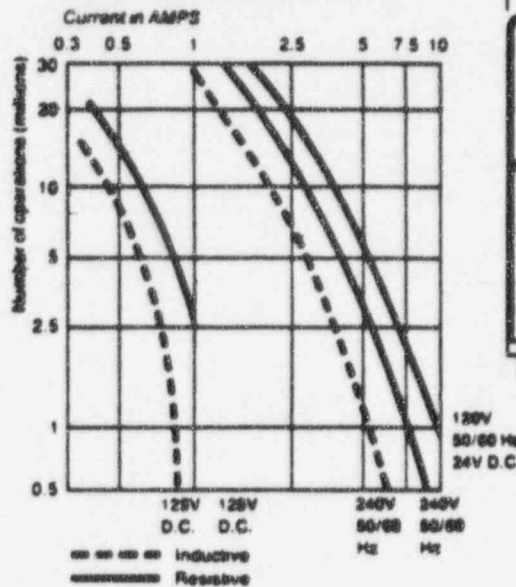
Mounting/terminals

16 flat base pins which may be soldered. Screw terminal or quick-connect sockets are available.

Life

Load life — see chart
Mechanical life — 100 million operations.

Load life characteristics



Transient Protection

A 1500 volt transient of less than 100 microseconds, or 1000 volts of less than 1 millisecond will not affect timing accuracy.

Insulation Resistance

Between all non-connected terminals as well as between non-connected terminals and the relay yoke: 1,000 megohms at 500 volts D.C.

Power Consumption

Typical power consumption at rated voltage is:

6VA for A.C. coils.
6 Watts for D.C. coils.

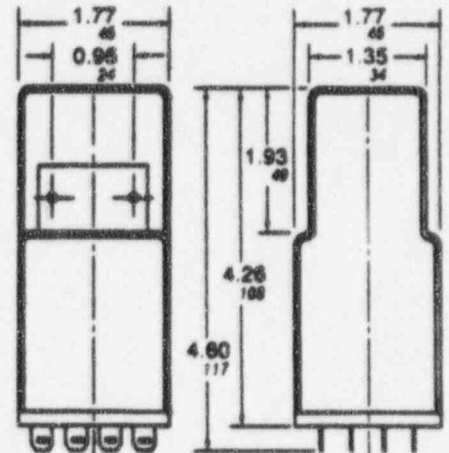
Dielectric

2000 VAC between terminals and case and between mutually-isolated contacts.

Weight

11 oz. Net.

Dimensions



J.O. No. 12210

TEL-CON NOTE

CALC E-218 PG 1051

CSU
River Bend Station

ATTACHMENT 7 COPY TO:

B. Mayer - 4 y
E. P. Bryant
247.453

TIME: 12:15

DATE: 11/8/84

| | <u>NAME</u> | <u>COMPANY</u> |
|-------|--------------------|----------------|
| FROM: | <u>T. Harrison</u> | <u>SWEC</u> |
| TO: | <u>J. Jackson</u> | <u>FCI</u> |

TOPIC: FS relay energization

DISCUSSION:

ACTION REQ'D:

TM: asked for current to energize coil on relay in Hood switch model FR-72-4 Dual switch point units.

JS: 5.4 ma

MAGNETIC STARTER COIL CHARACTERISTICS

| Characteristics | Size 0-1 | Size 2 | Size 3 | Size 4 | Size 5 | Size 6 |
|-------------------------|----------|--------|--------|--------|--------|--------|
| 3 POLES | | | | | | |
| Inrush VA (AC Coils) | 198 | 360 | 700 | 1400 | 900 | 3000 |
| Locked VA (AC Coils) | 34 | 41 | 57 | 78 | 10 | 80 |
| Locked Watts (AC Coils) | 0 | 18 | 16 | 22 | 0 | 175 |
| Inrush VA (DC Coils) | 200 | 400 | 800 | 1000 | 800 | 80 |
| Locked VA (DC Coils) | 0 | 0 | 14 | 25 | 22 | 400 |
| Locked Watts (DC Coils) | 0 | 0 | 14 | 20 | 22 | 70 |
| 6 POLES | | | | | | |
| Inrush VA (AC Coils) | 198 | 370 | 840 | 1700 | - | - |
| Locked VA (AC Coils) | 34 | 47 | 74 | 80 | - | - |
| Locked Watts (AC Coils) | 0 | 12 | 21 | 24 | - | - |

COIL CHARACTERISTICS FOR OTHER DEVICES

| Characteristics | Class J10, J120 | Class J11, J140 | Class J13, J150 | Class A12 & A14 |
|-----------------|-----------------|-----------------|-----------------|-----------------|
| Inrush VA | 120 | - | 100 | - |
| Hold VA | 18 | - | 0 | - |
| Locked Watts | 0 | - | 0 | - |
| Latching VA | - | 210 | - | - |
| Unlocking VA | - | 200 | - | 200 |

① Values are the same—irrespective of number of poles.
② Same as in Magnetic Starter—3 pole, Inrush VA.

[This section contains extremely faint and illegible text, likely bleed-through from the reverse side of the page. It includes various technical terms and numbers that are difficult to decipher.]

STONE & WEBSTER ENGINEERING CORPORATION
CALCULATION SHEET

A 5010.05

| CALCULATION IDENTIFICATION NUMBER | | | | PAGE 1 OF 9 |
|-----------------------------------|--------------------------------|--------------------------|--------------------------|----------------|
| J.O. OR W.O. NO. 12210 | DIVISION & GROUP ELECTRICAL | CALCULATION NO. E-218 | OPTIONAL TASK CODE NA | |

ATTACHMENT 9

SPECIAL CALCULATION FOR CABLE 1HVKBBC515 & 1HVKDBC506
(SIMILAR CIRCUITS - CALC APPLIES TO EACH CABLES)

CABLE - NGP-22 2/C - #10 COPPER

FIRE WRAPPED RACENAY - TRAY 1TC048B - 3HR WRAP - 40°C AMB

FROM/TO - 1SCV#PNLBBI / 1HVK#CHL 1B & 1D

LOAD - 1550 VA, 120 VAC, 1Ø (SEAL OIL PUMP MOTOR & 1KW HTR)

PER MOTOR NAMEPLATE - SF = 1.0

$$I_{FL} = \frac{1550 \text{ VA}}{120 \text{ VAC}} = 12.92 \text{ A} \quad \text{ASSUME } \phi \text{ L.F.} = 1.1 \text{ (FOR 10\% UNDER VOLTAGE)}$$

$$CSA = I_{FL} \times \phi \text{ L.F.} = 12.92 \times 1.1 = 14.35 \text{ A}$$

$$DCA \text{ (PER CHART 2 OF THIS CALC)} = 12.1 \text{ A}$$

∴ CABLE IS INADEQUATE

DETERMINE CABLE TEMPERATURE FOR $I_x = CSA$
(PER IEEE 242-1975, 11.5.2 (2))

$$T_x = T_A + (T_N - T_A) \left(\frac{I_x}{I_N} \right)^2$$

$$= 40 + (90 - 40) \left(\frac{14.35}{12.1} \right)^2$$

WHERE T_x = CABLE TEMP FOR I_x
 T_A = AMBIENT TEMP
 T_N = RATED INSUL. TEMP
 I_x = CSA
 I_N = DCA

$$= 110.3 \text{ } ^\circ\text{C}$$

ESTIMATED CABLE LIFE - (BASED ON CURVE FROM OXONITE QUAL REPT)
SWGS-1282-2, APP. 2 - CHART 1

$$\frac{1}{T_x} \times 10^4 \text{ } ^\circ\text{K} = \frac{1}{(110.3 + 273)} \times 10^4 \text{ } ^\circ\text{K} = 26.1$$

$$\text{PER CURVE, TIME} = 6.1 \times 10^4 \text{ HRS} = 6.96 \text{ YEARS}$$

∴ NEW CABLE MUST BE INSTALLED PRIOR TO 6.96 YEARS OF ACTUAL SERVICE.

STONE & WEBSTER ENGINEERING CORPORATION
CALCULATION SHEET

A 5010 85

| CALCULATION IDENTIFICATION NUMBER | | | | PAGE <u>2</u> OF <u>9</u> |
|-----------------------------------|------------------|-----------------|--------------------|------------------------------|
| J.O. OR W.O. NO. | DIVISION & GROUP | CALCULATION NO. | OPTIONAL TASK CODE | |
| 12210 | ELECTRICAL | E-218 | NA | |

ATTACHMENT 9

HOWEVER, BASED ON OPERATING LOGIC FOR THE OIL HEATER AND THE SEAL OIL PUMP MOTOR, THE TWO LOADS RARELY OPERATE SIMULTANEOUSLY. TYPICALLY, THE OIL HEATER OPERATES WHEN THE COMPRESSOR IS SHUT DOWN TO ASSURE THAT OIL IS AT THE PROPER MINIMUM TEMPERATURE FOR STARTING THE COMPRESSOR. ONCE RUNNING, OIL TEMPERATURE IS MAINTAINED FROM MACHINE HEAT AND THE OIL HEATER IS DEENERGIZED. THE SEAL OIL RETURN PUMP ONLY OPERATES WHEN THE SEAL OIL LEAKAGE RESERVOIR FILLS. THIS OCCURS ONLY WHEN SEAL OIL IS PUMPED TO THE SEALS WHILE THE COMPRESSOR IS RUNNING, OR WHEN ADDITIONAL OIL IS ADDED TO THE EQUIPMENT. IN ANY CASE, THE RUN TIME FOR THIS MOTOR IS TYPICALLY VERY SHORT. IT IS ANTICIPATED THAT THE AMOUNT OF TIME THAT BOTH LOADS OPERATE SIMULTANEOUSLY IS FAR LESS THAN 100 HOURS PER YEAR AND LESS THAN 5 HOURS PER OCCURRENCE.

THE TYPICAL OPERATING CONDITIONS ARE WITH THE 1KW HEATER RUNNING CONTINUOUSLY.

$$\therefore I_{FL} = \frac{1000}{120} = 8.33 \text{ A.} \quad \text{Assuming } \phi.L.F. = 1.1 \text{ (FOR 10\% UNDER VOLTAGE)}$$

$$CSA = I_{FL} \times OLF = 8.33 \times 1.1 = 9.17 \text{ A}$$

$$DCA \text{ (PER CHART 2 OF THIS CALC)} = 12.1 \text{ A}$$

$$12.1 > 9.17$$

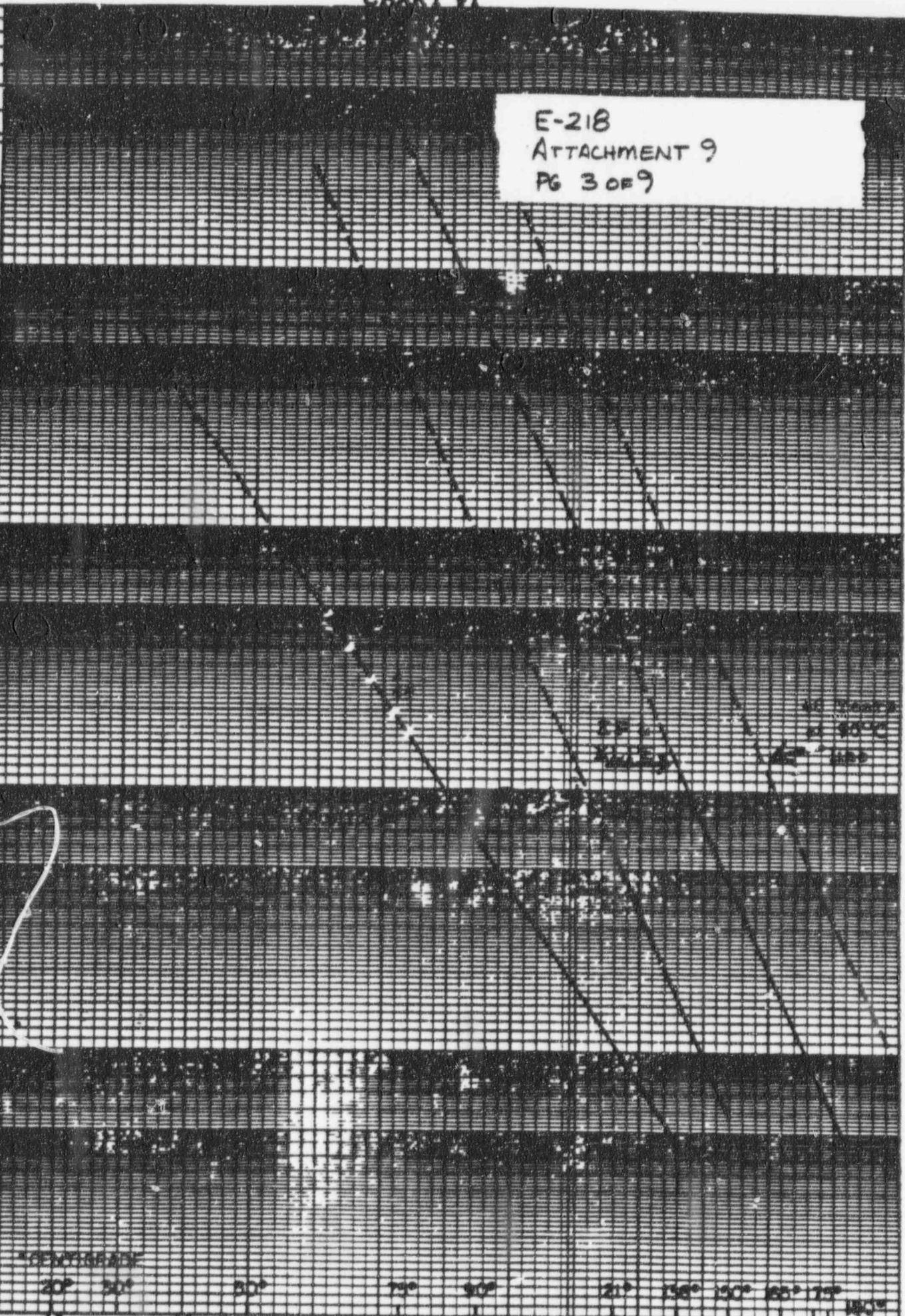
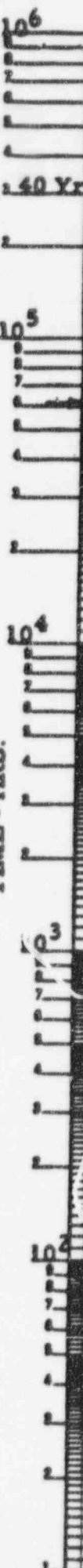
\therefore CABLE IS ADEQUATE
UNDER TYPICAL AND
* EMERGENCY OVERLOAD
CONDITIONS

* PER IEEE 242 PARA. 11.5.2 (3) AND MANUFACTURER'S SPECIFIED EMERGENCY OVERLOAD RATING FOR CABLE,

CHART #1

E-218
ATTACHMENT 9
PG 3 OF 9

TIME - HRS.



STONE & WEBSTER ENGINEERING CORPORATION
 CALCULATION SHEET

A 5010.05

| CALCULATION IDENTIFICATION NUMBER | | | | PAGE <u>4</u> OF <u>9</u> |
|-----------------------------------|--------------------------------|--------------------------|--------------------------|------------------------------|
| J.O. OR W.O. NO. 12210 | DIVISION & GROUP ELECTRICAL | CALCULATION NO. E-218 | OPTIONAL TASK CODE NA | |

ATTACHMENT 9

SPECIAL CALCULATION FOR CABLE ISCABNK508

*NOTE: DUE TO VOLTAGE DROP CONCERN LOAD ON PANEL ISCA-PNL8B2 MUST BE LIMITED TO 9KVA ∴ 15 KVA SUPPLY TRANSFORMER WILL NOT BE USED AS LOAD.

CABLE - NGP-52 3/C · #2/0 TRX ALUMINUM

FIRE WRAPPED RACEWAY - TRAY 1TK512N - 3HR WRAP - 50°C AMB

FROM/TO - IRCP → TCRO2F / ISCA-PNL8B2

LOAD - 9 KVA (PER CALC E-182) 240 VAC, 1Ø

$$I_{FL} = \frac{9000 \text{ VA}}{240 \text{ VAC}} = 37.5 \text{ A}$$

$$CSA = 37.5 \times 1.25 = 46.9 \text{ A}$$

$$DCA \text{ (PER CHART 1 OF THIS CALL)} = 81.9 \text{ A} \quad \therefore$$

CABLE IS ADEQUATE FOR REDUCED LOAD.

NOTE THAT EVEN IF 15KVA WAS USED FOR LOAD, CSA WOULD BE;

$$CSA = \frac{15000}{240} \times 1.25 = 78.1 \text{ A} \quad \text{AND} \quad DCA = CSA$$

∴ CABLE IS ADEQUATE

STONE & WEBSTER ENGINEERING CORPORATION
CALCULATION SHEET

Δ 5010 85

| CALCULATION IDENTIFICATION NUMBER | | | | PAGE <u>5</u> OF <u>9</u> |
|-----------------------------------|------------------|-----------------|--------------------|------------------------------|
| J.O. OR W.O. NO. | DIVISION & GROUP | CALCULATION NO. | OPTIONAL TASK CODE | |
| 12210 | ELECTRICAL | E-218 | NA | |

ATTACHMENT 9

SPECIAL CALCULATION FOR CABLE ISCAANK500

CABLE - NGP-54 3/C #4 TRX COPPER

FIRE WRAPPED RACEWAY - CONDUIT ICK921NA - 3HR WRAP - 40°C AMBI

FROM/TO - ISCA-XD10A1 / ISCA-PNL10A1

LOAD - 15 kVA, 240 VAC, 1Φ

$$I_{FL} = \frac{15000}{240} = 62.5 A$$

NOTE: SINCE NONE OF PANEL LOADS OPERATE AT A SERVICE FACTOR GREATER THAN 1.0, THE OVERLOAD FACTOR SHALL BE ASSUMED TO BE 1.1 TO ACCOUNT FOR POSSIBLE 10% UNDERVOLTAGE CONDITION.

$$CSA = I_{FL} \times OLF = 62.5 \times 1.1 = 69.4 A$$

DCA (PER CHART 1 OF THIS CALC) = 75A ∴ CABLE IS ADEQUATE BASED ON OVERLOAD FACTOR OF 1.1

STONE & WEBSTER ENGINEERING CORPORATION
CALCULATION SHEET

▲ 5010 BS

| CALCULATION IDENTIFICATION NUMBER | | | | PAGE <u>6</u> OF <u>9</u> |
|-----------------------------------|--------------------------------|--------------------------|--------------------------|------------------------------|
| J.O. OR W.O. NO. 12210 | DIVISION & GROUP ELECTRICAL | CALCULATION NO. E-218 | OPTIONAL TASK CODE NA | |

ATTACHMENT 9

SPECIAL CALCULATION FOR CABLE IENSBBH300

CABLE - NGR-12 3/C - *46 TRX COPPER

FIRE WRAPPED RACEWAY - CONDUIT ICHO12BA - 3HR WRAP - 40°C AMB.

FROM/TO - IENS *50G1B-BKR25 / IENS *LDC1B - XFMR

LOAD - 1500 KVA, 4160 V_{LL}, 3φ

PER CALC E-127 REV 3, P.54

φ.L.F. = 1.0 = OVERLOAD FACTOR

G.D.F. = 0.86 = GROUP DERATING FACTOR

(FOR 40°C AMB) A.D.F. = 1.0 = AMBIENT DERATING FACTOR

$$I_{FL} = \frac{1500}{4.16(\sqrt{3})} = 208.2 \text{ AMPS}$$

$$I_{MAX} \times A.D.F. \geq I_{FL} \times \phi.L.F. \div G.D.F.$$

PER IPCEA P46-426 P 264 BKV, $I_{MAX} = 287 \text{ A}$

$$287 \times 1.00 \geq 208.2 \times 1.0 \div 0.86$$

$$287 \geq 242.1 \quad \therefore \text{CABLE IS OK}$$

ALSO, UPON DERATING FOR 3 HR CONDUIT FIRE WRAP (.903)

$$287 \times 0.903 \geq 242$$

$$259 \text{ A} \geq 242 \text{ A} \quad \therefore \text{CABLE IS ADEQUATE}$$

HOWEVER, AT 90% BUS VOLTAGE, I_{FL} BECOMES;

$$I_{FL} = 208.2 \times 1.0 \times 1.111 \div .86$$

$$= 269 \text{ A} \quad 259 \text{ A} \neq 269 \text{ A.}$$

EXPECTED CABLE LIFE AT SUBSEQUENT ELEVATED TEMPERATURE

$$T_C = T_A + (T_R - T_A) \left(\frac{I_{FL}}{I_R} \right)^2 = 40 + (90 - 40) \left(\frac{269}{259} \right)^2$$

$$= 93.94 \quad \frac{1}{T} \times 10^4 \text{ } ^\circ\text{K} = \frac{1}{93.94 + 273} \times 10^4 = 27.25$$

EXPECTED LIFE = 28.54 YEARS*

STONE & WEBSTER ENGINEERING CORPORATION
CALCULATION SHEET

▲ 5010 85

| CALCULATION IDENTIFICATION NUMBER | | | | PAGE <u>7</u> OF <u>9</u> |
|-----------------------------------|------------------|-----------------|--------------------|------------------------------|
| J.O. OR W.O. NO. | DIVISION & GROUP | CALCULATION NO. | OPTIONAL TASK CODE | |
| 12210 | ELECTRICAL | E-218 | NA | |

ATTACHMENT 9
PER CALC E-222 REV D, PAGE 6 - TOTAL RUNNING
LOAD IS 1345 KVA

$$I_R @ 1345 \text{ KVA} = \frac{1345}{4.16 \sqrt{3}} \times 1.0 \times 1.0 \times 1.11 \div 0.86$$

ADF OLF ^{90%}BUS V GDF

= 241.1 A

∴ BASED ON TOTAL
RUNNING LOAD, CABLE
IS ADEQUATE

259A ≥ 241.1 A

* CONCLUSION -

28.54 YEARS EXPECTED LIFE IS BASED ON RATED KVA LOAD AND 90% NOMINAL VOLTAGE CONTINUOUSLY FOR THAT PERIOD. SINCE THE TOTAL RUNNING LOAD FOR THIS LOAD CENTER IS ONLY 90% OF RATED AND THESE CONDITIONS OF SERVICE ARE ONLY EXPERIENCED DURING LOCA CONDITIONS, THE CABLE WOULD RARELY, IF EVER, OPERATE AT THE POSTULATED ELEVATED TEMPERATURE. THEREFORE, IT IS DETERMINED THAT THE CABLE WOULD NEVER REQUIRE REPLACEMENT DURING ITS 40 YEAR QUALIFIED LIFE AS A RESULT OF INSUFFICIENT AMPACITY.

CHART #1

E-218
ATTACHMENT 9
PG 9 OF 9

TIME - HRS.

16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1

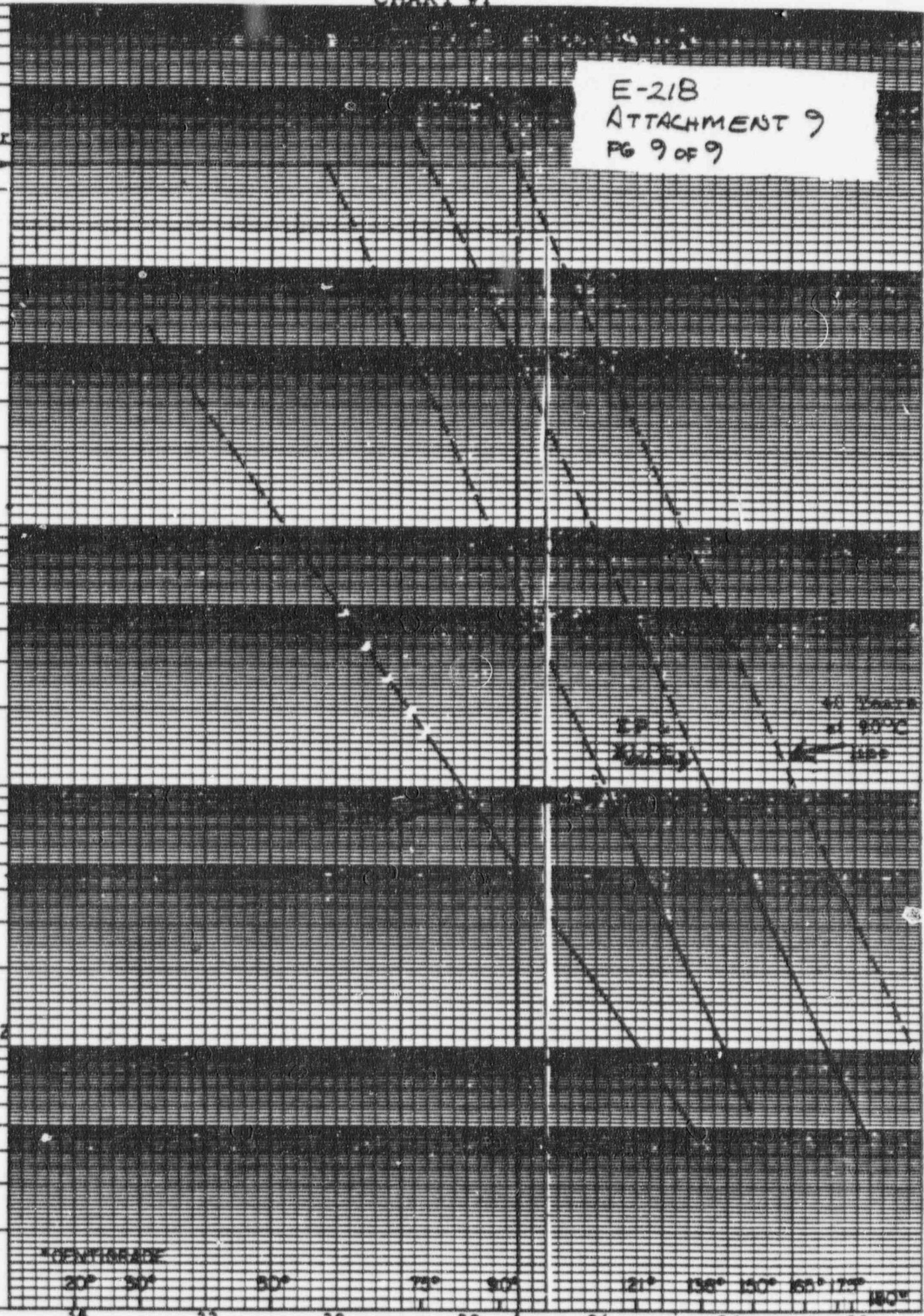
10⁵
10⁴
10³
10²

*CENTIGRADE

20° 30° 50° 75° 90° 121° 138° 150° 165° 175° 180°

34 32 30 28 26 24 22

60 Year
at 90°C
100



ATTACHMENT 10

E-218

IG IS RELEASED FOR INSULATION

SH 1 OF 159

Piping/Instrument

I.D. LINE NUMBER/DUCTWORK

CAT. I

CONDUIT 1CX600RC-1" 1CX600RC1-3/4" 1CX600RC2-3/4"

CABLES ISWPARK402 & 403

Drawing Shows: EE-34YC-2, E+DCR TC-259B9 & TC-26145

Building: FUEL HANDLING BUILDING

Elevation & Column Lines (limits if any) EL-70, 79 & 95

Exceptions and/or special instructions:

CONDUIT & SUPPORTS TO BE FIREPROOFED IN ACCORDANCE WITH THE ENGINEER'S REQUIREMENTS. START POINT FOR 1CX600RC @ EL-70 COL. L00RD. FA-9 END POINT AT 14JB6002 EL 95'-0. START POINT FOR 1CX600RC1 & 2 AT 14JB6002 EL 95'-0 END POINT AT TRANSITION FROM STEEL CONDUIT TO FLEXIBLE CONDUIT. DO NOT FIREPROOF INSTRUMENTS ISWP & FT69A & FT60A AT THIS TIME.

Boundary Identification Package: IFB.001 & IFB.002

CMS Work Package Account: 610-1650 1876 & 1877

Required Complete Date: (if appropriate) _____

CONSTRUCTION DEPARTMENT RELEASE

Electrical

[Signature] 11/26/84
Signature Date

Piping

NA

Painting

NA

HVAC

NA

Instrumentation

NA

Vessels/Millwright

NA

CONCURRENCE: SEG ENGINEER

[Signature] 11-21-84
Signature Date

Field Quality Control Insp.
(~~Gov. & Piping, HVAC, or Equip. only~~)

[Signature] 11/27/84

CONCURRENCE: Thermal Insulation Coordinator

[Signature] 11/27/84
Signature Date

Contractor Complete: _____

[Signature] 3/25/85
Signature Date

E+DCR P-22.330

COMPLETE

APPENDIX R 1

ATTACH 10
E-218
SH 2 OF 159

RELEASE No. E-002

Ill State Utilities

Over Bend Station *1/5/85*

THE FOLLOWING RACEWAYS, SUPPORTS AND COMPONENTS ARE RELEASED FOR INSTALLATION OF FIRE BARRIER MATERIALS:
ENCLOSURES FOR FP-FT-059A & FT-D6DA

RECEIVED JAN 26 1985

[Handwritten initials]

- 3 BUILDING/ELEVATIONS: FUEL BLDG EL. 95'-0" NEAR F6-7
- 4 LIMITS/RESTRICTIONS: N/A
- 5 APPLICABLE DRAWINGS: EE-34YA-2 EE-34YC-2 (E4DCR C-26,378B)
- 6 SPECIAL INSTRUCTIONS: INSTRUMENT RACK TO BE FIREPROOFED IN ACCORDANCE WITH ENGINEER'S REQUIREMENTS.
- 7 CMS ACCOUNT: G10-1650-1876 REQ'D COMPLETION DATE 1-27-85

| S&W DRAWING | ENGINEERING SIGNATURE & DATE | CONSTRUCTION SIGNATURE & DATE | FAC SIGNATURE & DATE |
|--|--------------------------------|-------------------------------|----------------------------|
| ELECTRICAL Conduits Cable trays Supports Cable | <i>[Signature]</i> N/A 1/25/85 | N/A | NA |
| | <i>[Signature]</i> NA | N/A | NA |
| | <i>[Signature]</i> NA 1/25/85 | <i>[Signature]</i> 1-25-85 | <i>[Signature]</i> 1/25/85 |
| | <i>[Signature]</i> NA 1/25/85 | N/A | NA |
| INSTRUMENTN PIPING STRUCTURAL OTHER | <i>[Signature]</i> 1-25-85 | <i>[Signature]</i> 1-25-85 | <i>[Signature]</i> 1/25/85 |
| | N/A | N/A | N/A |
| | N/A | N/A | N/A |

9 CONCURRENCE: *[Signature]* 1/25/85
REG. INSTR. & TYPING ENGINEER
[Signature] 1/25/85
INSTALLATION COORDINATOR

10 APPLICABLE CCP FORMS: CCC # 5-29-11-FB003 **COMPLETE**
 COMMENTS: E4DCR C-26378B
 THE ABOVE DESCRIBED WORK HAS BEEN COMPLETED

APPENDIX R IN

ATTACH 10
E-218
SH 3 OF 159

LEASE No. E-003

Gulf States Utilities

Ver Bend Station *W/SL/14*

THE FOLLOWING RACEWAYS, SUPPORTS AND COMPONENTS ARE RELEASED FOR INSTALLATION OF FIRE BARRIER MATERIALS:

1 * JB6002

RECEIVED JAN 26 1985

Handwritten initials

3 BUILDING/ELEVATIONS: FUEL BLDG EL. 95'-0" COL. 8

4 LIMITS/RESTRICTIONS:

5 APPLICABLE DRAWINGS: EE-34YC-2 EE-34YB-2 ~~E-4-DCR~~ E-26,397 *1/1/85*

6 SPECIAL INSTRUCTIONS: JUNCTION BOX TO BE FIREWRAPPED IN ACCORDANCE WITH ENGINEERS REQUIREMENTS.

7 CMS ACCOUNT: 610-11650-1876 REQ'D COMPLETION DATE

| S&W DISCIPLINE | ENGINEERING SIGNATURE & DATE | CONSTRUCTION SIGNATURE & DATE | FAC SIGNATURE & DATE |
|----------------|------------------------------|-------------------------------|----------------------------------|
| ELECTRICAL | <i>J. Williams 1/26/85</i> | <i>n/a</i> | <i>n/a</i> |
| Conduits | <i>J. Williams 1/26/85</i> | <i>n/a</i> | <i>n/a</i> |
| Cable trays | <i>J. Williams 1/26/85</i> | <i>Ken Ward 1-25-85</i> | <i>R. Mitchell 1/25/85</i> |
| Supports | <i>J. Williams 1/26/85</i> | <i>John W. Ruff 1-26-85</i> | <i>Kenneth L. Sample 1/27/85</i> |
| Cable | <i>J. Williams 1/26/85</i> | <i>n/a</i> | <i>n/a</i> |
| INSTRUMENTN | <i>n/a</i> | <i>n/a</i> | <i>n/a</i> |
| PIPING | <i>n/a</i> | <i>n/a</i> | <i>n/a</i> |
| STRUCTURAL | <i>n/a</i> | <i>n/a</i> | <i>n/a</i> |
| OTHER | <i>n/a</i> | <i>n/a</i> | <i>n/a</i> |

9 CONCURRENCE: *Kenneth J. Stevi 1/26/85*
SEE ISSUANCE SHEET ENGINEER DATE
Bill Williams 1/27/85
INSULATION COORDINATOR DATE

APPLICABLE CCP FORMS: CCC 5-29-11-FB0029

COMPLETE

COMMENTS: * Box Lid and gasket only *PLS 1-27-85*

APPENDIX R INSU.

ATTACH. 10
E-218
SH 4 OF 159

SE No. E-004
of Station 107106

Gulf States Utilities

THE FOLLOWING RACEWAYS, SUPPORTS AND COMPONENTS ARE RELEASED FOR INSTALLATION OF FIRE BARRIER MATERIALS:

1CK60ZNC & 1CC60ANC3 AND ATTACHMENTS

RECEIVED JAN 26 1985
[Signature]

3 BUILDING/ELEVATIONS: FUEL BLDG EL. 95'-0" COL F6-B

4 LIMITS/RESTRICTIONS:

5 APPLICABLE DRAWINGS: EE-5006-3 (N&D-10,233)

6 SPECIAL INSTRUCTIONS: CONDUIT TO BE FIRE PROOFED IN ACCORDANCE WITH ENGRS REQUIREMENTS. CONDUITS AFFECTED BY THE 18" RULE.

7 CMS ACCOUNT: _____ REQ'D COMPLETION DATE _____

| SEW DISCIPLINE | ENGINEERING SIGNATURE & DATE | CONSTRUCTION SIGNATURE & DATE | FQC SIGNATURE & DATE |
|----------------|------------------------------|-------------------------------|-------------------------------|
| ELECTRICAL | <u>J. Balgovic</u> | <u>K. Hany</u> 1-26-85 | <u>James J. Grist</u> 1-26-85 |
| Conduits | NA g.b. | n/a | NA |
| Cable-trays | <u>[Signature]</u> | <u>K. Hany</u> 1-26-85 | NA |
| Supports | NA g.b. | <u>[Signature]</u> 1-26-85 | NA |
| Cable | NA g.b. | <u>[Signature]</u> 1-26-85 | NA |
| INSTRUMENTN | n/a | n/a | n/a |
| PIPING | n/a | n/a | n/a |
| STRUCTURAL | n/a | n/a | n/a |
| OTHER | n/a | n/a | n/a |

9 CONCURRENCE: Kenneth J. Stein
SEG INSULATION ENGINEER
[Signature]
INSULATION COORDINATOR

1/26/85
DATE
COMPLETE
DATE

10 APPLICABLE CCP FORMS: 5-29-11-FB0016/5-29-11-FB0032/5-29-11-FB0033

11 COMMENTS: N&D 10233

THE ABOVE DESCRIBED WORK HAS BEEN COMPLETED
1/27/85

APPENDIX K III

ATTACH. 10

EMJL 100. - - -

Gulf States Utilities

E-218

Bend Station 1/25/85

SH. 5 OF 159

COMMENTS ARE RELEASED

THE FOLLOWING RACK FOR INSTALLATION OF FIRE BARRIER MATERIALS:

ISWP* FT59A (H) & ISNP* FT59A (L)

ISWP* FT60A (H) & ISNP* FT60A (L)

IMWS-FT15B, FQI-15B

RECEIVED JAN 25 1985

1 BUILDING/ELEVATIONS: FUEL BLDG EL. 95'-0"

2 LIMITS/RESTRICTIONS: N/A

3 APPLICABLE DRAWINGS: EK-311F-2 - E & DCR C26,840

4 SPECIAL INSTRUCTIONS: INSTRUMENT TUBING WILL BE PROTECTED FOR 18 LINEAR INCHES OUTSIDE THE RACK ENCLOSURE IN ACCORDANCE WITH ENGINEER'S REQUIREMENTS.

5 CMS ACCOUNT: REQ'D COMPLETION DATE

| S&W DISCIPLINE | ENGINEERING SIGNATURE & DATE | CONSTRUCTION SIGNATURE & DATE | FQC SIGNATURE & DATE |
|--------------------|------------------------------|-------------------------------|-------------------------|
| ELECTRICAL | | | |
| Conduits | N/A [Signature] | N/A KAF 1/26/85 | N/A KAF 1/26/85 |
| Cabletrays | N/A [Signature] | N/A KAF 1/26/85 | N/A KAF 1/26/85 |
| Supports | N/A [Signature] | N/A KAF 1/26/85 | N/A KAF 1/26/85 |
| Cable | N/A [Signature] 1/25/85 | N/A KAF 1/26/85 | N/A KAF 1/26/85 |
| INSTRUMENTN PIPING | [Signature] 1-26-85 | [Signature] 1-26-85 | David H Collins 1/26/85 |
| STRUCTURAL | N/A KAF 1/26/85 | N/A KAF 1/26/85 | N/A KAF 1/26/85 |
| OTHER | | | |
| E&D | [Signature] 1/26/85 | N/A KAF 1/26/85 | N/A KAF 1/26/85 |

CONCURRENCE: Kenneth J. Steir
INSULATION ENGINEER
 [Signature]
INSULATION COORDINATOR

1/26/85
 DATE
 1/26/85
COMPLETE

APPLICABLE CCP FORMS: 5-29-11-FB0031/5-29-11-FB00015

COMMENTS: E&D CR TC 26.840A

THE ABOVE DESCRIBED WORK HAS BEEN COMPLETED
 [Signature] 1/27/85 DATE
CONSTRUCTION REP.
 [Signature] 1/27/85 DATE
ANCO. REFC REP.

APPENDIX

GULF STATES UTILI

ATTACH. 10
E-218
SH 6 OF 159

LEASE

RIVER BEND STATION

THE FOLLOWING ITEM MATERIAL:

ION OF FIRE BARRIER

| | | | | |
|---------------|------------|------------------|------------|----------------|
| ICC203RC - 3" | 6N-1A-0013 | ICK95BRA - 2" | 6N-1A-0016 | HJB |
| | 6N-1A-0012 | | 6N-1A-0003 | HJB |
| | 6N-1A-0011 | | 6N-1A-0038 | HJB |
| | 6N-1A-0006 | | 6N-1A-0001 | |
| ICC203RC1-2" | 6U-1A-0062 | ICK95BRA1-1 1/2" | 6U-1A-0062 | |
| | | | CU-0485 | |

BUILDING/ELEVATIONS: PIPE TUNNEL EL 66'-3"

LIMITS/RESTRICTIONS: N/A

APPLICABLE DRAWINGS: EE-34YD-2 EE-34YA-2 EE-34YB-2

SPECIAL INSTRUCTIONS:

N/A

CMS ACCOUNT: 392-1650-1876
392-1650-1877

COMPLETION DATE:

| S&W DISCIPLINE | CONSTRUCTION SIGNATURE&DATE | ENGINEERING SIGNATURE&DATE | FBC SIGNATURE&DATE |
|---|-----------------------------|----------------------------|---------------------------------|
| ELECTRICAL conduits cable tray supports cable | <i>K. A. Hein</i> 2-11-85 | <i>K. A. Hein</i> 2-10-85 | <i>Robert L. Sample</i> 2/11/85 |
| | N/A KAS. 2/11/85 | N/A 2-10-85 | N/A KM 2/11/85 |
| | <i>K. A. Hein</i> 2-11-85 | <i>K. A. Hein</i> 2-10-85 | <i>Robert L. Sample</i> 2/11/85 |
| | <i>John H. Kopt</i> 2/11/85 | <i>K. A. Hein</i> 2-10-85 | <i>Robert L. Sample</i> 2-11-85 |
| INSTRUMENTS | N/A | N/A | N/A |
| PIPING | N/A | N/A | N/A |
| STRUCTURAL | N/A | N/A | N/A |
| OTHER | | | |

CONCURRENCE: *Kenneth J. Stein* 2-11-85
SES INSULATION ENGINEER DATE

W. H. [Signature] 2-11-85
INSULATION COORDINATOR DATE

APPLICABLE CCCP FORMS: 5-29-13-GL0034, 5-29-13-GL0035, 5-29-13-GL0036, 5-29-13-GL0037.

COMMENTS: ERDOR C-26397A

COMPLETE

THE ABOVE DESCRIBED WORK HAS BEEN COMPLETED

Charles M. Bailey 3/25/85
ANCO CONSTRUCTION REP. DATE

Thomas L. [Signature] 3-25-85
ANCO RA/PO/REP. DATE

GULF STATES UTILITIES

ATTACH. 10
E-218
SM. 7 OF 159

RIVER BEND STATION

JF FIRE BARRIER

2. THE FOLLOWING ITEMS ARE RE

MATERIAL: CABLE TRAYS: 1TH200R, 1TK200R, 1TC200R, 1TX200R
Support Nos.: 1F-1, ^{CV-1F-2} 2F-1, 3F-1, 4F-1, 5A-1, 6A-1, 7A-1, 12C-1, 10A-2, 10A-1, 12C-2, 12C-3, 12C-4, 12C-5, 12C-6, 12C-7, 12C-8, 12C-9, 12C-10, 12C-11, 12C-12, 12C-13, 12C-14, 12C-15, 12C-16, 18A-1, 18A-2, 8A-13, 8A-14

Cont. Pg 2

3. BUILDING/ELEVATIONS: PIPE TUNNEL "F" EL. 66'-3"

4. LIMITS/RESTRICTIONS: see HOLD H-007 Attached

5. APPLICABLE DRAWINGS: EE-34VA-2, EE-34VB-2, EE-34VD-2

6. SPECIAL INSTRUCTIONS: FIRE PROOFING OF ITEMS LISTED IN BLOCK 2 SHALL BE BY MEANS OF AN ENCLOSURE USING ENVELOPE STRUCTURE ERECTED BY STONE & WEBSTER CONSTRUCTION.

7. CMS ACCOUNT: 392-11550-1878 392-11550-1879 COMPLETION DATE:

| 8. S&W DISCIPLINE | CONSTRUCTION SIGNATURE&DATE | ENGINEERING SIGNATURE&DATE | FQC SIGNATURE&DATE |
|---|--|----------------------------------|--|
| ELECTRICAL Conduits cable tray supports cable | C. Earl Williams C. Earl Williams Alford M. ... 3/18/85 3/20/85 | TAB TAB 3/18/85 3/18/85 | 3/27 Kenneth C. ... Kenneth C. ... 3-8 3/30/85 |
| INSTRUMENTS PIPING STRUCTURAL OTHER CSI B.I.1 / F. PROTECT. | N/A SEE HOLD N/A 3/19/85 | J/R N/A 3/19/85 3/19/85 | N/A N/A N/A C. E. ... 3/19/85 |

9. CONCURRENCE: [Signature] 5-7-85
SEG INSULATION ENGINEER DATE

INSULATION COORDINATOR DATE

10. APPLICABLE CCCP FORMS:

COMMENTS:

THE ABOVE DESCRIBED WORK HAS BEEN COMPLETED

ATTACH. 10
E-218
SH. 8 OF 159

Continued from Block 2.

ITEMS REQUIRING FIREPROOFING ~~DOE TO 18" RULE~~ ARE AS FOLLOWS:

- 1) ICK600NA9
- 2) ICC600NA6
- 3) ICK600NA1
- 4) ICK600NA10 } SUPPORT # FN-1A-0222, FN-1A-0708, FN-1A-0709, FN-1A-0710, FN-1A-0711
- 5) ICK600NM1
- 6) ICC270NH1
- 7) ICK200RA } SUPPORT # FN-1A-0030
- 8) ICC200RA
- 9) ICC270NH7
- 10) ICX9110A } Junction Box 18JB2072 - SUPPORT # FN-1A-0032 2104
- 11) UNSCHEDULED CONDUIT LABELED SMOKE & FIRE PROTECTION
- 12) D.M. # 11
- 13) D.M. # 11

NOTED
[Signature]
3/18/85

THE PORTIONS OF THE FOLLOWING LISTED CONDUITS, WHICH ARE WITHIN THE CONFINES OF THE ENCLOSURES FOR THE CABLE TRAYS, SHALL BE FIRE PROOFED PER E & DCR C-25.823

- | | |
|---------------------------|--|
| ① ICC 600NA6 | FN-1A-0450 FN-1A-0451 UNISTRUT OFF WEB OF BEAM (TD COVERED WITH FIRE PROOFING) |
| ② ICC 800NA9 | FN-1A-0450 FN-1A-0451 UNISTRUT OFF WEB OF BEAM (TD COVERED WITH FIRE PROOFING) |
| ③ ICC 600NA1 | FN-1A-0222 FN-1A-0206 |
| ④ ICC 600NA6 | LJ-1A-0813 FU-1A-0708 FU-1A-0709 FU-1A-0710 FU-1A-0711 |
| ⑤ ICC 600NM1 | FU-1A-0708 FU-1A-0709 FU-1A-0710 FU-1A-0711 |
| ⑥ ICC 270NH1 | CU-8A-13 CU-8A-14 |
| ⑦ Junction Box 1* JB 2072 | |

THE FOLLOWING LISTED ITEMS WILL BE FIRE PROOFED PER 18" RULE

- | | |
|---|------------|
| ① ICX 2002A | FN-1A-0033 |
| ② ICX 9110A | |
| ③ CONDUITS LABELED FOR SMOKE & FIRE PROTECTION WHICH PENETRATE ENCLOSURE. | |

ATTACH. 10
E-218
SH 10 OF 159

C 10 BOX FIRE PROTECTION W/1" CONDUIT (1" RUNS THRU ENVELOPE) } SUPPS HAVE TELLS
SMOKE DETECTOR LINES - 1" 3/4" (ATTACHED TO ENCLOSURE)

ICC600NA6 (OUTSIDE ENV.)
1CK800NA9 FN-1A-0450 - FN-1A-0451 - STRUT OFF BEAM NO ID - LX - COVERED
ICX200RA - FN-1A-0033 - 1/8" RILE

3"
ICK600NA1 - FN-1A-0222, FN-1A-0206

1/2"
ICK600NA6 - LU-1A-0813, FU-1A-0708, FU-1A-0709, FU-1A-0710, FU-1A-C

4"
ICK600NM1 - FU-1A-0708, FU-1A-0709, FU-1A-0710, FU-1A-0711

ICC270NH7 - supported on cable tray supports CV-8A-13, CV-8A-14

Z70NA1 supported on cable tray supports: CV-8A-13, CV-8A-14

APPENDIX R INSULA

ATTACH. 10

E-218

ASE NO. E-008

GULF STATES UTILITIES

2-5-85

SH. 11 OF 159

VER BEND STATION

THE FOLLOWING ITEMS ARE RELEASED FOR INSTALLATION OF FIRE BARRIER MATERIAL: CABLE TRAYS: ITH201R, ITC201R, ITC202R, ITX201R, ITX202R,

ITC203R.

CONDUIT # : ICK200RB-3"

SUPPORT # : CV-19A-1, 20A-1, 21A-1, 21A-2, 21A-3, 21A-4, 33C-1, 21A-7, 57A-1, 22E-1, 21A-5.

CONTINUED PAGE 2 OF 2

- 3. BUILDING/ELEVATIONS: PIPE TUNNEL "G" EL. 66'-3" & 70'-3"
- 4. LIMITS/RESTRICTIONS: "G" TUNNEL ONLY, AND HOLD H-00B-1 & H-00B-2, WHICH WILL BE RELEASED AT A LATER DATE. JF 3/6
- 5. APPLICABLE DRAWINGS: EE-344D-2, EE-344A-2, EE-344B-2
- 6. SPECIAL INSTRUCTIONS: PROTECTION OF ITEMS IN BLOCK 2 SHALL BE BY MEANS OF AN ENCLOSURE USING ENVELOPE STRUCTURE ERECTED BY S & W CONSTRUCTION. Part No. 5 3/26/85
- 7. CHS ACCOUNT: 392-11650-1878 COMPLETION DATE: 392-11650-1879

| S&W DISCIPLINE | CONSTRUCTION SIGNATURE & DATE | ENGINEERING SIGNATURE & DATE | FDC SIGNATURE & DATE |
|---|--|--|--|
| ELECTRICAL conduits cable tray supports cable | <i>C. Paul Williams</i> 5-20-85 <i>C. Paul Williams</i> 3-29-85 <i>E. Hand</i> 3/19/85 <i>E. Sington</i> 4/1/85 | <i>TJB</i> 3/20/85 <i>PTB</i> <i>Donna L. Dorn</i> 3/19/85 <i>TJB</i> | 66067496-22560 <i>Kenneth J. Sington</i> 3/29/85 <i>Donna L. Dorn</i> 3/29/85 <i>Kenneth J. Sington</i> 3/29/85 |
| INSTRUMENTS | N/A | N/A | N/A |
| PIPING | N/A | N/A | N/A |
| STRUCTURAL | N/A | N/A | N/A |
| OTHER CSI 0.1.1 | NA | <i>D. Sington</i> 3-19-85 | <i>CE Tuley</i> 3/19/85 |

8. CONCURRENCE: *Kenneth J. Sington* 3/29/85
 S&W INSULATION ENGINEER DATE
[Signature] 3-29-85
 INSULATION COORDINATOR DATE

9. APPLICABLE CCCP FORMS:

COMMENTS: No D 6750 - INVOICE SEPARATION ON ITX202R. ANCO
 COMPLETING FIRE BARRIER RESTRAINS SIGNATURE,
 THE ABOVE DESCRIBED WORK HAS BEEN COMPLETED. *E. Sington* 3/29

CONTINUED FROM BLOCK 2 .

ITEMS REQUIRING FIREPROOFING DUE TO 18" RULE ARE AS FOLLOWS:

- 1) 1" CONDUIT ATTACHED TO SUPPORT # CV-22E-1, 21A-4, 21A-3, 21A-1
UNIDENTIFIED CONDUIT PENETRATING ENVELOPE FOR TRAY # ITH 201R
- 2) 2" UNIDENTIFIED CONDUIT ATTACHED TO SUPPORT # CV-22E-1, 57A-1, 21A-7
PENETRATING ENVELOPE FOR TRAY # ITX 201R
- 3) 1" UNIDENTIFIED CONDUIT ATTACHED TO SUPPORT # CV-22E-1, 57A-1, 21A-7
PENETRATING ENVELOPE FOR TRAY # ITX 201R
- 4) 3EA 1" CONDUITS ATTACHED TO SUPPORT # CV-22E-1, 57A-1, 21A-7, 33C-1, 21A-5
UNIDENTIFIED CONDUITS PENETRATING ENVELOPE FOR TRAY # ITH 201K AND
ITC 203R.

THE FOLLOWING ITEMS ARE RELEASED FOR INSTALLATION OF FIRE BARRIER MATERIAL:

ITEMS CONTAINED ON THIS RELEASE ARE NOT APPENDIX "D", HOWEVER, THEY REQUIRE FIREPROOFING DUE TO 18" RULE:

ATTACH. 10
E-218
SH. 13 OF 159

Cont R. 2

BUILDING/ELEVATIONS: PIPE TUNNEL "C" EL. 66'-3"

LIMITS/RESTRICTIONS:

APPLICABLE DRAWINGS: EE-347A-2, EE-347B-2, EE-347

SPECIAL INSTRUCTIONS:

Details: BA1 BB BL

CMS ACCOUNT: 392-1650-1877/1878
392-1650-1876/1879 COMPLETION DATE:

| S&W DISCIPLINE | CONSTRUCTION SIGNATURE&DATE | ENGINEERING SIGNATURE&DATE | FQC SIGNATURE&DATE |
|----------------|-----------------------------|----------------------------|--------------------|
| ELECTRICAL | Ken Hays 3/20/85 | T. B. King | Don Mathis 3-22-85 |
| Conduits | NA | T. B. King | NA |
| cable tray | Ken Hays 3/20/85 | Don Mathis 3/19/85 | NA |
| supports | Ken Hays 3/20/85 | T. B. King | NA |
| cable | NA | NA | NA |
| INSTRUMENTS | NA | NA | NA |
| PIPING | NA | NA | NA |
| STRUCTURAL | NA | NA | NA |
| OTHER | NA | NA | NA |

9. CONCURRENCE: Kenneth J. Steen 3/29/85
SEG. INSULATION ENGINEER DATE
INSULATION COORDINATOR 3-29-85 DATE

RECEIVED
ANCO

10. APPLICABLE CCCP FORMS: 05-29-13-GLO150, 05-29-13-GLO151 RECEIVED MAR 29 1985

REMARKS:

COMPLETE

THE ABOVE DESCRIBED WORK HAS BEEN COMPLETED -

CABLE TRAY: ITX203R

THE LISTED TRAY WILL BE ENCLOSED ALONG WITH TRAYS LISTED ON RELEASE

E-008

- CONDUITS: ICK600NM1-4"
- ICK600ND2-3"
- ICK600NA7-14"
- KL270NH1-1 1/2"
- ICK270NM7-1"

ATTACH. 10

E-218

SH. 14 OF 159

ABOVE LISTED CONDUITS WILL PENETRATE ENCLOSURES FOR CABLE TRAYS LISTED ON REL. # E-008

SKETCH E-008-2

P. 2

CABLE TRAY: ITX203R

ABOVE LISTED TRAY WILL BE ENCLOSED ALONG WITH TRAYS LISTED ON RELEASE
E-008

CONDUITS: ICK600NM1-4"
ICK600ND2-3"
ICK600NA7-1 1/2"
KC270NH1-1 1/2"
KC270NH7-1"

ATTACH. 10
E-218
SH 15 OF 159

ABOVE LISTED CONDUITS WILL PENETRATE ENCLOSURES FOR CABLE TRAYS LISTED ON REL. # E-008

APPENDIX R I
GULF STATES UTILITIES

ATTACH. 10
E-218
SH. 16 OF 159

JOB NO. E-009
ER BEND STATION

THE FOLLOWING ITEMS ARE RELEASED FOR INSTALLATION OF FIRE BARRIER

| | | | |
|-----------|------------------|--------------|------------------------|
| MATERIAL: | ICC200RA-4" | ICK200RA4-2" | 1x JB2114 ✓ |
| | ICK200RA-3" | ICC200RA4-4" | 1x JB2116 ✓ |
| | ICC200RA2-3" | ICC200RA5-3" | 1x JB2117 ✓ |
| | ICK200RA2-3" | ICC200RA6-2" | 1x JB2118 ✓ |
| | ICC200RA3-2" | | 1x JB2119 ✓ |
| | ICK200RA3-1 1/2" | | 1x JB2120 ✓ |

BUILDING/ELEVATIONS: PIPE TUNNELS 'F' & 'E' EL. 66'-3"

LIMITS/RESTRICTIONS: N/A

APPLICABLE DRAWINGS: EE-34YD-2 EE-34YA-2 EE-34YB-2

SPECIAL INSTRUCTIONS: DETAIL; BAI, BB, BC, AH, BA, BD

CMS ACCOUNT: 392-1650-1876 292-1650-1877 COMPLETION DATE:

| DISCIPLINE | CONSTRUCTION SIGNATURE & DATE | ENGINEERING SIGNATURE & DATE | FDC SIGNATURE & DATE |
|-------------|-------------------------------|------------------------------|---------------------------|
| ELECTRICAL | <i>[Signature]</i> 3/10/85 | <i>[Signature]</i> 3/10/85 | <i>[Signature]</i> 3-1-85 |
| conduits | N/A | <i>[Signature]</i> 3/10/85 | <i>[Signature]</i> 3-1-85 |
| cable tray | <i>[Signature]</i> 2/20/85 | <i>[Signature]</i> 3/10/85 | <i>[Signature]</i> 3-1-85 |
| supports | <i>[Signature]</i> 2/25/85 | <i>[Signature]</i> 3/10/85 | <i>[Signature]</i> 3-1-85 |
| cable | <i>[Signature]</i> 2/25/85 | <i>[Signature]</i> 3/10/85 | <i>[Signature]</i> 3-1-85 |
| INSTRUMENTS | N/A | N/A | N/A |
| PIPING | N/A | N/A | N/A |
| STRUCTURAL | N/A | <i>[Signature]</i> 3/15/85 | N/A |
| OTHER | N/A | N/A | N/A |

CONCURRENCE: *[Signature]* 3-1-85
DESIGNATION ENGINEER DATE
[Signature] 3-1-85
INSTALLATION COORDINATOR DATE

APPLICABLE CDDP FORMS:

COMMENTS:

THE ABOVE DESCRIBED WORK HAS BEEN COMPLETED

ANCO CONSTRUCTION REP. DATE ANCO GA/BC REP. DATE

WYONJE For Conduits 2x ICC 200RA-
FROM CABLE TRAY C NORTH END "P" TUNNEL

AS Follows

ATTACH. 10
E-218
SH. 17 OF 159

- | | |
|----------------|---------------------------------|
| 1. FN-1A-0031 | 05. EL-1A-1021 |
| 2. FN-1A-0030 | 06. EL-1A-1020 |
| 3. FN-1A-0029 | 07. EL-1A-1019 |
| 4. FN-1A-0028 | 08. FN-1A-1113 |
| 5. 12-PV5-1 | 09. FN-1A-1114 |
| 6. FN-1A-0025 | 50. FN-1A-1121 |
| 7. FN-1A-0024 | 61. FN-1A-1112 |
| 8. FN-1A-0023 | 52. EN-1A- 0013 1164 |
| 9. FN-1A-0022 | 8-24-85 |
| 10. FN-1A-0021 | |
| 11. FN-1A-0020 | |
| 12. FN-1A-0019 | |
| 13. FN-1A-0018 | |
| 14. FN-1A-0017 | |
| 15. FL-1A-1105 | |
| 16. FL-1A-1104 | |
| 17. FL-1A-1103 | |
| 18. FL-1A-1102 | |
| 19. FL-1A-1101 | |
| 20. FN-1A-1115 | |
| 21. FN-1A-1116 | |
| 22. FN-1A-1120 | |
| 23. FL-1A-1100 | |
| 24. FL-1A-1099 | |
| 25. FL-1A-1098 | |
| 26. FL-1A-1097 | |
| 27. FL-1A-1096 | |
| 28. FL-1A-1095 | |
| 29. FL-1A-1094 | |
| 30. FL-1A-1093 | |
| 31. FL-1A-1092 | |
| 32. FL-1A-1091 | |
| 33. FL-1A-1090 | |
| 34. FL-1A-1089 | |
| 35. FL-1A-1088 | |
| 36. EN-1A-1111 | |
| 37. EL-1A-1086 | |
| 38. EL-1A-1085 | |
| 39. EL-1A-1027 | |
| 40. EL-1A-1026 | |
| 41. EL-1A-1025 | |
| 42. EL-1A-1024 | |
| 43. EL-1A-1023 | |
| 44. EL-1A-1022 | |

SUPPORTS FOR ICK200RA3-2 ARE AS FOLLOWS:

- 1. EU-1A-1017
- 2. EU-1A-0649

ATTACH 10
E-218
SH. 18 OF 159

SUPPORTS FOR ICK200RA3-1 1/2 ARE AS FOLLOWS:

- 1. EU-1A-1117
- 2. EU-1A-0650

SUPPORTS FOR ICK200RA4-4 ARE AS FOLLOWS:

- 1. EN-1A-~~0065~~ ^{AS 3-1-85} 1166
- 2. EN-1A-~~0064~~ ^{AS 3-1-85} 1165

SUPPORTS FOR ICK200RA4-2 ARE AS FOLLOWS:

- 1. EN-1A-1118
- 2. EN-1A-1119
- 3. CV-0505
- 4. EU-1A-0616
- 5. CV-0545
- 6. CV-0555

SUPPORTS FOR ICK200RA2-3 ARE AS FOLLOWS:

- 1. CV-0525 ^{AS 3-1-85}
- 2. ~~EN-1A-0023~~ ^{AS 3-1-85} ~~1168~~
EN-1A-1168

SUPPORTS FOR ICK200RA2-3 ARE AS FOLLOWS:

- 1. CV-0535
- 2. CV-0525
- 3. CV-0515
- 4. EN-1A-~~0066~~ ^{AS 3-1-85} 1167

SUPPORTS FOR ICK200RA5-3 ARE AS FOLLOWS:

- 1. EU-1A-0612
- 2. EL-1A-1018
- 3. CV-0565
- 4. CV-0575
- 5. EN-1A-~~0062~~ 1163
- 6. CV-0495
- 7. EL-1A-0617
- 8. EL-1A-0618

SUPPORTS FOR ICC 200RDL6-2" ARE AS FOLLOWS:

1. EJ-1A-~~0064~~ 1162
MS 3425

ATTACH. 10
E-218
SH. 19 OF 159

PIPE TUNNELS "P" & "E" WORKING NORTH TO SOUTH

ALL STRUCTURAL STEEL USED FOR CONDUIT SUPPORT ATTACHMENT. *ques 7/14/85*

2. TUBE STEEL SUPPORT # B7-759-BT-1 *CEL 9/19/85*

3. TUBE STEEL SUPPORT # B7-108-JF *CEL 9/19/85*

4. SUPPORT # WS-8N-15 & 6" Ø PIPE

ATTACH. 10
E-218
SH. 2/02/89

5. SUPPORT # WS-8L-14 & 1 1/2" Ø PIPE

6. SUPPORT # WS-8L-13 & 1 1/2" Ø PIPE

7. SUPPORT # WS-8N-14 & 6" Ø PIPE

8. SUPPORT # WS-8L-12 & 1 1/2" Ø PIPE

9. SUPPORT # WS-8N-13 & 6" Ø PIPE

10. SUPPORT # WS-8N-11 & 6" Ø PIPE

RECEIVED
MAR 22 1985
ANCO INSULATIONS

APPENDIX R

GULF STATES UTILITIES

ATTACH. 10
E-2/B
SM 22 OF 159

SE NO. E-009-2

IR BEND STATION

2. THE FOLLOWING ITEMS ARE

FIRE BARRIER

SERIAL ITEMS INCLUDED ON THIS RELEASE REQUIRE FIRE BARRIER MATERIAL DUE TO 18' RULE. STRUCTURAL STEEL USED AS SUPPORT ATTACHMENT FOR CONDUITS No. ICC200RA-4" & ICC200RA-3" MUST BE PROTECTED FOR A MINIMUM OF 18'. THE FOLLOWING SUPPORTS WILL PENETRATE PROTECTED AREA OF STRUCTURAL STEEL.

CONTINUED Pg. 2 of 2

3. BUILDING/ELEVATIONS: PIPE TUNNELS "E" & "F"

4. LIMITS/RESTRICTIONS: N/A

5. APPLICABLE DRAWINGS: EE-34YB-2 EE-34YD-2

6. SPECIAL INSTRUCTIONS:
Details: BA, B01, BA7, BB, AH, BE

7. CHS ACCOUNT: 392-1460-1876 392-1460-1877 COMPLETION DATE:

| S&M DISCIPLINE | CONSTRUCTION SIGNATURE&DATE | ENGINEERING SIGNATURE&DATE | FOC SIGNATURE&DATE |
|------------------------|-----------------------------|------------------------------|---------------------------|
| ELECTRICAL conduits | <i>John H. Ryle</i> 3/2/85 | <i>SE [Signature]</i> 3/2/85 | <i>Don Matzick</i> 3-2-85 |
| cable tray | <i>[Signature]</i> 3/2/85 | N/A | <i>[Signature]</i> 3-2-85 |
| supports | <i>John H. Ryle</i> 3/2/85 | <i>[Signature]</i> 3/2/85 | <i>[Signature]</i> 3-2-85 |
| cable | <i>John H. Ryle</i> 3/2/85 | <i>[Signature]</i> 3/2/85 | <i>[Signature]</i> 3-2-85 |
| INSTRUMENTS | | | |
| PIPING | | | |
| STRUCTURAL | | | |
| OTHER | | | |

9. CONCURRENCE: *Bennett J. Stern* 3/2/85
SES INSULATION ENGINEER DATE
[Signature] 3-2-85
INSULATION COORDINATOR DATE

RECEIVED
ANCO

10. APPLICABLE CCCP FORMS:

RECEIVED MAR 02 1985

COMMENTS: E & DCR C-26,397

THE ABOVE DESCRIBED WORK HAS BEEN COMPLETED

PIPE TUNNEL "F" & "E" WORKING NORTH to SOUTH

1. SUPPORT # FN-1A-0330 \approx $\frac{3}{4}$ " CONDUIT
2. SUPPORT # FN-1A-0331 \approx $\frac{3}{4}$ " CONDUIT
3. SUPPORT # FN-1A-0325 \approx $\frac{3}{4}$ " CONDUIT
4. SUPPORT # FN-1A-0326 \approx $\frac{3}{4}$ " CONDUIT

ATTACH 10
E-218
SH 23 OF 159

APPENDIX R INE

ATTACH. 10
E-218
SH. 24 OF 159

IE NO. E-009-5

STATE UTILITIES

BEND STATION

FOLLOWING ITEMS ARE RELEASED FOR INSTALLATION OF FIRE BARRIER MATERIAL: ITEMS CONTAINED ON THIS RELEASE ARE NOT APPENDIX R. HOWEVER, THEY REQUIRE FIREPROOFING DUE TO 18" RULE

Cont Pg. 2.

BUILDING/ELEVATIONS: PIPE TUNNEL "E" EL 70'-0"

LIMITS/RESTRICTIONS: N/A

APPLICABLE DRAWINGS: EE-34YA-2 EE-34YB-2 EE-34YD-2

SPECIAL INSTRUCTIONS:
DETAILS BA BB ~~BE~~ BE AD

CMS ACCOUNT: 392-1650-1876
392-1650-1877

COMPLETION DATE:

| DISCIPLINE | CONSTRUCTION SIGNATURE&DATE | ENGINEERING SIGNATURE&DATE | FQC SIGNATURE&DATE |
|---|-----------------------------|----------------------------|--------------------|
| ELECTRICAL conduits cable tray supports cable | _____ | _____ | _____ |
| INSTRUMENTS PIPING STRUCTURAL OTHER | _____ | _____ | _____ |

CONCURRENCE:

SEG INSULATION ENGINEER DATE

INSULATION COORDINATOR DATE

APPLICABLE CCCP FORMS:

COMMENTS:

THE ABOVE DESCRIBED WORK HAS BEEN COMPLETED

CONTINUED FROM BLOCK 2

ATTACH. 10
E-218
SH. 25 OF 159

B 2

.8" CRITERIA FOR CONDUITS # ICC200RA5 & ICK200RA9

- ① 4" STAINLESS STEEL PIPE, GNS SYSTEM, IN PHYSICAL CONTACT WITH TUBE STEEL SUPPORT # BZ-108 PQ - PIPE TUNNEL *E" 13'-0" SOUTH OF S LINE @ EAST WALL PENETRATION
- ② 4" PIPE # 1-IAS-101-4-020 IN PHYSICAL CONTACT WITH TUBE STEEL SUPPORT # BZ-108 PQ - PIPE TUNNEL
- ③ 3/4" CONDUIT (NO ID) ADDED TO SUPPORTS # CV-054S & EU-1A-0612 AFTER BEING RELEASED FOR FIREPROOFING.

APPENDIX R

ATTACH. 10
E-218
SH. 26 OF 159

EASE NO. E-011

GULF STATES UTILITIES

RIVER BEND STATION

THE FOLLOWING ITEMS ARE RELEASED FOR INSTALLATION OF FIRE BARRIER MATERIAL:

JUNCTION BOXES: 1*JB2106
1*JB2102
1*JB2149

- 4. BUILDING/ELEVATIONS: PIPE TUNNEL "G" EL. 106'-3"
- 5. LIMITS/RESTRICTIONS: N/A
- 6. APPLICABLE DRAWINGS: EE-347D-2
- 7. SPECIAL INSTRUCTIONS: N/A
- 8. CMS ACCOUNT: 342-1650-1876 COMPLETION DATE: N/A

| SW DISCIPLINE | CONSTRUCTION SIGNATURE & DATE | ENGINEERING SIGNATURE & DATE | FDC SIGNATURE & DATE |
|---------------|-------------------------------|------------------------------|----------------------|
| ELECTRICAL | <i>[Signature]</i> 2/10/05 | <i>[Signature]</i> 2/13/05 | <i>[Signature]</i> |
| conduits | N/A | N/A | N/A |
| cable tray | <i>[Signature]</i> 2/10/05 | <i>[Signature]</i> 2/13/05 | <i>[Signature]</i> |
| supports | <i>[Signature]</i> 2/15/05 | <i>[Signature]</i> 2/13/05 | <i>[Signature]</i> |
| cable | N/A | N/A | N/A |
| INSTRUMENTS | N/A | N/A | N/A |
| PIPING | N/A | N/A | N/A |
| STRUCTURAL | N/A | N/A | N/A |
| OTHER | N/A | N/A | N/A |

9. CONCURRENCE: *[Signature]* 2/13/05
SEG INSULATION ENGINEER DATE
[Signature] 2-13-05
INSULATION COORDINATOR DATE

10. APPLICABLE CCCP FORMS:

REMARKS:

THE ABOVE DESCRIBED WORK HAS BEEN COMPLETED

APPENDIX R INSULATION RELEASE NO. E-011

GULF STATES UTILITIES

RIVER BEND STATION

THE FOLLOWING ITEMS ARE RELEASED FOR INSTALLATION OF FIRE BARRIER

MATERIAL: Conduit #'s: ^{ICK200RB1} ICK200RB1 ^{RULE} 2/27/85
 ICK958RA2 } *
 ICC203RC2 }

ATTACH 10
 E-218
 CH. 27 OF 159

* CONDUITS ARE NOT APPENDIX "R", HOWEVER THEY REQUIRE FIRE PROOFING DUE TO 18" RULE.

3. BUILDING/ELEVATIONS: PIPE TUNNEL "G" EL. 66'-0"

4. LIMITS/RESTRICTIONS: N/A

5. APPLICABLE DRAWINGS: EE-34YA-2, EE-34YB-2, EE-34YD-2

6. SPECIAL INSTRUCTIONS:

DETAIL BA1 & BA

7. CMS ACCOUNT: 392-1650-1876 COMPLETION DATE: 2/28/85

| S&W DISCIPLINE | CONSTRUCTION SIGNATURE & DATE | ENGINEERING SIGNATURE & DATE | FQC SIGNATURE & DATE |
|---|-------------------------------|------------------------------|-------------------------|
| ELECTRICAL conduits cable tray supports cable | <i>[Signature]</i> 2/24/85 | <i>[Signature]</i> 2/24/85 | <i>[Signature]</i> 2-27 |
| | <i>[Signature]</i> 2/24/85 | <i>[Signature]</i> | N/A 2-27-85 |
| | <i>[Signature]</i> 2/24/85 | <i>[Signature]</i> | N/A 2-27-85 |
| INSTRUMENTS | | | |
| PIPING | | | |
| STRUCTURAL | | | |
| OTHER | | | |

9. CONCURRENCE: *[Signature]* 2/27/85
 SEE INSULATION ENGINEER DATE
[Signature] 2/27/85
 INSULATION COORDINATOR DATE

10. APPLICABLE CCCP FORMS: S-29-13-GL0039

COMPLETE

COMMENTS: L & DLD C-26097A

THE ABOVE DESCRIBED WORK HAS BEEN COMPLETED

INTEROFFICE MEMORANDUM

A 0000

SUBJECT

J.E. OR W.O. NO. 12210

ATTACH. 10
E-218
SH. 29 OF 159

DATE

FROM: K. HARDY

TO: R. BEAUDET

CC: PQC
CONSTRUCTION

In order to facilitate Appendix "R" Release E012 the following will be implemented on a as needed basis. The Appendix "R" conduit ICL920BB in the affected Fire Zone areas are supported by the following supports.

- | | | | | |
|---------------------|----------------------|-----------|-----------|-----------|
| 1. <u>CU-X-0297</u> | 7. <u>CR-210CC-1</u> | 13. _____ | 19. _____ | 25. _____ |
| 2. <u>CU-X-0296</u> | 8. _____ | 14. _____ | 20. _____ | 26. _____ |
| 3. <u>CU-X-0298</u> | 9. _____ | 15. _____ | 21. _____ | 27. _____ |
| 4. <u>CU-X-0306</u> | 10. _____ | 16. _____ | 22. _____ | 28. _____ |
| 5. <u>CU-X-0307</u> | 11. _____ | 17. _____ | 23. _____ | 29. _____ |
| 6. <u>?CR 2685</u> | 12. _____ | 18. _____ | 24. _____ | 30. _____ |

All other associated conduit will be inspected for attachment point only based on the 18" rule criteria. This will not impact the integrity or future raceway inspections. The associated conduit per support is as follows.

- | | | | | |
|---------------------------|------------------------|----------------------|----------------------|-----------------------|
| 1. <u>1 1/2" ICK003BT</u> | <u>3" ICL920BB</u> | <u>3" ICL920BE</u> | <u>2"</u> | <u>18" Fire Prot.</u> |
| 2. <u>1 1/2" ICK003BT</u> | <u>3" ICL920BB</u> | <u>3" ICL920BE</u> | <u>2"</u> | <u>18" Fire prot.</u> |
| 3. <u>18" Fire Prot.</u> | <u>1 1/2" ICK003BT</u> | <u>3" ICL920BB</u> | <u>2"</u> | <u>3" ICC040BC</u> |
| 4. <u>3" ICL920BB</u> | <u>3" ICC040BC</u> | _____ | _____ | _____ |
| 5. <u>3" ICL920BB</u> | <u>3" ICC040BC</u> | <u>1/2" ICC129NB</u> | <u>1/2" ICC129NC</u> | _____ |
| 6. <u>3" ICL920BB</u> | _____ | _____ | _____ | _____ |
| 7. <u>3" ICL920BB</u> | <u>3" ICC040BC</u> | _____ | _____ | _____ |
| 8. _____ | _____ | _____ | _____ | _____ |
| 9. _____ | _____ | _____ | _____ | _____ |
| 10. _____ | _____ | _____ | _____ | _____ |
| 11. _____ | _____ | _____ | _____ | _____ |
| 12. _____ | _____ | _____ | _____ | _____ |
| 13. _____ | _____ | _____ | _____ | _____ |
| 14. _____ | _____ | _____ | _____ | _____ |
| 15. _____ | _____ | _____ | _____ | _____ |
| 16. _____ | _____ | _____ | _____ | _____ |
| 17. _____ | _____ | _____ | _____ | _____ |
| 18. _____ | _____ | _____ | _____ | _____ |
| 19. _____ | _____ | _____ | _____ | _____ |
| 20. _____ | _____ | _____ | _____ | _____ |

& 000.00

SUBJECT

ATTACH 10
E-218
SH. 30 OF 159

DATE

FROM: E. BARDY

TO: R. BLAUDET

CC: PQC
CONSTRUCTION

In order to facilitate Appendix "R" Release E 012 the following will be implemented on a as needed basis. The Appendix "R" conduit ICC040BC in the affected Fire Zone areas are supported by the following supports.

- | | | | | |
|----------------------|----------------------|-----------|-----------|-----------|
| 1. <u>CN-3C-0343</u> | 7. <u>CN-3C-0295</u> | 13. _____ | 19. _____ | 25. _____ |
| 2. <u>CN-3C-0344</u> | 8. <u>CA-220CS-1</u> | 14. _____ | 20. _____ | 26. _____ |
| 3. <u>CN-3C-0346</u> | 9. _____ | 15. _____ | 21. _____ | 27. _____ |
| 4. <u>CN-3C-0298</u> | 10. _____ | 16. _____ | 22. _____ | 28. _____ |
| 5. <u>CN-3C-0346</u> | 11. _____ | 17. _____ | 23. _____ | 29. _____ |
| 6. <u>CN-3C-0347</u> | 12. _____ | 18. _____ | 24. _____ | 30. _____ |

All other associated conduit will be inspected for attachment point only based on 18" rule criteria. This will not impact the integrity or future raceway inspection. The associated conduit per support is as follows.

- | | | | | |
|--------------------|-----------------|-----------------------|-----------------|-------|
| 1. <u>ICC040BC</u> | <u>ICL027NC</u> | <u>ICL052NA</u> | <u>ICC920NY</u> | _____ |
| 2. <u>ICC040BC</u> | <u>ICL027NC</u> | <u>ICL052NA</u> | <u>ICC920NY</u> | _____ |
| 3. <u>ICC040BC</u> | <u>ICL027NC</u> | <u>ICL052NA</u> | _____ | _____ |
| 4. <u>ICC040BC</u> | <u>ICL920BB</u> | <u>1/2 Fire Prot.</u> | <u>ICK003BT</u> | _____ |
| 5. <u>ICC040BC</u> | <u>ICL920BB</u> | _____ | _____ | _____ |
| 6. <u>ICL920BB</u> | <u>ICC929NB</u> | <u>ICC129NC</u> | <u>ICC040BC</u> | _____ |
| 7. <u>ICC045BB</u> | <u>ICC040BE</u> | <u>ICC040BC</u> | <u>ICC129NA</u> | _____ |
| 8. <u>ICC040BC</u> | <u>ICL920BB</u> | _____ | _____ | _____ |
| 9. _____ | _____ | _____ | _____ | _____ |
| 10. _____ | _____ | _____ | _____ | _____ |
| 11. _____ | _____ | _____ | _____ | _____ |
| 12. _____ | _____ | _____ | _____ | _____ |
| 13. _____ | _____ | _____ | _____ | _____ |
| 14. _____ | _____ | _____ | _____ | _____ |
| 15. _____ | _____ | _____ | _____ | _____ |
| 16. _____ | _____ | _____ | _____ | _____ |
| 17. _____ | _____ | _____ | _____ | _____ |
| 18. _____ | _____ | _____ | _____ | _____ |
| 19. _____ | _____ | _____ | _____ | _____ |
| 20. _____ | _____ | _____ | _____ | _____ |

INTEROFFICE MEMORANDUM

8 000.20

SUBJECT

TO: R. BEAUDET

ATTACH 10
E-218
SH. 31 OF 159

62 22 12210

DATE

FROM: E. HARDY

CC: PQC
CONSTRUCTION

In order to facilitate Appendix "R" Release E 012 the following will be implemented on a as needed basis. The Appendix "R" conduit 1CC040BE in the affected Fire Zone areas are supported by the following supports.

- | | | | | |
|----------------------|-----------|-----------|-----------|-----------|
| 1. <u>CU-3C-0349</u> | 7. _____ | 13. _____ | 19. _____ | 25. _____ |
| 2. <u>CU-3C-0295</u> | 8. _____ | 14. _____ | 20. _____ | 26. _____ |
| 3. _____ | 9. _____ | 15. _____ | 21. _____ | 27. _____ |
| 4. _____ | 10. _____ | 16. _____ | 22. _____ | 28. _____ |
| 5. _____ | 11. _____ | 17. _____ | 23. _____ | 29. _____ |
| 6. _____ | 12. _____ | 18. _____ | 24. _____ | 30. _____ |

All other associated conduit will be inspected for attachment point only based on 18" rule criteria. This will not impact the integrity or future raceway inspection. The associated conduit per support is as follows.

- | | | | | |
|--------------------|-----------------|-----------------|-----------------|-------|
| 1. <u>1CC040BE</u> | <u>1CC065BB</u> | <u>1CC040BC</u> | <u>1CL920BB</u> | _____ |
| 2. <u>1CC065BB</u> | <u>1CC040BE</u> | <u>1CC040BC</u> | <u>1CC1291A</u> | _____ |
| 3. _____ | _____ | _____ | _____ | _____ |
| 4. _____ | _____ | _____ | _____ | _____ |
| 5. _____ | _____ | _____ | _____ | _____ |
| 6. _____ | _____ | _____ | _____ | _____ |
| 7. _____ | _____ | _____ | _____ | _____ |
| 8. _____ | _____ | _____ | _____ | _____ |
| 9. _____ | _____ | _____ | _____ | _____ |
| 10. _____ | _____ | _____ | _____ | _____ |
| 11. _____ | _____ | _____ | _____ | _____ |
| 12. _____ | _____ | _____ | _____ | _____ |
| 13. _____ | _____ | _____ | _____ | _____ |
| 14. _____ | _____ | _____ | _____ | _____ |
| 15. _____ | _____ | _____ | _____ | _____ |
| 16. _____ | _____ | _____ | _____ | _____ |
| 17. _____ | _____ | _____ | _____ | _____ |
| 18. _____ | _____ | _____ | _____ | _____ |
| 19. _____ | _____ | _____ | _____ | _____ |
| 20. _____ | _____ | _____ | _____ | _____ |

APPENDIX R
GULF STATES UTILITIES

ATTACH. 10
 E-218
 EM 32 OF 159

EASE NO. E-013
IVER BEND STATION

THE FOLLOWING ITEMS ARE RELEASED FOR INSTALLATION OF FIRE BARRIER MATERIAL:

ICC 019 BA
 ICC 017 BB

← DELETED P225.102A 12/4/85

WRAP ONLY IN C-24

Cont. Pg. 2

3. BUILDING/ELEVATIONS: CONTROL BLDG. EL 115/116

4. LIMITS/RESTRICTIONS: Holds H-0-13-1 H-0-13-2

5. APPLICABLE DRAWINGS: EE-347A-2, EE-347B-2, EE-347C-2

6. SPECIAL INSTRUCTIONS:
 Detail: BB, AH, BA1, BE, BA

7. CMS ACCOUNT: 710-1650-1876
 710-1650-1877

COMPLETION DATE:

| 8. S&W DISCIPLINE | CONSTRUCTION SIGNATURE & DATE | ENGINEERING SIGNATURE & DATE | FBC SIGNATURE & DATE |
|-------------------|-------------------------------|------------------------------|----------------------------|
| ELECTRICAL | <i>[Signature]</i> 4/16/85 | <i>[Signature]</i> 3/20/85 | <i>[Signature]</i> 3/20/85 |
| conduits | <i>[Signature]</i> 4/16/85 | <i>[Signature]</i> 3/20/85 | <i>[Signature]</i> 3/20/85 |
| cable tray | NA | NA | NA |
| supports | NA | NA | NA |
| cable | NA | NA | NA |
| INSTRUMENTS | NA | NA | NA |
| PIPING | NA | NA | NA |
| STRUCTURAL | NA | NA | NA |
| OTHER | NA | NA | NA |

9. CONCURRENCE: *[Signature]* 3/30/85
 SEE INSULATION ENGINEER DATE

[Signature]
 INSULATION COORDINATOR DATE

10. APPLICABLE CCCP FORMS:

COMMENTS:

THE ABOVE DESCRIBED WORK HAS BEEN COMPLETED

INTEROFFICE MEMORANDUM

SUBJECT

ATTACH. 10
E-218
SH. 33 OF 159

JO OR
WO NU 12210

DATE

FROM: K. HARDY

TO: R. BEAUDET

CC: FQC
CONSTRUCTION

In order to facilitate Appendix "R" Release E-13 the following will be implemented on a as needed basis. The Appendix "R" conduit ICCO19BA in the affected Fire Zone areas are supported by the following supports.

- | | | | | |
|----------------------|-----------------------|-----------|-----------|-----------|
| 1. <u>Cu 3C U270</u> | 7. <u>Cu 3A U274</u> | 13. _____ | 19. _____ | 25. _____ |
| 2. <u>Cu 3C U261</u> | 8. <u>Cu 3A U316</u> | 14. _____ | 20. _____ | 26. _____ |
| 3. <u>Cu 3C U265</u> | 9. <u>Cu 3A U241</u> | 15. _____ | 21. _____ | 27. _____ |
| 4. <u>Cu 3C U261</u> | 10. <u>Cu 3A U313</u> | 16. _____ | 22. _____ | 28. _____ |
| 5. <u>Cu 3C U266</u> | 11. _____ | 17. _____ | 23. _____ | 29. _____ |
| 6. <u>Cu 3C U265</u> | 12. _____ | 18. _____ | 24. _____ | 30. _____ |

All other associated conduit will be inspected for attachment point only based on 18" rule criteria. This will not impact the integrity or future raceway inspection. The associated conduit per support is as follows.

- | | | | | |
|----------------------------|------------------------|-----------------------|------------------------|------------------------|
| 1. <u>1 1/2" ICC920NN</u> | <u>3" ICC920NJ</u> | <u>3/4" ICC019BA</u> | <u>3/4" ICC017BB</u> | <u>1" unsch</u> |
| 2. <u>1" unsch.</u> | <u>1" unsch.</u> | <u>4" ICLO52NA</u> | <u>4" ICLO27NC</u> | <u>3/4" lighting</u> |
| 3. <u>3/4" unsch.</u> | <u>3/4" lighting</u> | _____ | _____ | _____ |
| 4. <u>1 1/2" ICC920NN</u> | <u>3" ICC920NJ</u> | <u>3/4" ICC019BA</u> | <u>3/4" ICC017BB</u> | <u>1" unsch.</u> |
| 5. <u>1" unsch.</u> | <u>1" unsch.</u> | <u>4" ICLO52NA</u> | <u>4" ICLO27NC</u> | <u>3/4" unsch.</u> |
| 6. <u>1 1/2" ICC920NN</u> | <u>3" ICC920NJ</u> | <u>3/4" ICC019BA</u> | <u>3/4" ICC017BB</u> | <u>1" unsch.</u> |
| 7. <u>1" unsch.</u> | <u>1" unsch.</u> | <u>4" ICLO52NA</u> | <u>4" ICLO27NC</u> | <u>3/4" unsch.</u> |
| 8. <u>3" ICC920NJ</u> | <u>3/4" ICC019BA</u> | <u>3/4" ICC017BB</u> | <u>1" unsch.</u> | <u>1" unsch.</u> |
| 9. <u>1" unsch.</u> | <u>4" ICLO52NA</u> | <u>4" ICLO27NC</u> | <u>3/4" unsch.</u> | <u>1 1/2" ICC920NN</u> |
| 10. <u>3" ICC920NJ</u> | <u>3/4" ICC019BA</u> | <u>3/4" ICC017BB</u> | <u>1" unsch.</u> | <u>1" unsch.</u> |
| 11. <u>1" unsch.</u> | <u>4" ICLO52NA</u> | <u>4" ICLO27NC</u> | <u>3/4" unsch.</u> | <u>1 1/2" ICC920NN</u> |
| 12. <u>3/4" ICC019BA</u> | <u>3/4" ICC017BB</u> | <u>1" unsch.</u> | <u>1" unsch.</u> | <u>1 unsch.</u> |
| 13. <u>4" ICLO52NA</u> | <u>4" ICLO27NC</u> | <u>3/4" unsch.</u> | <u>1 1/2" ICC920NN</u> | <u>3/4" ICC920NJ</u> |
| 14. <u>3/4" unsch.</u> | <u>3/4" ICC920NJ-2</u> | <u>1" ICC920NJ-4</u> | <u>3/4" ICC920NJ-8</u> | <u>1" COMM.</u> |
| 15. <u>1 1/2" ICX012NA</u> | <u>4" ICLO52NA</u> | <u>4" ICLO27NC</u> | <u>1 1/2" ICC920NN</u> | <u>3/4" ICC920NJ</u> |
| 16. <u>3/4" ICC920NJ5</u> | <u>1" ICC920NJ4</u> | <u>3/4" ICC920NJ8</u> | <u>3/4" Fire Prot.</u> | <u>3/4" ICC019BB</u> |
| 17. <u>3/4" ICC017BB</u> | <u>1" unsch.</u> | <u>1" unsch.</u> | <u>1" unsch.</u> | <u>3/4" unsch.</u> |
| 18. <u>3/4" unsch.</u> | <u>COMM.</u> | _____ | _____ | _____ |
| 19. <u>3/4" ICC019BB</u> | _____ | _____ | _____ | _____ |
| 20. _____ | _____ | _____ | _____ | _____ |

| | | | | | |
|--------|-------------------------|------------------------|------------------------|------------------------|------------------------|
| 9. 21. | <u>1 1/2" ICC047BE4</u> | <u>1 1/2" ICX012NA</u> | <u>1 1/2" ICX920NT</u> | <u>1 1/2" ICC049NE</u> | <u>1 1/2" ICX921NM</u> |
| 22. | <u>3/4" ICC023RA4</u> | <u>3/4" ICC920NT2</u> | <u>3/4" ICC019BA</u> | <u>3/4" FIRE Prot.</u> | <u>3/4" UNS.</u> |
| 23. | <u>3/4" FIRE Prot.</u> | <u>1 1/2" ICX012NC</u> | _____ | _____ | _____ |
| 24. | _____ | _____ | _____ | _____ | _____ |
| 25. | _____ | _____ | _____ | _____ | _____ |
| 26. | _____ | _____ | _____ | _____ | _____ |
| 27. | _____ | _____ | _____ | _____ | _____ |
| 28. | _____ | _____ | _____ | _____ | _____ |
| 29. | _____ | _____ | _____ | _____ | _____ |
| 30. | _____ | _____ | _____ | _____ | _____ |
| 31. | _____ | _____ | _____ | _____ | _____ |
| 32. | _____ | _____ | _____ | _____ | _____ |
| 33. | _____ | _____ | _____ | _____ | _____ |
| 34. | _____ | _____ | _____ | _____ | _____ |
| 35. | _____ | _____ | _____ | _____ | _____ |
| 36. | _____ | _____ | _____ | _____ | _____ |
| 37. | _____ | _____ | _____ | _____ | _____ |
| 38. | _____ | _____ | _____ | _____ | _____ |
| 39. | _____ | _____ | _____ | _____ | _____ |
| 40. | _____ | _____ | _____ | _____ | _____ |

ATTACH 10
E-218
SH 34 OF 159

SUBJECT

12 28 12210

ATTACH 10

DATE

TO: R. BEAUDET

E-218

FROM: K. HARDY

SH. 113 OF 159

CC: PQC CONSTRUCTION

In order to facilitate Appendix "R" Release E-047 the following will be implemented on a as needed basis. The Appendix "R" conduit 1CC052B in the affected Fire Zone areas are supported by the following supports.

- NOB0024
1. 1*JBO191 7. _____ 13. _____ 19. _____ 25. _____
2. _____ 8. _____ 14. _____ 20. _____ 26. _____
3. _____ 9. _____ 15. _____ 21. _____ 27. _____
4. _____ 10. _____ 16. _____ 22. _____ 28. _____
5. _____ 11. _____ 17. _____ 23. _____ 29. _____
6. _____ 12. _____ 18. _____ 24. _____ 30. _____

All other associated conduit will be inspected for attachment point only base 18" rule criteria. This will not impact the integrity or future raceway insp The associated conduit per support is as follows.

1. NO supports _____ _____ _____ _____
2. _____ _____ _____ _____ _____
3. _____ _____ _____ _____ _____
4. _____ _____ _____ _____ _____
5. _____ _____ _____ _____ _____
6. _____ _____ _____ _____ _____
7. _____ _____ _____ _____ _____
8. _____ _____ _____ _____ _____
9. _____ _____ _____ _____ _____
10. _____ _____ _____ _____ _____
11. _____ _____ _____ _____ _____
12. _____ _____ _____ _____ _____
13. _____ _____ _____ _____ _____
14. _____ _____ _____ _____ _____
15. _____ _____ _____ _____ _____
16. _____ _____ _____ _____ _____
17. _____ _____ _____ _____ _____
18. _____ _____ _____ _____ _____
19. _____ _____ _____ _____ _____
20. _____ _____ _____ _____ _____

SUBJECT

DATE

DATE

FROM: E. HARDY

TO: R. BEAUDET

ATTACH 10
E-218
SH 114 OF 159

CC: PQC
CONSTRUCTION

In order to facilitate Appendix "R" Release E-047 the following will be implemented on a as needed basis. The Appendix "R" conduit CC9208F in the affected Fire Zone areas are supported by the following supports.

- 1. *JB0025
- 2. 41-3A-0207
- 3. _____
- 4. *JB00
- 5. _____
- 6. _____
- 7. _____
- 8. _____
- 9. _____
- 10. _____
- 11. _____
- 12. _____
- 13. _____
- 14. _____
- 15. _____
- 16. _____
- 17. _____
- 18. _____
- 19. _____
- 20. _____
- 21. _____
- 22. _____
- 23. _____
- 24. _____
- 25. _____
- 26. _____
- 27. _____
- 28. _____
- 29. _____
- 30. _____

All other associated conduit will be inspected for attachment point only based 18" rule criteria. This will not impact the integrity or future raceway inspe The associated conduit per support is as follows.

- 1. TJA | CC9208F
- 2. _____
- 3. _____
- 4. _____
- 5. _____
- 6. _____
- 7. _____
- 8. _____
- 9. _____
- 10. _____
- 11. _____
- 12. _____
- 13. _____
- 14. _____
- 15. _____
- 16. _____
- 17. _____
- 18. _____
- 19. _____
- 20. _____

INTEROFFICE MEMORANDUM

SUBJECT

12210

DATE

FROM: K. HARDY

CC: PQC
CONSTRUCTION

TO: R. BEAUDET

ATTACH 10
E-218
SH. 115 OF 159

In order to facilitate Appendix "R" Release E-047 the following will be implemented on a as needed basis. The Appendix "R" conduit ICC920BF3 in the affected Fire Zone areas are supported by the following supports.

WJB0025

- | | | | | |
|----------------------|-----------|-----------|-----------|-----------|
| 1. <u>CH-3A-0207</u> | 7. _____ | 13. _____ | 19. _____ | 25. _____ |
| 2. _____ | 8. _____ | 14. _____ | 20. _____ | 26. _____ |
| 3. _____ | 9. _____ | 15. _____ | 21. _____ | 27. _____ |
| 4. _____ | 10. _____ | 16. _____ | 22. _____ | 28. _____ |
| 5. _____ | 11. _____ | 17. _____ | 23. _____ | 29. _____ |
| 6. _____ | 12. _____ | 18. _____ | 24. _____ | 30. _____ |

All other associated conduit will be inspected for attachment point only based 18" rule criteria. This will not impact the integrity or future raceway inspe The associated conduit per support is as follows.

- | | | | |
|--|-------|-------|-------|
| 1. <u>NA ICC 920 BF3</u> | _____ | _____ | _____ |
| 2. <u>JUNCTION BOX - needs labeled</u> | _____ | _____ | _____ |
| 3. _____ | _____ | _____ | _____ |
| 4. _____ | _____ | _____ | _____ |
| 5. _____ | _____ | _____ | _____ |
| 6. _____ | _____ | _____ | _____ |
| 7. _____ | _____ | _____ | _____ |
| 8. _____ | _____ | _____ | _____ |
| 9. _____ | _____ | _____ | _____ |
| 10. _____ | _____ | _____ | _____ |
| 11. _____ | _____ | _____ | _____ |
| 12. _____ | _____ | _____ | _____ |
| 13. _____ | _____ | _____ | _____ |
| 14. _____ | _____ | _____ | _____ |
| 15. _____ | _____ | _____ | _____ |
| 16. _____ | _____ | _____ | _____ |
| 17. _____ | _____ | _____ | _____ |
| 18. _____ | _____ | _____ | _____ |
| 19. _____ | _____ | _____ | _____ |
| 20. _____ | _____ | _____ | _____ |

APPENDIX R INSULATION RELEASE NO-E-048

GULF STATES UTILITIES

RIVER BEND STATION

THE FOLLOWING ITEMS ARE RELEASED FOR INSTALLATION OF FIRE BARRIER MATERIAL:

CONDUIT # 1CX0143A

ATTACH 10
E-218
54 1/6 OF 159

FIRE ZONE C-16

BUILDING/ELEVATIONS: CONTROL BLDG. EL. 98'-0"

LIMITS/RESTRICTIONS:

APPLICABLE DRAWINGS: EE-347A-YD

SPECIAL INSTRUCTIONS INCLUDED ARE SUPPORTS AND 18" CRITERIA ASSOCIATED WITH THE ABOVE LISTED RAILWAY (SEE ATTACHMENT(S))

CMS ACCOUNT: 710-4650-1876
710-1650-1877

COMPLETION DATE:

| SM DISCIPLINE | CONSTRUCTION SIGNATURE & DATE | ENGINEERING SIGNATURE & DATE | FQC SIGNATURE & DATE |
|---|-------------------------------|------------------------------|----------------------|
| ELECTRICAL conduits cable tray supports cable | _____ | _____ | _____ |
| INSTRUMENTS PIPING STRUCTURAL OTHER | _____ | _____ | _____ |

CONCURRENCE: _____
INSULATION ENGINEER DATE

_____ DATE
INSULATION COORDINATOR

APPLICABLE CCCP FORMS:

COMMENTS:

THE ABOVE DESCRIBED WORK HAS BEEN COMPLETED

ANCO CONSTRUCTION REP. DATE

ANCO QA/QC REP. DATE

INTEROFFICE MEMORANDUM

8 000 00

SUBJECT

J D OR 12210
W O NO

DATE

FROM: K. HARDY

TO: R. BEAUDET

ATTACH. 10
E-218
SH. 117 OF 159

CC: FQC
CONSTRUCTION

In order to facilitate Appendix "R" Release E-048 the following will be implemented on a as needed basis. The Appendix "R" conduit ICX014B in the affected Fire Zone areas are supported by the following supports.

- | | | | | |
|----------------------|-------------------|-----------|-----------|-----------|
| 1. <u>1JCB#RAK1</u> | 7. <u>ITX014B</u> | 13. _____ | 19. _____ | 25. _____ |
| 2. <u>CN-2A-0091</u> | 8. _____ | 14. _____ | 20. _____ | 26. _____ |
| 3. <u>CN-2A-0092</u> | 9. _____ | 15. _____ | 21. _____ | 27. _____ |
| 4. <u>CR194K-1</u> | 10. _____ | 16. _____ | 22. _____ | 28. _____ |
| 5. <u>CR188B-1</u> | 11. _____ | 17. _____ | 23. _____ | 29. _____ |
| 6. <u>CR187K-1</u> | 12. _____ | 18. _____ | 24. _____ | 30. _____ |

All other associated conduit will be inspected for attachment point only based 18" rule criteria. This will not impact the integrity or future raceway inspe The associated conduit per support is as follows.

- | | | |
|--------------------|----------------------|-------|
| 1. _____ | _____ | _____ |
| 2. _____ | _____ | _____ |
| 3. _____ | _____ | _____ |
| 4. <u>ITL012B</u> | <u>3/4" SECURITY</u> | _____ |
| 5. <u>ITC054B</u> | <u>ICX014BB</u> | _____ |
| 6. <u>ICX017BD</u> | _____ | _____ |
| 7. _____ | _____ | _____ |
| 8. _____ | _____ | _____ |
| 9. _____ | _____ | _____ |
| 10. _____ | _____ | _____ |
| 11. _____ | _____ | _____ |
| 12. _____ | _____ | _____ |
| 13. _____ | _____ | _____ |
| 14. _____ | _____ | _____ |
| 15. _____ | _____ | _____ |
| 16. _____ | _____ | _____ |
| 17. _____ | _____ | _____ |
| 18. _____ | _____ | _____ |
| 19. _____ | _____ | _____ |
| 20. _____ | _____ | _____ |

CN-2A-0091

7'7" N (B)

12'5" E (D)

102'9" 67.

"DY" Detail

APPENDIX R INSULATION RELEASE NO. E-049

GULF STATES UTILITIES

RIVER BEND STATION

THE FOLLOWING ITEMS ARE RELEASED FOR INSTALLATION OF FIRE BARRIER MATERIAL: CONDUIT # ICC048BK

ATTACH 10
E-218
SH. 118 OF 159

FIRE ZONE C-16

BUILDING/ELEVATIONS: CONTROL BLDG EL. 98'-0"

LIMITS/RESTRICTIONS:

APPLICABLE DRAWINGS: EE-351 A-YD

SPECIAL INSTRUCTIONS: INCLUDED ARE SUPPORTS AND 18" CRITERIA ASSOCIATED WITH THE ABOVE LISTED RACEWAY (SEE ATTACHMENT 5)

CMS ACCOUNT: 710-1650-1876
710-1650-1877

COMPLETION DATE:

| S&W DISCIPLINE | CONSTRUCTION SIGNATURE&DATE | ENGINEERING SIGNATURE&DATE | FOC SIGNATURE&DATE |
|---|-----------------------------|----------------------------|--------------------|
| ELECTRICAL - conduits - cable tray - supports - cable | _____ | _____ | _____ |
| INSTRUMENTS PIPING STRUCTURAL OTHER | _____ | _____ | _____ |

CONCURRENCE: _____
SEE INSULATION ENGINEER DATE

_____ DATE
INSULATION COORDINATOR

APPLICABLE CSCP FORMS:

COMMENTS:

THE ABOVE DESCRIBED WORK HAS BEEN COMPLETED

ANCO CONSTRUCTION REP. DATE

ANCO QA/QC REP. DATE

SUBJECT

DATE

FROM: K. HARDY

TO: D. BEAUDET

ATTACH. 10
E-218
EH. 119 OF 159

CC: PQC
CONSTRUCTION

In order to facilitate Appendix "R" Release E-049 the following will be implemented on a as needed basis. The Appendix "R" conduit 1CC04B in the affected Fire Zone areas are supported by the following supports.

- | | | | | |
|----------------------|--|-----------|-----------|-----------|
| 1. <u>IRMS#RE13B</u> | 7. _____ | 13. _____ | 19. _____ | 25. _____ |
| 2. <u>CR-266AS-1</u> | 8. _____ | 14. _____ | 20. _____ | 26. _____ |
| 3. <u>CR191A-7</u> | 9. <u>100.752</u> ^{C 26 2L6A} | 15. _____ | 21. _____ | 27. _____ |
| 4. <u>CR191A-B</u> | 10. _____ | 16. _____ | 22. _____ | 28. _____ |
| 5. <u>ITC04BB</u> | 11. _____ | 17. _____ | 23. _____ | 29. _____ |
| 6. _____ | 12. _____ | 18. _____ | 24. _____ | 30. _____ |

All other associated conduit will be inspected for attachment point only based 18" rule criteria. This will not impact the integrity or future raceway inspe The associated conduit per support is as follows.

- | | | | | |
|-----------------------|----------------------|---------------------|--------------------|-------|
| 1. _____ | _____ | _____ | _____ | _____ |
| 2. _____ | _____ | _____ | _____ | _____ |
| 3. <u>1CX016BC</u> | <u>3/4" COMM.</u> | <u>1 1/2" COMM.</u> | _____ | _____ |
| 4. <u>1" SECURITY</u> | <u>3/4" UNMARKED</u> | <u>1" UNMARKED</u> | <u>1" UNMARKED</u> | _____ |
| 5. _____ | _____ | _____ | _____ | _____ |
| 6. _____ | _____ | _____ | _____ | _____ |
| 7. _____ | _____ | _____ | _____ | _____ |
| 8. _____ | _____ | _____ | _____ | _____ |
| 9. _____ | _____ | _____ | _____ | _____ |
| 10. _____ | _____ | _____ | _____ | _____ |
| 11. _____ | _____ | _____ | _____ | _____ |
| 12. _____ | _____ | _____ | _____ | _____ |
| 13. _____ | _____ | _____ | _____ | _____ |
| 14. _____ | _____ | _____ | _____ | _____ |
| 15. _____ | _____ | _____ | _____ | _____ |
| 16. _____ | _____ | _____ | _____ | _____ |
| 17. _____ | _____ | _____ | _____ | _____ |
| 18. _____ | _____ | _____ | _____ | _____ |
| 19. _____ | _____ | _____ | _____ | _____ |

1000651
EE-420-E
3' N (D)
12' W (CA)
95' Elev.

APPENDIX R INSULATION RELEASE NO-E-051

GULF STATES UTILITIES

RIVER BEND STATION

THE FOLLOWING ITEMS ARE RELEASED FOR INSTALLATION OF FIRE BARRIER MATERIAL:

- CONDUITS #
- 1CC002 0J
 - 1CC909 0A1 -
 - 1CC909 0A9 -
 - 1CC909 0C1
 - 1CC909 0C7
 - 1CK909 0A1
 - 1CK909 0C
 - 1CK909 0E2
 - 1CK909 0A1 -
 - 1CH003 0A -
- ATTACH. 10
E-218
SP 120 OF 159

FIRE ZONE C-6

BUILDING/ELEVATIONS:

CONTROL BLDG. FL. 70'-0"

LIMITS/RESTRICTIONS:

APPLICABLE DRAWINGS:

EE-34YA-YD

SPECIAL INSTRUCTIONS: INCLUDED ARE SUPPORTS AND 18" CRITERIA ASSOCIATED WITH THE ABOVE LISTED RACEWAYS (SEE ATTACHMENT(S))

CMS ACCOUNT: 710-1460-187
710-1460-187

COMPLETION DATE:

| SW DISCIPLINE | CONSTRUCTION SIGNATURE&DATE | ENGINEERING SIGNATURE&DATE | FBC SIGNATURE&DATE |
|---|-----------------------------|----------------------------|--------------------|
| ELECTRICAL conduits cable tray supports cable | _____ | _____ | _____ |
| INSTRUMENTS PIPING STRUCTURAL OTHER | _____ | _____ | _____ |

CONCURRENCE:

SES INSULATION ENGINEER DATE

INSULATION COORDINATOR DATE

APPLICABLE CCOF FORMS:

COMMENTS:

THE ABOVE DESCRIBED WORK HAS BEEN COMPLETED

ANCO CONSTRUCTION REP. DATE

ANCO EA/GC REP. DATE

INTEROFFICE MEMORANDUM

DATE

SUBJECT

ATTACH 10
E-218
SH.121 OF 159

48 OF 12210

DATE

FROM: K. BARDY

TO: R. BEAUDET

CC: PQC
CONSTRUCTION

Associated Conduit Only 18" Rule

In order to facilitate Appendix "R" Release EOSI ^{W/S 1.125} the following will be implemented on a as needed basis. The Appendix "R" conduit ICX 001 F in the affected Fire Zone areas are supported by the following supports.

- | | | | | |
|---------------------|-----------------------|-----------|-----------|-----------|
| 1. <u>CR-92F-1</u> | 7. <u>CR-93A-1</u> | 13. _____ | 19. _____ | 25. _____ |
| 2. <u>CR-155F-1</u> | 8. <u>CR-13FS-2</u> | 14. _____ | 20. _____ | 26. _____ |
| 3. <u>CR-156F-1</u> | 9. <u>CR-13FS-1</u> | 15. _____ | 21. _____ | 27. _____ |
| 4. <u>CR-95A-1</u> | 10. <u>CR-1B-0601</u> | 16. _____ | 22. _____ | 28. _____ |
| 5. <u>CR-93A-3</u> | 11. <u>CR-11RS-1</u> | 17. _____ | 23. _____ | 29. _____ |
| 6. <u>CR-93A-2</u> | 12. _____ | 18. _____ | 24. _____ | 30. _____ |

All other associated conduit will be inspected for attachment point only based on 18" rule criteria. This will not impact the integrity or future raceway inspection. The associated conduit per support is as follows.

- | | | | | |
|---------------------|-------|-------|-------|-------|
| 1. <u>ICX001 F</u> | _____ | _____ | _____ | _____ |
| 2. _____ | _____ | _____ | _____ | _____ |
| 3. _____ | _____ | _____ | _____ | _____ |
| 4. _____ | _____ | _____ | _____ | _____ |
| 5. _____ | _____ | _____ | _____ | _____ |
| 6. _____ | _____ | _____ | _____ | _____ |
| 7. _____ | _____ | _____ | _____ | _____ |
| 8. _____ | _____ | _____ | _____ | _____ |
| 9. _____ | _____ | _____ | _____ | _____ |
| 10. _____ | _____ | _____ | _____ | _____ |
| 11. <u>ICX001 F</u> | _____ | _____ | _____ | _____ |
| 12. _____ | _____ | _____ | _____ | _____ |
| 13. _____ | _____ | _____ | _____ | _____ |
| 14. _____ | _____ | _____ | _____ | _____ |
| 15. _____ | _____ | _____ | _____ | _____ |
| 16. _____ | _____ | _____ | _____ | _____ |
| 17. _____ | _____ | _____ | _____ | _____ |
| 18. _____ | _____ | _____ | _____ | _____ |
| 19. _____ | _____ | _____ | _____ | _____ |

INTEROFFICE MEMORANDUM

SUBJECT

ATTACH. 10
E-218
SH. 122 OF 159

12210

DATE

FROM: R. HARDY

TO: R. BEAUDET

CC: PQC
CONSTRUCTION

Associated Conduit Only 18" rule

In order to facilitate Appendix "B" Release EOSI ^{5/1/15} the following will be implemented on a as needed basis. The ~~Appendix "B"~~ ^{18"} conduit 10x920φB in the affected Fire Zone areas are supported by the following supports.

- | | | | | |
|----------------------|-----------|-----------|-----------|-----------|
| 1. <u>CE-11 KS-1</u> | 7. _____ | 13. _____ | 19. _____ | 25. _____ |
| 2. _____ | 8. _____ | 14. _____ | 20. _____ | 26. _____ |
| 3. _____ | 9. _____ | 15. _____ | 21. _____ | 27. _____ |
| 4. _____ | 10. _____ | 16. _____ | 22. _____ | 28. _____ |
| 5. _____ | 11. _____ | 17. _____ | 23. _____ | 29. _____ |
| 6. _____ | 12. _____ | 18. _____ | 24. _____ | 30. _____ |

All other associated conduit will be inspected for attachment point only based on 18" rule criteria. This will not impact the integrity or future raceway inspection. The associated conduit per support is as follows.

- | | | | | |
|--------------------|-------|-------|-------|-------|
| 1. <u>10x920φB</u> | _____ | _____ | _____ | _____ |
| 2. _____ | _____ | _____ | _____ | _____ |
| 3. _____ | _____ | _____ | _____ | _____ |
| 4. _____ | _____ | _____ | _____ | _____ |
| 5. _____ | _____ | _____ | _____ | _____ |
| 6. _____ | _____ | _____ | _____ | _____ |
| 7. _____ | _____ | _____ | _____ | _____ |
| 8. _____ | _____ | _____ | _____ | _____ |
| 9. _____ | _____ | _____ | _____ | _____ |
| 10. _____ | _____ | _____ | _____ | _____ |
| 11. _____ | _____ | _____ | _____ | _____ |
| 12. _____ | _____ | _____ | _____ | _____ |
| 13. _____ | _____ | _____ | _____ | _____ |
| 14. _____ | _____ | _____ | _____ | _____ |
| 15. _____ | _____ | _____ | _____ | _____ |
| 16. _____ | _____ | _____ | _____ | _____ |
| 17. _____ | _____ | _____ | _____ | _____ |
| 18. _____ | _____ | _____ | _____ | _____ |
| 19. _____ | _____ | _____ | _____ | _____ |
| 20. _____ | _____ | _____ | _____ | _____ |

INTEROFFICE MEMORANDUM

& DATE

SUBJECT

IN OR NO 12210
WO NO

DATE 4/9/85

FROM K. HARDY

CC: PQC
CONSTRUCTION

ATTACH. 10

E-218

SH. 123 OF 159

TO: R. BEAUDET

In order to facilitate Appendix "R" Release E-051 the following will be implemented on a as needed basis. The Appendix "R" conduit KL929DC1 in the affected Fire Zone areas are supported by the following supports.

- | | | | | |
|----------------------------|-----------------------|----------------------------|--|-----------|
| 1. <u>ITC0010</u> | 7. <u>CR-155F-1</u> | 13. <u>CL-ID-0029</u> | 19. <u>CR-13F4-2</u> | 25. _____ |
| 2. <u>WALL EMERG-NO. #</u> | 8. <u>NO #</u> | 14. <u>CL-ID-0028</u> | 20. <u>CR-13F4-1</u> | 26. _____ |
| 3. <u>NO #</u> | 9. <u>NO #</u> | 15. <u>CL-ID-0027</u> | 21. <u>CR-11K5-1</u> | 27. _____ |
| 4. <u>CR-4VE-1</u> | 10. <u>CR-95A-1</u> | 16. <u>NO # CR-025</u> | 22. <u>LEAVES CONTR. ST. TO P. CHANNEL</u> | 28. _____ |
| 5. <u>CR-5BK-3</u> | 11. <u>CL-ID-0031</u> | 17. <u>NO # CR 2.7.123</u> | 23. _____ | 29. _____ |
| 6. <u>CR-92F-1</u> | 12. <u>CL-ID-0030</u> | 18. <u>CR-13F5-3</u> | 24. _____ | 30. _____ |

(PARTIAL - WITHIN CONTROL BLDG. ONLY)

All other associated conduit will be inspected for attachment point only based on 18" rule criteria. This will not impact the integrity or future raceway inspection. The associated conduit per support is as follows.

- | | | | | |
|---------------------|----------------------|-------------------------|---------------------|--------------------|
| 1. <u>N/A</u> | _____ | _____ | _____ | _____ |
| 2. <u>ICX91BUD</u> | _____ | _____ | _____ | _____ |
| 3. <u>ICX91BUAI</u> | _____ | _____ | _____ | _____ |
| 4. <u>ICX91BUAI</u> | <u>ITX004B</u> | _____ | _____ | _____ |
| 5. <u>ICX91BUAI</u> | <u>ITX004B</u> | _____ | _____ | _____ |
| 6. <u>ICX91BUB</u> | <u>ICC0020J</u> | <u>ICX91BUD</u> | <u>ICX91BUAI</u> | _____ |
| 7. <u>ICX91BUB</u> | <u>ICC0020J</u> | <u>ICX91BUD</u> | <u>ICX91BUAI</u> | _____ |
| 8. <u>ICX91BUB</u> | <u>ITX004B</u> | _____ | _____ | _____ |
| 9. <u>ICX91BUB</u> | <u>ITX004B</u> | _____ | _____ | _____ |
| 10. <u>ICX025BB</u> | <u>ITC03BB</u> | <u>ICX9090CT</u> | <u>ICX939UAI</u> | <u>ICX939TAI</u> |
| _____ | _____ | _____ | _____ | _____ |
| 11. <u>ICX91BUB</u> | <u>ICX91BUAI</u> | <u>ICC0020J</u> | <u>1 1/2" COMM.</u> | <u>1" SECURITY</u> |
| _____ | <u>3/4" SECURITY</u> | _____ | _____ | _____ |
| 12. <u>ICX91BUB</u> | <u>ICX91BUAI</u> | <u>ICC0020J</u> | <u>1 1/2" COMM.</u> | _____ |
| 13. <u>ICX91BUB</u> | <u>ICX91BUAI</u> | <u>3/4" EMERG. LTR.</u> | _____ | _____ |
| 14. <u>ICX91BUB</u> | <u>ICX91BUAI</u> | _____ | _____ | _____ |
| 15. <u>ICX91BUB</u> | <u>ICX91BUAI</u> | <u>ICX940RJ</u> | <u>ICX91BRD</u> | <u>ICX920RK</u> |
| 16. <u>ICX91BUB</u> | <u>ICX91BUAI</u> | _____ | _____ | _____ |
| 17. <u>ICX91BUB</u> | <u>ICX91BUAI</u> | _____ | _____ | _____ |

C-6

C-6



SUBJECT

10 08 12:10
NO NO

DATE 4/9/05

FROM: K. HARDY

CC: PQC
CONSTRUCTION

ATTACH. 10
E-218
SH. 125 OF 159

TO: R. BEAUDET

In order to facilitate Appendix "R" Release E-051 the following will be implemented on a as needed basis. The Appendix "R" conduit 1CC002ΦJ in the affected Fire Zone areas are supported by the following supports.

- | | | | | |
|----------------------|-----------------------|----------------------|--|-----------|
| 1. <u>ITC002Φ</u> | 7. <u>CR-155F-1</u> | 13. <u>CR-15FS-2</u> | 19. <u>CR-13FS-1</u> | 25. _____ |
| 2. <u>CN-1C-000B</u> | 8. <u>CR-156F-1</u> | 14. <u>CR-15FS-1</u> | 20. <u>CN-1B-0001</u> | 26. _____ |
| 3. <u>CN-1C-000B</u> | 9. <u>CR-74A-1</u> | 15. <u>CR-14FS-1</u> | 21. <u>CR-4K-1</u> | 27. _____ |
| 4. <u>CR-40E-1</u> | 10. <u>NO #</u> | 16. <u>CR-13FS-4</u> | 22. <u>LEAKING CONDUIT</u> <u>BLK. TO B</u> | 28. _____ |
| 5. <u>CR-50K-3</u> | 11. <u>CR-75A-1</u> | 17. <u>CR-13FS-3</u> | 23. _____ | 29. _____ |
| 6. <u>CR-92F-1</u> | 12. <u>CL-1D-0031</u> | 18. <u>CR-13FS-2</u> | 24. _____ | 30. _____ |

(PARTIAL - WITHIN CONTROL BLDG. ONLY)

All other associated conduit will be inspected for attachment point only based on the 18" rule criteria. This will not impact the integrity or future raceway inspections. The associated conduit per support is as follows.

5-6

- | | | | | |
|----------------------|----------------------|------------------|---------------------|--------------------|
| 1. <u>N/A</u> | _____ | _____ | _____ | _____ |
| 2. <u>N/A</u> | _____ | _____ | _____ | _____ |
| 3. <u>N/A</u> | _____ | _____ | _____ | _____ |
| 4. <u>ICX918UB</u> | <u>ITC030B</u> | _____ | _____ | _____ |
| 5. <u>ICX918UB</u> | <u>ITC030B</u> | _____ | _____ | _____ |
| 6. <u>ICX918UB</u> | <u>1CC909ΦC1</u> | <u>ICX918UD</u> | <u>ICX918UA1</u> | _____ |
| 7. <u>ICX918UB</u> | <u>1CC909ΦC1</u> | <u>ICX918UD</u> | <u>ICX918UA1</u> | _____ |
| 8. <u>ICX918UD</u> | _____ | _____ | _____ | _____ |
| 9. <u>N/A</u> | _____ | _____ | _____ | _____ |
| 10. <u>ICX918UA1</u> | _____ | _____ | _____ | _____ |
| 11. <u>ICX918UA1</u> | <u>ITX025B</u> | <u>1CC909ΦC1</u> | <u>ICX939UA1</u> | <u>ICX939TA1</u> |
| | <u>ICX918UD</u> | _____ | _____ | _____ |
| 12. <u>ICX918UB</u> | <u>ICX918UA1</u> | <u>1CC909ΦC1</u> | <u>1 1/2" COMM.</u> | <u>1" SECURITY</u> |
| | <u>3/4" SECURITY</u> | _____ | _____ | _____ |
| 13. <u>ICK909ΦA3</u> | <u>ICL909ΦA1</u> | <u>ICK909ΦE2</u> | <u>IC1+003ΦA</u> | <u>ICK909ΦA1</u> |
| 14. <u>ICK909ΦA3</u> | <u>ICL909ΦA1</u> | <u>ICK909ΦE2</u> | <u>IC1+003ΦA</u> | <u>ICK909ΦA1</u> |
| 15. <u>ICK909ΦA3</u> | <u>ICL909ΦA1</u> | <u>ICK909ΦA1</u> | <u>IC1+003ΦA</u> | <u>ICK909ΦC</u> |
| | <u>1CC909ΦC7</u> | <u>ICK909ΦE2</u> | _____ | _____ |
| 16. <u>ICK909ΦE2</u> | <u>ICK918ΦA1</u> | <u>1CC909ΦA9</u> | <u>1CC909ΦA3</u> | _____ |

INTEROFFICE MEMORANDUM

SUBJECT

NO OR 12210
NO NR

SHI 1 OF 2

DATE 4-9-85

FROM: K. HARDY

ATTACH. 10
E-218
SH. 127 OF 159

TO: R. BEAUDET

CC: PQC
CONSTRUCTION

In order to facilitate Appendix "R" Release E-051 the following will be implemented on a as needed basis. The Appendix "R" conduit ICL9090A1 in the affected Fire Zone areas are supported by the following supports.

- | | | | | |
|--------------------------|---|---|---|-----------|
| 1. <u>ENTERS CONT RA</u> | 7. <u>CR-13FS-4</u> | 13. <u>NO NUMA</u> <small>EN 10 0339</small> | 19. <u>NO NUMA</u> <small>EN 30 0467</small> | 25. _____ |
| 2. <u>CR-11KS-1</u> | 8. <u>CR-14FS-1</u> | 14. <u>NO NUMA</u> <small>EN 10 0340</small> | 20. <u>NO NUMA</u> | 26. _____ |
| 3. <u>CU-1B-0601</u> | 9. <u>CR 15FS-1</u> | 15. <u>NO NUMA</u> <small>EN 20 0265</small> | 21. <u>NO NUMA</u> <small>EN 30 0467</small> | 27. _____ |
| 4. <u>CR-13FS-1</u> | 10. <u>CR-15FS-2</u> | 16. <u>NO NUMA</u> <small>EN 10 0339</small> | 22. <u>CR-222A-1</u> | 28. _____ |
| 5. <u>CR-13FS-2</u> | 11. <u>NO NUMA</u> <small>EN 10 0339</small> | 17. <u>NO NUMA</u> <small>EN 20 0265</small> | 23. _____ | 29. _____ |
| 6. <u>CR-13FS-3</u> | 12. <u>NO NUMA</u> <small>EN 10 0339</small> | 18. <u>NO NUMA</u> <small>EN 30 0467</small> | 24. _____ | 30. _____ |

All other associated conduit will be inspected for attachment point only based 18" rule criteria. This will not impact the integrity or future raceway inspection. The associated conduit per support is as follows.

- | | | | | |
|---|-------------------|---|------------------|------------------|
| 1. _____ | _____ | _____ | _____ | _____ |
| 2. <u>ICL9090A2</u> | <u>ICL9090A9</u> | _____ | _____ | _____ |
| 3. <u>ICL9090A2</u> - <u>ICL9090A8</u> - <u>ICL9090A</u> - <u>ICL9090E1</u> - <u>ICL9090A1</u> - <u>ICL9090E2</u> - <u>ICL9090A</u> - <u>ICL9090A1</u> - <u>ICL9090A1</u> - <u>ICL9090E</u> | _____ | _____ | _____ | _____ |
| 4. <u>ICL9090C7</u> | <u>ICK9090C</u> | <u>ICL9090A</u> | <u>ICL9090A1</u> | _____ |
| 5. <u>ICL9090C7</u> | <u>ICK9090C</u> | <u>ICL9090A</u> | <u>ICL9090A1</u> | _____ |
| 6. <u>ICL9090C7</u> | <u>ICK9090C</u> | <u>ICL9090A</u> | <u>ICL9090A1</u> | _____ |
| 7. <u>ICL9090C7</u> | <u>ICK9090C</u> | <u>ICL9090A</u> | <u>ICL9090A1</u> | _____ |
| 8. <u>ICL9090A8</u> | <u>ICL9090A1</u> | <u>ICL9090A</u> - <u>ICK9090C</u> - <u>ICL9090C7</u> - <u>ICK9090E2</u> - <u>ICL9090E</u> | _____ | _____ |
| 9. <u>ICK9090A8</u> | <u>ICL9090A</u> | <u>ICK9090E2</u> | <u>ICL9090A</u> | <u>ICK9090A1</u> |
| 10. <u>ICK9090A8</u> | <u>ICL9090A</u> | <u>ICK9090E2</u> | <u>ICL9090A</u> | <u>ICK9090A1</u> |
| 11. <u>ICL9090A</u> | <u>.75" COMM.</u> | _____ | _____ | _____ |
| 12. <u>ICL9090A</u> | _____ | _____ | _____ | _____ |
| 13. <u>ICL9090A</u> | <u>ICL9390E1</u> | <u>ICL9090E2</u> | _____ | _____ |
| 14. <u>ICL9090A</u> | <u>ICL9390E1</u> | <u>ICL9090E2</u> | _____ | _____ |
| 15. <u>ICL9090A</u> | <u>ICL9090E2</u> | <u>ICL9390E1</u> | _____ | _____ |
| 16. <u>ICL9090A</u> | <u>ICL9090E2</u> | <u>ICL9390E1</u> | _____ | _____ |
| 17. <u>ICL9090A</u> | <u>ICL9090E2</u> | <u>ICL9390E1</u> | <u>1" COMM.</u> | _____ |
| 18. <u>ICL9090A</u> | <u>ICL9090E2</u> | <u>ICL9390E1</u> | <u>1" COMM.</u> | _____ |
| 19. <u>ICL9090A</u> | <u>ICL9090A</u> | <u>ICL9090E2</u> | <u>ICL9390E1</u> | <u>ICL9390E1</u> |

ATTACH 10
E-218
SH. 28 OF 159

JHI 2 OF 2

| | | | | | |
|-----|----------|--------|--|--|--|
| 21. | 12H0030A | | | | |
| 22. | 1TH0020 | | | | |
| 23. | 1TH0020 | | | | |
| 24. | 1CC0040A | 1" LTG | | | |
| 25. | 1T<0010 | | | | |
| 26. | | | | | |
| 27. | | | | | |
| 28. | | | | | |
| 29. | | | | | |
| 30. | | | | | |
| 31. | | | | | |
| 32. | | | | | |
| 33. | | | | | |
| 34. | | | | | |
| 35. | | | | | |
| 36. | | | | | |
| 37. | | | | | |
| 38. | | | | | |
| 39. | | | | | |
| 40. | | | | | |

INTEROFFICE MEMORANDUM

SUBJECT

12210

DATE 4/9/85

FROM: K. HARDY

TO: R. BEAUDET

ATTACH 10

E-218

SH. 129 OF 159

CC: PQC CONSTRUCTION

In order to facilitate Appendix "R" Release E-051 the following will be implemented on a as needed basis. The Appendix "R" conduit ICC409DA9 in the affected Fire Zone areas are supported by the following supports.

- | | | | | |
|---------------------|----------------------|-----------------------|----------------------------|-----------|
| 1. <u>ITC0020</u> | 7. <u>CR-30AS-1</u> | 13. <u>CR-14FS-1</u> | 19. <u>CR-11KS-1</u> | 25. _____ |
| 2. <u>43 NUMBER</u> | 8. <u>CR-28AS-2</u> | 14. <u>CR-13FS-4</u> | 20. <u>EXITS TO TUNNEL</u> | 26. _____ |
| 3. <u>CR-33K-1</u> | 9. <u>CR-28AS-1</u> | 15. <u>CR-13FS-3</u> | 21. _____ | 27. _____ |
| 4. <u>CR-32A-2</u> | 10. <u>CR-27A-1</u> | 16. <u>CR-13FS-2</u> | 22. _____ | 28. _____ |
| 5. <u>CR-32A-1</u> | 11. <u>CR-26AS-1</u> | 17. <u>CR-13FS-1</u> | 23. _____ | 29. _____ |
| 6. <u>CR-31A-1</u> | 12. <u>CR-16FS-1</u> | 18. <u>CR-18-D601</u> | 24. _____ | 30. _____ |

PARTIAL INSP. OF ONLY CONDUIT WITHIN CONT. BLDG.

All other associated conduit will be inspected for attachment point only based on 18" rule criteria. This will not impact the integrity or future raceway inspection. The associated conduit per support is as follows.

- | | | | | |
|---|------------------|---|--|------------------|
| 1. <u>N/A</u> | _____ | _____ | _____ | _____ |
| 2. <u>ICC409DA3</u> | <u>ICC409DA1</u> | <u>1" COMM.</u> | _____ | _____ |
| 3. <u>ICC409DA3</u> | <u>ICX002DA</u> | <u>ICX910DA</u> | <u>ICC409DA1</u> | <u>ICC418DA</u> |
| 4. <u>3" SMK. DET</u> | <u>ICC409DA3</u> | <u>ICX002DA</u> | <u>ICX910DA</u> | <u>ICC409DA1</u> |
| 5. <u>ICC409DA3</u> | <u>ICX002DA</u> | <u>ICX910DA</u> | <u>ICC409DA1</u> | _____ |
| 6. <u>ICC409DA3 - ICX002DA - ICX410DA - 1" COMM. - ICC006BC - ICC006BA - ICX409DA1</u> | _____ | _____ | _____ | _____ |
| 7. <u>ICC409BA3</u> | <u>ICX002DA</u> | <u>ICX410DA - .75" COMM. - ICC006BC - ICX409DA1</u> | _____ | _____ |
| 8. <u>ICX918DA</u> | <u>ICC418DA</u> | <u>ICC066NA - ICX918DA1 - ICC409DA3 - ICX002DA - 1" SMK</u> | _____ | _____ |
| 9. <u>ICX002DA</u> | <u>ICC409DA3</u> | <u>ICC418DA</u> | <u>1" SMK DET.</u> | <u>ICC066N</u> |
| 10. <u>ICC409DA3 - ICX004ND - ICX439DA1 - ICX418DA - ICX418DA1 - ICX409DA1 - ICC04NC - ICX002DA - ICC06NA - ICC4</u> | _____ | _____ | _____ | _____ |
| 11. <u>ICC409DA2</u> | <u>ICX409DA1</u> | <u>ICC418DA</u> | <u>ICC409DA2 - ICC409DA3 - ICC409DA1</u> | _____ |
| 12. <u>ICC409DA3</u> | <u>ICX410DA</u> | _____ | _____ | _____ |
| 13. <u>2-1" COMM</u> | <u>ICC409DA3</u> | <u>ICX418DA1</u> | <u>ICX410DA</u> | _____ |
| 14. <u>ICC0020J</u> | <u>ICX409DE2</u> | <u>ICX418DA1</u> | <u>ICC409DC1</u> | <u>ICC409DA3</u> |
| 15. <u>ICC0020J</u> | <u>ICX409DE2</u> | <u>ICX418DA1</u> | <u>ICC409DC1</u> | <u>ICC409DA3</u> |
| 16. <u>ICC0020J</u> | <u>ICX409DE2</u> | <u>ICX418DA1</u> | <u>ICC409DC1</u> | <u>ICC409DA3</u> |
| 17. <u>ICC0020J</u> | <u>ICX409DE2</u> | <u>ICX418DA1</u> | <u>ICC409DC1</u> | <u>ICC409DA3</u> |
| 18. <u>ICC409CA2 - ICX409CB8 - ICC418DA - ICC409DE1 - ICX409DA1 - ICC0020J - ICX410DA - ICC409DA1 - ICC409DA9 - ICC409DA3</u> | _____ | _____ | _____ | _____ |
| <u>ICC409DA1</u> | _____ | _____ | _____ | _____ |

CL. IC 0135

C

INTEROFFICE MEMORANDUM

12210

SUBJECT

DATE 4/9/65

ATTACH 10
E-218

FROM: K. HARDY

TO: R. BEAUDET

SH. 1SD OF 159

CC: PQC
CONSTRUCTION

In order to facilitate Appendix "R" Release E-051 the following will be implemented on a as needed basis. The Appendix "R" conduit 1CH003ΦA in the affected Fire Zone areas are supported by the following supports.

- | | | | | |
|--|-------------------------------------|----------------------|--|-----------|
| 1. <u>1TH003Φ</u> CN 20 0223 | 7. CR-15FS-1 No F | 13. <u>CR-15FS-1</u> | 19. <u>CU-1B-005B</u> | 25. _____ |
| 2. CR-14FS-1 | 8. <u>FLR. OPEN'G</u> CN 10 0310 | 14. <u>CR-14FS-1</u> | 20. <u>CR-4K-1</u> | 26. _____ |
| 3. CR-13FS-4 | 9. CR-13FS-4 No F | 15. <u>CR-13FS-4</u> | 21. <u>LEAVE COMP.</u> <u>FLR. OP B</u> | 27. _____ |
| 4. <u>FLR. OPEN'G</u> CN 15 0225 | 10. CR-13FS-3 No F | 16. <u>CR-13FS-3</u> | 22. <u>TUNABLE</u> | 28. _____ |
| 5. CR-13FS-2 No F | 11. CR-13FS-2 No F | 17. <u>CR-13FS-2</u> | 23. _____ | 29. _____ |
| 6. CR-13FS-1 No F CN 20 0224 | 12. <u>CR-15FS-2</u> | 18. <u>CR-13FS-1</u> | 24. _____ | 30. _____ |

(PARTIAL - WITHIN CONTROL BLDG. ONLY)

All other associated conduit will be inspected for attachment point only based on 18" rule criteria. This will not impact the integrity or future raceway inspection. The associated conduit per support is as follows.

- | | | | | |
|----------------------|-------------------|------------------|------------------|------------------|
| 1. <u>N/A</u> | _____ | _____ | _____ | _____ |
| 2. <u>1CH002ΦB</u> | <u>1CK909ΦA1</u> | _____ | _____ | _____ |
| 3. <u>1CH002ΦB</u> | <u>1CC920NΦ6</u> | _____ | _____ | _____ |
| 4. <u>N/A</u> | _____ | _____ | _____ | _____ |
| 5. <u>1CH002ΦB</u> | <u>1CK909ΦA1</u> | _____ | _____ | _____ |
| 6. <u>1CH002ΦB</u> | <u>1CK909ΦA1</u> | _____ | _____ | _____ |
| 7. <u>1CH002ΦB</u> | <u>1CK909ΦA1</u> | _____ | _____ | _____ |
| 8. <u>N/A</u> | _____ | _____ | _____ | _____ |
| 9. <u>1CH002ΦB</u> | <u>1CK909ΦA1</u> | _____ | _____ | _____ |
| 10. <u>1CK909ΦA1</u> | _____ | _____ | _____ | _____ |
| 11. <u>1CK909ΦA1</u> | <u>3/4" COMM.</u> | _____ | _____ | _____ |
| 12. <u>1CK909ΦA1</u> | <u>1CC002ΦJ</u> | <u>1CK909ΦAB</u> | <u>1CL909ΦA1</u> | <u>1CK909ΦE?</u> |
| 13. <u>1CK909ΦA1</u> | <u>1CC002ΦJ</u> | <u>1CK909ΦAB</u> | <u>1CL909ΦA1</u> | <u>1CK909ΦE?</u> |
| 14. <u>1CK909ΦA1</u> | <u>1CC002ΦJ</u> | <u>1CK909ΦAB</u> | <u>1CL909ΦA1</u> | <u>1CK909ΦE?</u> |
| _____ | <u>1CC909ΦE7</u> | _____ | _____ | _____ |
| 15. <u>1CK909ΦA1</u> | <u>1CL909ΦA1</u> | <u>1CK909ΦC</u> | <u>1CC909ΦE7</u> | _____ |
| 16. <u>1CK909ΦA1</u> | <u>1CL909ΦA1</u> | <u>1CK909ΦC</u> | <u>1CC909ΦE7</u> | _____ |
| 17. <u>1CK909ΦA1</u> | <u>1CL909ΦA1</u> | <u>1CK909ΦC</u> | <u>1CC909ΦE7</u> | _____ |
| 18. <u>1CK909ΦA1</u> | <u>1CL909ΦA1</u> | <u>1CK909ΦC</u> | <u>1CC909ΦE7</u> | _____ |

C-6

26

20. ICK9090E2

1CC9090E1

ITX061N

21. N/A

ATTACH. 10
E-21B
SH 131 OF 159

INTEROFFICE MEMORANDUM

SUBJECT

NO 12210

DATE 9/9/85

FROM: K. HARDY

CC: PQC
CONSTRUCTION

TO: R. BEAUDET

ATTACH 10
E-218
SH. 132 OF 159

In order to facilitate Appendix "R" Release E-051 the following will be implemented on a as needed basis. The Appendix "R" conduit 1CK9090C in the affected Fire Zone areas are supported by the following supports.

- | | | | | |
|--|-----------------------|-------------------------------------|---|----------------------|
| 1. <u>1# JB0146</u> | 7. <u>CR-128A-1</u> | 13. <u>CR-130A-1</u> | 19. <u>CU-1C-0139</u> NO# | 25. <u>CR-40AS-7</u> |
| 2. <u>CU-3C-0144</u> | 8. <u>CR-117A-1</u> | 14. <u>NO#</u> | 20. <u>CR-53A1-1</u> | 26. <u>CR-40AS-6</u> |
| 3. <u>NO#</u> | 9. <u>CR-117A-2</u> | 15. <u>NO#</u> | 21. <u>CR-6W-1</u> | 27. <u>CR-40AS-5</u> |
| 4. <u>FLR. OPENING</u> <u>BL. 112'-0"</u> | 10. <u>CR-118AS-1</u> | 16. <u>NO#</u> <u>CU 2. 0146</u> | 22. <u>CR-43A-4</u> <u>1975-2</u> | 28. <u>CR-40AS-3</u> |
| 5. <u>NO#</u> | 11. <u>CR-117A-3</u> | 17. <u>NO#</u> <u>CN 2. 0167</u> | 23. <u>CR-43A-3</u> <u>1975-1</u> | 29. <u>CR-153A-1</u> |
| 6. <u>CR-116AS-1</u> (CONT'D.) | 12. <u>CR-119A-1</u> | 18. <u>NO#</u> <u>CU-1C-0140</u> | 24. <u>CR-40AS-B</u> | 30. <u>CR-95A-1</u> |

All other associated conduit will be inspected for attachment point only based on 18" rule criteria. This will not impact the integrity or future raceway inspection. The associated conduit per support is as follows.

- | | | | | |
|-------------------------|------------------------|------------------|------------------|------------------|
| 1. <u>N/A</u> | _____ | _____ | _____ | _____ |
| 2. <u>3/4" UNMARKED</u> | _____ | _____ | _____ | _____ |
| 3. <u>3/4" UNMARKED</u> | _____ | _____ | _____ | _____ |
| 4. <u>N/A</u> | _____ | _____ | _____ | _____ |
| 5. <u>N/A</u> | _____ | _____ | _____ | _____ |
| 6. <u>N/A</u> | _____ | _____ | _____ | _____ |
| 7. <u>N/A</u> | _____ | _____ | _____ | _____ |
| 8. <u>N/A</u> | _____ | _____ | _____ | _____ |
| 9. <u>N/A</u> | _____ | _____ | _____ | _____ |
| 10. <u>ICL919NF</u> | <u>ICL046NC</u> | <u>ICC920BL1</u> | _____ | _____ |
| 11. <u>ICHO12BA</u> | <u>ICL919NF</u> | <u>ICL046NC</u> | <u>ICX920NX1</u> | <u>ICC920BL1</u> |
| 12. <u>ICHO12BA</u> | <u>ICL919NF</u> | <u>ICL046NC</u> | <u>ICX920NX1</u> | <u>ICC920BL1</u> |
| 13. <u>ICHO12BA</u> | _____ | _____ | _____ | _____ |
| 14. <u>ICCO40BE</u> | <u>3/4" SMOKE DET.</u> | _____ | _____ | _____ |
| 15. <u>N/A</u> | _____ | _____ | _____ | _____ |
| 16. <u>N/A</u> | _____ | _____ | _____ | _____ |
| 17. <u>N/A</u> | _____ | _____ | _____ | _____ |
| 18. <u>N/A</u> | _____ | _____ | _____ | _____ |
| 19. <u>3/4" COMM.</u> | _____ | _____ | _____ | _____ |

SUPPORTS (CONT'D.)

| | | | | |
|----------------|---------------|---------------|-------------------------------------|-----|
| 31. CR-93A-3 | 35. CR-14FS-1 | 39. CR-13FS-2 | 43. LEAVES CONTR. BLDG. TO B TUNNEL | 47. |
| 32. CR-27A-1 | 36. CR-14FS-1 | 40. CR-13FS-1 | 44. | 48. |
| 33. CR-26A1S-1 | 37. CR-13FS-4 | 41. CR-37A1-1 | 45. | 49. |
| 34. CU-1B-004H | 38. CR-13FS-3 | 42. CR-4K-1 | 46. | 50. |

(PARTIAL - WITHIN CONTROL BLDG. ONLY)

ATTACH. 1D
E-218
SH. 133
OF 159

ASSOCIATED CONDUIT PER SUPPORT (CONT'D.)

| | | | | |
|---------------|-----------|-----------|-----------|-----------|
| 21. ICC91BBA | ICC940JA | ICC940TF | ICC073NA | |
| 22. N/A | | | | |
| 23. N/A | | | | |
| 24. N/A | | | | |
| 25. N/A | | | | |
| 26. N/A | | | | |
| 27. N/A | | | | |
| 28. N/A | | | | |
| 29. N/A | | | | |
| 30. N/A | | | | |
| 31. ICK004ND | ICL004NC | | | |
| 32. ICL004NC | ICK91BFA1 | ICK910FA | | |
| 33. ICL004NC | ICK91BFA1 | ICK910FA | | |
| 34. ICK91BFA1 | ICK910FA | | | |
| 35. ICC909FA1 | ICC909FA2 | ICK909FA1 | | |
| 36. ICK909FAB | ICC909FA1 | ICK909FA1 | ICH003FA | ICC909FC7 |
| ICK909FA1 | KH002FJ | | | |
| 37. ICC909FC7 | ICK909FA1 | ICH003FA | ICK909FA1 | |
| 38. ICC909FC7 | ICK909FA1 | ICH003FA | ICK909FA1 | |
| 39. ICC909FC7 | ICK909FA1 | ICH003FA | ICK909FA1 | |
| 40. ICC909FC7 | ICK909FA1 | ICH003FA | ICK909FA1 | |
| 41. N/A | | | | |
| 42. ITX072N | | | | |
| 43. N/A | | | | |

C-6 ↓

INTEROFFICE CORRESPONDENCE

| | | |
|----------------|-------------------|---|
| TO: D Matzick | LOCATION FWC | SUBJECT / REFERENCE / J.O. NO. Appendix R Release EOSI |
| FROM: B Walker | LOCATION Field | |

MESSAGE: —

The following conduits were overlooked on the 18" rule criteria, please provide an 18" rule for the following associated conduit & supports

- 1 ICX001UF
- 2 ICX920dB

ATTACH 10
E-218
SM. 134 OF 159

Supports:

- Rerunway ICX920dB — CR 11KS 1
- Rerunway ICX001UF — CR 11KS-1, CR 13 UL01, CR 13FS-1, CR 13FS-2, CR 93A-1, CR 93A-2, CR 93A-3, CR 93A-1
- CR 15UF-1, CR 155F-1 CR 92F-1

S/1/55
DATE

W. Walker
SIGNATURE

4367
TELEPHONE

REPLY:

1

cc.

DATE

SIGNATURE

TELEPHONE

6 608 128

INTEROFFICE MEMORANDUM

12210

SUBJECT

ATTACH. 10

DATE 4/9/64

E-218

FROM: K. HARDY

TO: R. BEAUDET

S.H. 135 OF 159

CC: PQC
CONSTRUCTION

In order to facilitate Appendix "R" Release E-051 the following will be implemented on a as needed basis. The Appendix "R" conduit ICC9040A1 in the affected Fire Zone areas are supported by the following supports.

- | | | | | |
|----------------------|----------------------|----------------------|-------------------------------|-----------|
| 1. <u>ITC 3020</u> | 7. <u>CR-31A-1</u> | 13. <u>CR-16FS-1</u> | 19. <u>CU 1B D6D1</u> | 25. _____ |
| 2. <u>CR-33K-1</u> | 8. <u>CR-30AS-1</u> | 14. <u>CR-14FS-1</u> | 20. <u>CR-11KS-1</u> | 26. _____ |
| 3. <u>CR-33K-1</u> | 9. <u>CR-28AS-2</u> | 15. <u>CR-13FS-4</u> | 21. <u>ENTERES & T.M.</u> | 27. _____ |
| 4. <u>CR-32A-2</u> | 10. <u>CR-28AS-1</u> | 16. <u>CR-13FS-3</u> | 22. _____ | 28. _____ |
| 5. <u>CU 1C-0046</u> | 11. <u>CR-27A-1</u> | 17. <u>CR-13FS-2</u> | 23. _____ | 29. _____ |
| 6. <u>CR-32A-1</u> | 12. <u>CR-26A1-1</u> | 18. <u>CR-13FS-1</u> | 24. _____ | 30. _____ |

PARTIAL INSD OF CONDUIT ONLY WITHIN CONT. BLDG

All other associated conduit will be inspected for attachment point only based on 18" rule criteria. This will not impact the integrity or future raceway inspection. The associated conduit per support is as follows.

- | | | | | |
|----------------------|------------------|--------------------|---|------------------|
| 1. <u>N/A</u> | | | | |
| 2. <u>ICC9090A3</u> | <u>ICC9090A4</u> | | | |
| 3. <u>ICC9090A3</u> | <u>ICC9090A4</u> | <u>1CX410DA</u> | <u>ICC910DA</u> | <u>1" COMM.</u> |
| 4. <u>ICC4040A3</u> | <u>ICC9090A4</u> | <u>1" COMM.</u> | <u>1CX410DA</u> | |
| 5. <u>ICC4040A3</u> | <u>ICC9090A4</u> | <u>1" COMM. m.</u> | <u>1CX410DA</u> | |
| 6. <u>ICC4040A3</u> | <u>ICC9090A4</u> | <u>1" COMM. m.</u> | <u>1CX410DA</u> | |
| 7. <u>ICC9040A2</u> | <u>1CX439DA1</u> | <u>1" COMM.</u> | <u>1CC006BA</u> | <u>1CC006BC</u> |
| 8. <u>ICC4040A2</u> | <u>1CC006BC</u> | <u>.75" LTG</u> | <u>1CX439DA1</u> | |
| 9. <u>1CX439DA1</u> | <u>1CX409DA1</u> | <u>1CC066NA</u> | <u>1" SMK DET</u> | <u>1CX418DA1</u> |
| 10. <u>1CX439DA1</u> | <u>1CC066NA</u> | <u>1CX4040A1</u> | <u>1" SMK DET</u> | <u>1CL004NC</u> |
| 11. <u>1CX4040A1</u> | <u>1CC066NA</u> | <u>1CX4040A1</u> | <u>1CX418DA1 - 1CX439DA1 - 1CL004NC</u> | |
| 12. <u>ICC9090A2</u> | <u>1CX4040A1</u> | <u>1CC418DA</u> | <u>1CX4090C - 1CC9090A3 - 1CC9040A4</u> | |
| <u>1CX439DA1</u> | <u>1CX4040A1</u> | <u>1CX4090A</u> | <u>1CX410DA</u> | <u>1CX418DA1</u> |
| 13. <u>1CX4040C</u> | <u>1CC418DA</u> | <u>1CC4040A2</u> | <u>1CX4040A1</u> | |
| 14. <u>1CC418DA</u> | <u>1CC4040A2</u> | <u>1CX4040A1</u> | | |
| 15. <u>1CC418DA</u> | <u>1CC4040A2</u> | <u>1CX4040A1</u> | <u>1CX410DA - 1CX4040A3 - 2.1 COMM.</u> | |
| 16. <u>1CC418DA</u> | <u>1CC4040A2</u> | <u>1CX4040A1</u> | <u>1CX4040A - 1CX4040A3 - 2.1 COMM.</u> | |
| 17. <u>1CC418DA</u> | <u>1CC4040A2</u> | <u>1CX4040A1</u> | <u>1CX410DA - 1CX4040A3 - 2.1 COMM.</u> | |
| 18. <u>1CX4040A</u> | <u>1CX4040A2</u> | <u>1CX4040A1</u> | <u>1CX410DA</u> | <u>1CX4040A3</u> |

SUBJECT

TO: R. BEAUDET

ATTACH. 10
E-218
SH. 136 OF 159

12310

DATE 4/9/85

FROM: K. HARDY

CC: PQC
CONSTRUCTION

In order to facilitate Appendix "R" Release E-051 the following will be implemented on a as needed basis. The Appendix "R" conduit ICX909ΦA1 in the affected Fire Zone areas are supported by the following supports.

- | | | | | |
|---------------------------|-----------------------|----------------------|--|-----------|
| 1. <u>ITX001Φ</u> | 7. <u>CR-30AS-1</u> | 13. <u>CR-14FS-1</u> | 19. <u>CU-1B-06C1</u> | 25. _____ |
| 2. <u>NO # CL. K. 035</u> | 8. <u>CR-29A-1</u> | 14. <u>CR-14FS-1</u> | 20. <u>CR-11KS-1</u> | 26. _____ |
| 3. <u>CR-33K-1</u> | 9. <u>CR-2BAS-2</u> | 15. <u>CR-13FS-4</u> | 21. <u>LEAVES CONTR. SUPP. TO B PLUMBING</u> | 27. _____ |
| 4. <u>CR-32A-2</u> | 10. <u>CR-2BAS-1</u> | 16. <u>CR-13FS-3</u> | 22. _____ | 28. _____ |
| 5. <u>CR-32A-1</u> | 11. <u>CR-27A-1</u> | 17. <u>CR-13FS-2</u> | 23. _____ | 29. _____ |
| 6. <u>CR-31A-1</u> | 12. <u>CR-26AIS-1</u> | 18. <u>CR-13FS-1</u> | 24. _____ | 30. _____ |

(PARTIAL - WITHIN CONTROL BLDG. ONLY)

All other associated conduit will be inspected for attachment point only based on the 18" rule criteria. This will not impact the integrity or future raceway inspections. The associated conduit per support is as follows.

- | | | | | |
|----------------------|------------------|----------------------|----------------------|----------------------|
| 1. <u>N/A</u> | _____ | _____ | _____ | _____ |
| 2. <u>ICC909ΦA9</u> | <u>ICC909ΦA1</u> | _____ | _____ | _____ |
| 3. <u>ICC006BA</u> | <u>ICX939ΦA1</u> | <u>ICX91BΦA1</u> | _____ | _____ |
| 4. <u>ICC006BA</u> | <u>ICX939ΦA1</u> | <u>ICM002BE</u> | <u>3/4" UNMARKED</u> | _____ |
| 5. <u>ICC006BA</u> | _____ | _____ | _____ | _____ |
| 6. <u>ICC006BC</u> | <u>ICC006BA</u> | <u>1" SMOKE DET.</u> | _____ | _____ |
| 7. <u>ICC006BC</u> | <u>3/4" LTC.</u> | _____ | _____ | _____ |
| 8. <u>ICX91BΦA</u> | <u>ICC066NA</u> | _____ | _____ | _____ |
| 9. <u>ICC909ΦA1</u> | <u>ICX939ΦA1</u> | <u>ICC066NA</u> | <u>ICX91BΦA1</u> | <u>1" SMOKE DET.</u> |
| 10. <u>ICC909ΦA1</u> | <u>ICX939ΦA1</u> | <u>ICC066NA</u> | <u>ICL004NC</u> | <u>1" SMOKE DET.</u> |
| 11. <u>ICC909ΦA1</u> | <u>ICX939ΦA1</u> | <u>ICC066NA</u> | <u>ICL004NC</u> | <u>ICK004ND</u> |
| | <u>ICX91BΦA1</u> | _____ | _____ | _____ |
| 12. <u>ICC909ΦA1</u> | <u>ICC909ΦA2</u> | <u>ICC91BΦA</u> | <u>ICK909ΦC</u> | <u>ICC909ΦA3</u> |
| | <u>ICX939ΦA1</u> | <u>ICK004ND</u> | <u>ICX002ΦA</u> | <u>ICX910ΦA</u> |
| | _____ | _____ | _____ | _____ |
| 13. <u>ICK909ΦC</u> | <u>ICC909ΦA1</u> | <u>ICC909ΦA2</u> | _____ | _____ |
| 14. <u>ICC91BΦA</u> | <u>ICC909ΦA1</u> | <u>ICC909ΦA2</u> | _____ | _____ |
| 15. <u>ICX910ΦA</u> | <u>ICC909ΦA2</u> | <u>ICC909ΦA1</u> | <u>ICK909ΦAB</u> | <u>ICC91BΦA</u> |
| | <u>1" COMM.</u> | <u>1" COMM.</u> | _____ | _____ |

SUBJECT

NO NO 12210

DATE 4/9/85

FROM K. HARDY

TO: R. BEAUDET

ATTACH. 10
E-218
SM 138 OF 159

CC: PQC
CONSTRUCTION

In order to facilitate Appendix "R" Release E-051 the following will be implemented on a as needed basis. The Appendix "R" conduit ICK909ΦE2 in the affected Fire Zone areas are supported by the following supports.

- | | | | | |
|---|--|----------------------|---|-----------|
| 1. <u>ITK001Φ</u> | 7. <u>No Φ</u> | 13. <u>CR-15FS-1</u> | 19. <u>CL-1B-005B</u> | 25. _____ |
| 2. <u>NE Φ</u> <small>CL 30 0417</small> | 8. <u>FLR. OPEN'G</u> <small>24. 36' 0"</small> | 14. <u>CR-14FS-1</u> | 20. <u>CR-4K-1</u> | 26. _____ |
| 3. <u>No Φ</u> <small>CL 30 0416</small> | 9. <u>CL-1A-093T</u> | 15. <u>CR-13FS-4</u> | 21. <u>LEAVES CENTER</u> <u>FLR. TO B</u> <u>TUNNEL</u> | 27. _____ |
| 4. <u>FLR. OPEN'G</u> <u>FL. 115' 0"</u> | 10. <u>No Φ</u> | 16. <u>CR-13FS-3</u> | 22. _____ | 28. _____ |
| 5. <u>FLR. OPEN'G</u> <u>FL. 115' 0"</u> | 11. <u>CL-1B-093T</u> | 17. <u>CR-13FS-2</u> | 23. _____ | 29. _____ |
| 6. <u>FLR. OPEN'G</u> <u>FL. 115' 0"</u> | 12. <u>CR-15FS-2</u> | 18. <u>CR-13FS-1</u> | 24. _____ | 30. _____ |

All other associated conduit will be inspected for attachment point only based on the 18" rule criteria. This will not impact the integrity or future raceway inspections. The associated conduit per support is as follows.

20
282
20
581

C-6

- | | | | | |
|----------------------|------------------|------------------|------------------|------------------|
| 1. <u>N/A</u> | _____ | _____ | _____ | _____ |
| 2. <u>ICH001ΦB</u> | <u>ICC939ΦC1</u> | <u>ICC939ΦA1</u> | <u>ICH002ΦB</u> | _____ |
| 3. <u>ICK909ΦA1</u> | _____ | _____ | _____ | _____ |
| 4. <u>N/A</u> | _____ | _____ | _____ | _____ |
| 5. <u>ICK909ΦA1</u> | <u>ICC909ΦC1</u> | <u>ICC939ΦA1</u> | <u>ICH002ΦB</u> | _____ |
| 6. <u>ICK909ΦA1</u> | <u>ICC909ΦC1</u> | <u>ICC939ΦA1</u> | <u>ICH002ΦB</u> | _____ |
| 7. <u>ICL909ΦA1</u> | <u>ICH001ΦB</u> | <u>ICK939ΦA1</u> | <u>ICK909ΦD1</u> | _____ |
| 8. <u>N/A</u> | _____ | _____ | _____ | _____ |
| 9. <u>ICH001ΦB</u> | <u>ICL909ΦA1</u> | <u>ICK939ΦA1</u> | <u>ICK909ΦD1</u> | _____ |
| 10. <u>ICL909ΦA1</u> | _____ | _____ | _____ | _____ |
| 11. <u>ICL909ΦA1</u> | _____ | _____ | _____ | _____ |
| 12. <u>ICC002ΦJ</u> | <u>ICK909ΦAB</u> | <u>ICL909ΦA</u> | <u>ICH003ΦA</u> | <u>ICK909ΦA1</u> |
| 13. <u>ICC002ΦJ</u> | <u>ICK909ΦAB</u> | <u>ICL909ΦA</u> | <u>ICH003ΦA</u> | <u>ICK909ΦA1</u> |
| 14. <u>ICK909ΦAB</u> | <u>ICL909ΦA1</u> | <u>ICK909ΦA1</u> | <u>ICH003ΦA</u> | <u>ICK909ΦC</u> |
| 15. <u>ICC002ΦJ</u> | <u>ICC002ΦJ</u> | _____ | _____ | _____ |
| 16. <u>ICC002ΦJ</u> | <u>ICK918ΦA1</u> | <u>ICC909ΦA3</u> | <u>ICC909ΦA9</u> | _____ |
| 17. <u>ICC002ΦJ</u> | <u>ICK918ΦA1</u> | <u>ICC909ΦA3</u> | <u>ICC909ΦA9</u> | <u>ICC909ΦC1</u> |
| 18. <u>ICC002ΦJ</u> | <u>ICK918ΦA1</u> | <u>ICC909ΦA3</u> | <u>ICC909ΦA9</u> | <u>ICC909ΦC1</u> |
| 19. <u>ICC909ΦC7</u> | <u>ICK918ΦA1</u> | <u>ICC909ΦA3</u> | <u>ICC909ΦA9</u> | <u>ICC909ΦC1</u> |

INTEROFFICE MEMORANDUM

JO NO 12210
WO NO

SUBJECT

ATTACH 10
E-218
SH 140 OF 159

DATE

FROM: K. HARDY

TO: R. BEAUDET

CC: PQC
CONSTRUCTION

In order to facilitate Appendix "R" Release ELSI the following will be implemented on a as needed basis. The Appendix "R" conduit ICC9090E2 in the affected Fire Zone areas are supported by the following supports.

- | | | | | |
|----------------------|---------------------|----------------------|-----------------------|-----------|
| 1. <u>CR-4K-1</u> | 7. <u>CR-13FS-4</u> | 13. <u>CR-152A-1</u> | 19. <u>CR-92F-1</u> | 25. _____ |
| 2. <u>CR-4K-1</u> | 8. <u>CR-14FS-1</u> | 14. <u>CR-93A-2</u> | 20. <u>CR-56E-5</u> | 26. _____ |
| 3. <u>CR-1A-0058</u> | 9. <u>CR-035</u> | 15. <u>CR-93A-3</u> | 21. <u>CR-44E-1</u> | 27. _____ |
| 4. <u>CR-13FS-1</u> | 10. <u>CR-61A-2</u> | 16. <u>CR-95A-1</u> | 22. <u>CR-47A-1</u> | 28. _____ |
| 5. <u>CR-13FS-2</u> | 11. <u>CR-61A-1</u> | 17. <u>CR-156F-1</u> | 23. <u>CR-10-0097</u> | 29. _____ |
| 6. <u>CR-13FS-3</u> | 12. <u>CR-62A-1</u> | 18. <u>CR-155F-1</u> | 24. <u>ICC00106</u> | 30. _____ |

All other associated conduit will be inspected for attachment point only based on the 18" rule criteria. This will not impact the integrity or future raceway inspection. The associated conduit per support is as follows.

- | | | | | |
|--|------------------|---|------------------|-----------------|
| 1. <u>NA</u> | _____ | _____ | _____ | _____ |
| 2. <u>ICC9090E2</u> | <u>KH0030A</u> | <u>1TXDWN</u> | _____ | _____ |
| 3. <u>ICC9090E2</u> | <u>IC10036A</u> | _____ | _____ | _____ |
| 4. <u>ICL9090C</u> | <u>ICK9090A1</u> | <u>IC140030A</u> | <u>ICL9090A1</u> | _____ |
| 5. <u>ICK9090C</u> | <u>ICK9090A1</u> | <u>IC140030A</u> | <u>ICL9090A1</u> | _____ |
| 6. <u>ICK9090C</u> | <u>ICK9090A1</u> | <u>IC140030A</u> | <u>ICL9090A1</u> | _____ |
| 7. <u>ICK9090C</u> | <u>ICK9090A1</u> | <u>IC140030A</u> | <u>ICL9090A1</u> | _____ |
| 8. <u>ICK9090A9</u> | <u>ICL9090A1</u> | <u>ICK9090A1 - KH0030A - ICC9090C - ICK9090E2</u> | _____ | _____ |
| 9. <u>ICC00205</u> | _____ | _____ | _____ | _____ |
| 10. <u>ICX918UD</u> | _____ | _____ | _____ | _____ |
| 11. <u>ICX918UD</u> | _____ | _____ | _____ | _____ |
| 12. <u>ICX918UD</u> | _____ | _____ | _____ | _____ |
| 13. <u>ICX918UD</u> | _____ | _____ | _____ | _____ |
| 14. <u>2-1" LTG</u> | <u>KX918UD</u> | <u>ICX9100A</u> | <u>ICX9100A</u> | _____ |
| 15. <u>2-1" LTG</u> | <u>KX918UD</u> | _____ | _____ | _____ |
| 16. <u>ICX918UD</u> | <u>ICX939UN</u> | <u>KX939TA1</u> | _____ | _____ |
| 17. <u>KX939UA1</u> | <u>KX939TA1</u> | _____ | _____ | _____ |
| 18. <u>ICC918KB</u> | <u>ICC918KA</u> | <u>KC9180A</u> | <u>ICX939UA1</u> | <u>KX939TA1</u> |
| 19. <u>ICX918UD - ICC9090C1 - ICX918UB - ICC00205 - ICX918UA - KC918KA - ICC918KB - ICC00205 - KC918</u> | _____ | _____ | _____ | _____ |

ATTACH. 10

E-21B

SH. 141 OF 159

| | | | | | |
|-----|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| 20. | <u>ICC9184A</u> | <u>KC918KA</u> | <u>KC918KB</u> | <u>ITC 006B</u> | <u> </u> |
| 21. | <u>ITC 004B</u> | <u>KX918UD</u> | <u> </u> | <u> </u> | <u> </u> |
| 22. | <u>ITC 004B</u> | <u> </u> | <u> </u> | <u> </u> | <u> </u> |
| 23. | <u>ITC 0010</u> | <u> </u> | <u> </u> | <u> </u> | <u> </u> |
| 24. | <u>NA</u> | <u> </u> | <u> </u> | <u> </u> | <u> </u> |
| 25. | <u> </u> | <u> </u> | <u> </u> | <u> </u> | <u> </u> |
| 27. | <u> </u> | <u> </u> | <u> </u> | <u> </u> | <u> </u> |
| 28. | <u> </u> | <u> </u> | <u> </u> | <u> </u> | <u> </u> |
| 29. | <u> </u> | <u> </u> | <u> </u> | <u> </u> | <u> </u> |
| 30. | <u> </u> | <u> </u> | <u> </u> | <u> </u> | <u> </u> |
| 31. | <u> </u> | <u> </u> | <u> </u> | <u> </u> | <u> </u> |
| 32. | <u> </u> | <u> </u> | <u> </u> | <u> </u> | <u> </u> |
| 33. | <u> </u> | <u> </u> | <u> </u> | <u> </u> | <u> </u> |
| 34. | <u> </u> | <u> </u> | <u> </u> | <u> </u> | <u> </u> |
| 35. | <u> </u> | <u> </u> | <u> </u> | <u> </u> | <u> </u> |
| 36. | <u> </u> | <u> </u> | <u> </u> | <u> </u> | <u> </u> |
| 37. | <u> </u> | <u> </u> | <u> </u> | <u> </u> | <u> </u> |
| 38. | <u> </u> | <u> </u> | <u> </u> | <u> </u> | <u> </u> |
| 39. | <u> </u> | <u> </u> | <u> </u> | <u> </u> | <u> </u> |
| 40. | <u> </u> | <u> </u> | <u> </u> | <u> </u> | <u> </u> |

APPENDIX R INSULATION RELEASE NO. E-059

GULF STATES UTILITIES

RIVER BEND STATION

THE FOLLOWING ITEMS ARE RELEASED FOR INSTALLATION OF FIRE BARRIER MATERIAL: **JUNCTION BOX: 1#JBD191**

*ATTACH 10
E-218
SM. 142 OF 159*

BUILDING/ELEVATIONS: *CONTRDL BLDG EL 115'/116'*

LIMITS/RESTRICTIONS:

APPLICABLE DRAWINGS: *EE-34YA-YD*

SPECIAL INSTRUCTIONS:

CMS ACCOUNT: *710-1650-1876*

COMPLETION DATE:

| BS&W DISCIPLINE | CONSTRUCTION SIGNATURE&DATE | ENGINEERING SIGNATURE&DATE | FDC SIGNATURE&DATE |
|---|----------------------------------|----------------------------|----------------------------|
| ELECTRICAL conduits cable tray supports cable | <i>NA</i> | <i>N/A</i> | <i>NA DLM 4-28-85</i> |
| | <i>NA</i> | <i>N/A</i> | <i>NA DLM 4-28-85</i> |
| | <i>W. J. [Signature] 9/25/85</i> | <i>NA</i> | <i>[Signature] 4-28-85</i> |
| | <i>NA</i> | <i>N/A</i> | <i>[Signature] 5-14-85</i> |
| INSTRUMENTS PIPING STRUCTURAL OTHER <i>J. Boxes</i> | <i>N/A</i> | <i>N/A</i> | <i>N/A</i> |
| | <i>N/A</i> | <i>N/A</i> | <i>N/A</i> |
| | <i>N/A</i> | <i>N/A</i> | <i>N/A</i> |
| | <i>W. J. [Signature] 4/24/86</i> | <i>NA</i> | <i>[Signature] 4-28-85</i> |

CONCURRENCE: *[Signature]*
BS&W INSULATION ENGINEER

5/16/85
DATE

INSULATION COORDINATOR

DATE

APPLICABLE CCCP FORMS:

COMMENTS:

THE ABOVE DESCRIBED WORK HAS BEEN COMPLETED

ANCO CONSTRUCTION REP. DATE

ANCO QA/QC REP. DATE

INTEROFFICE MEMORANDUM

DATE

SUBJECT

12210

DATE

FROM: K. BARDY

TO: R. BEAUDET

ATTACH. 10

E-218

SH. 143 OF 159

CC: PQC
CONSTRUCTION

In order to facilitate Appendix "R" Release EDS9, ED67 the following will be implemented on a as needed basis. The Appendix "R" conduit 4360025, 0 in the affected Fire Zone areas are supported by the following supports.

- | | | | | |
|-------------------|-----------|-----------|-----------|-----------|
| 1. <u>JB*0025</u> | 7. _____ | 13. _____ | 19. _____ | 25. _____ |
| 2. <u>JB*041</u> | 8. _____ | 14. _____ | 20. _____ | 26. _____ |
| 3. _____ | 9. _____ | 15. _____ | 21. _____ | 27. _____ |
| 4. _____ | 10. _____ | 16. _____ | 22. _____ | 28. _____ |
| 5. _____ | 11. _____ | 17. _____ | 23. _____ | 29. _____ |
| 6. _____ | 12. _____ | 18. _____ | 24. _____ | 30. _____ |

All other associated conduit will be inspected for attachment point only based 18" rule criteria. This will not impact the integrity or future raceway inspection. The associated conduit per support is as follows.

- | | | | | |
|---------------------------|------------------------------------|-------|-------|-------|
| 1. <u>ICC059RC-1 1/2"</u> | <u>ICC019BB2-1 1/2"</u> | _____ | _____ | _____ |
| 2. _____ | <u>(ICC052RC2-3") + Box to Box</u> | _____ | _____ | _____ |
| _____ | <u>ICC052RC3-2"</u> | _____ | _____ | _____ |
| _____ | <u>ICC049NA-1"</u> | _____ | _____ | _____ |
| _____ | <u>3/4" R1 (SMOKE DET)</u> | _____ | _____ | _____ |
| _____ | <u>3" & No ID</u> | _____ | _____ | _____ |
| 7. _____ | _____ | _____ | _____ | _____ |
| 8. _____ | _____ | _____ | _____ | _____ |
| 9. _____ | _____ | _____ | _____ | _____ |
| 10. _____ | _____ | _____ | _____ | _____ |
| 11. _____ | _____ | _____ | _____ | _____ |
| 12. _____ | _____ | _____ | _____ | _____ |
| 13. _____ | _____ | _____ | _____ | _____ |
| 14. _____ | _____ | _____ | _____ | _____ |
| 15. _____ | _____ | _____ | _____ | _____ |
| 16. _____ | _____ | _____ | _____ | _____ |
| 17. _____ | _____ | _____ | _____ | _____ |
| 18. _____ | _____ | _____ | _____ | _____ |
| 19. _____ | _____ | _____ | _____ | _____ |
| 20. _____ | _____ | _____ | _____ | _____ |

APPENDIX R INSULATION RELEASE NO. E-067

GULF STATES UTILITIES

RIVER BDD STATION

THE FOLLOWING ITEMS ARE RELEASED FOR INSTALLATION OF FIRE BARRIER MATERIAL:

JUNCTION Box: 1 * JB0025
1 * JB0024

ATTACH. 10
E-218
SH. 144 OF 159

FIRE ZONE C-17

BUILDING/ELEVATIONS: CONTROL BLDG. 115' / 116'

LIMITS/RESTRICTIONS:

APPLICABLE DRAWINGS: EE-34YA-3 - EE-34YE-3

SPECIAL INSTRUCTIONS: INCLUDED ARE SUPPORTS AND 18" CRITERIA ASSOCIATED WITH

THE ABOVE LISTED RACEWAY(S) (SEE ATTACHMENT(S))

CMS ACCOUNT: 710-1650-1876
710-4650-1877 COMPLETION DATE:

| SM DISCIPLINE | CONSTRUCTION SIGNATURE&DATE | ENGINEERING SIGNATURE&DATE | FOC SIGNATURE&DATE |
|---|-----------------------------|----------------------------|--------------------|
| ELECTRICAL conduits cable tray supports cable | _____ | _____ | _____ |
| INSTRUMENTS PIPING STRUCTURAL OTHER | _____ | _____ | _____ |

CONCURRENCE: _____
SES INSULATION ENGINEER DATE

INSULATION COORDINATOR DATE

APPLICABLE COOP FORMS:

COMMENTS: E & OCR @ 22.570A

THE ABOVE DESCRIBED WORK HAS BEEN COMPLETED

AND CONSTRUCTION REP. DATE

AND QA/QC REP. DATE

INTEROFFICE MEMORANDUM
& cover

JOB NO. 12210
WO NO.

SUBJECT

ATTACH. 10

DATE

E-218

FROM: K. HARDY

TO: R. BEAUDET

SH. 145 OF 159

CC: PQC
CONSTRUCTION

In order to facilitate Appendix "R" Release E 067 the following will be implemented on a as needed basis. The Appendix "R" conduit 1# JB0024 in the affected Fire Zone areas are supported by the following supports.

- | | | | | |
|------------------|-----------|-----------|-----------|-----------|
| 1. <u>JB0024</u> | 7. _____ | 13. _____ | 19. _____ | 25. _____ |
| 2. _____ | 8. _____ | 14. _____ | 20. _____ | 26. _____ |
| 3. _____ | 9. _____ | 15. _____ | 21. _____ | 27. _____ |
| 4. _____ | 10. _____ | 16. _____ | 22. _____ | 28. _____ |
| 5. _____ | 11. _____ | 17. _____ | 23. _____ | 29. _____ |
| 6. _____ | 12. _____ | 18. _____ | 24. _____ | 30. _____ |

All other associated conduit will be inspected for attachment point only based on t 18" rule criteria. This will not impact the integrity or future raceway inspection. The associated conduit per support is as follows.

- | | | | |
|----------------------------|-------|-------|-------|
| 1. <u>ICC920BFS-2"</u> | _____ | _____ | _____ |
| <u>ICC920BF4-2"</u> | _____ | _____ | _____ |
| <u>2" Q SPARE</u> | _____ | _____ | _____ |
| <u>2" Q SPARE</u> | _____ | _____ | _____ |
| <u>3/4" Q NO ID</u> | _____ | _____ | _____ |
| <u>ICC052BC2-3"</u> | _____ | _____ | _____ |
| <u>3/4" RI (SAME DET.)</u> | _____ | _____ | _____ |
| <u>ICC049NA-1"</u> | _____ | _____ | _____ |
| <u>ICC059RC-1 1/2"</u> | _____ | _____ | _____ |
| 10. _____ | _____ | _____ | _____ |
| 11. _____ | _____ | _____ | _____ |
| 12. _____ | _____ | _____ | _____ |
| 13. _____ | _____ | _____ | _____ |
| 14. _____ | _____ | _____ | _____ |
| 15. _____ | _____ | _____ | _____ |
| 16. _____ | _____ | _____ | _____ |
| 17. _____ | _____ | _____ | _____ |
| 18. _____ | _____ | _____ | _____ |
| 19. _____ | _____ | _____ | _____ |
| 20. _____ | _____ | _____ | _____ |

INTEROFFICE MEMORANDUM

4-00000

SUBJECT

10. 00 12210
WB. NO.

DATE

FROM: K. BARDY

TO: R. BEAUDET

ATTACH 10
E-218
SH 146 OF 159

CC: FQC
CONSTRUCTION

In order to facilitate Appendix "R" Release ED59, ED67 the following will be implemented on a as needed basis. The Appendix "R" conduit 1#360025, D14 in the affected Fire Zone areas are supported by the following supports.

- | | | | | |
|-------------------|-----------|-----------|-----------|-----------|
| 1. <u>JB*0025</u> | 7. _____ | 13. _____ | 19. _____ | 25. _____ |
| 2. <u>JB*0111</u> | 8. _____ | 14. _____ | 20. _____ | 26. _____ |
| 3. _____ | 9. _____ | 15. _____ | 21. _____ | 27. _____ |
| 4. _____ | 10. _____ | 16. _____ | 22. _____ | 28. _____ |
| 5. _____ | 11. _____ | 17. _____ | 23. _____ | 29. _____ |
| 6. _____ | 12. _____ | 18. _____ | 24. _____ | 30. _____ |

All other associated conduit will be inspected for attachment point only based on 18" rule criteria. This will not impact the integrity or future raceway inspection. The associated conduit per support is as follows.

- | | | | | |
|---------------------------|------------------------------|---------------------|-------|-------|
| 1. <u>1CC059RC-1 1/2"</u> | <u>1CC019BB2-1 1/2"</u> | _____ | _____ | _____ |
| 2. _____ | <u>(1CC052B2-3")</u> | <u>+ Box to Box</u> | _____ | _____ |
| _____ | <u>1CC052B3-2"</u> | _____ | _____ | _____ |
| _____ | <u>1CC049NA-1"</u> | _____ | _____ | _____ |
| _____ | <u>3/4" RFI (SMOKE DET.)</u> | _____ | _____ | _____ |
| _____ | <u>3" & No ID</u> | _____ | _____ | _____ |
| 7. _____ | _____ | _____ | _____ | _____ |
| 8. _____ | _____ | _____ | _____ | _____ |
| 9. _____ | _____ | _____ | _____ | _____ |
| 10. _____ | _____ | _____ | _____ | _____ |
| 11. _____ | _____ | _____ | _____ | _____ |
| 12. _____ | _____ | _____ | _____ | _____ |
| 13. _____ | _____ | _____ | _____ | _____ |
| 14. _____ | _____ | _____ | _____ | _____ |
| 15. _____ | _____ | _____ | _____ | _____ |
| 16. _____ | _____ | _____ | _____ | _____ |
| 17. _____ | _____ | _____ | _____ | _____ |
| 18. _____ | _____ | _____ | _____ | _____ |
| 19. _____ | _____ | _____ | _____ | _____ |
| 20. _____ | _____ | _____ | _____ | _____ |

APPENDIX R INSULATION RELEASE NO. E-068

STATE UTILITIES

RIVER BEND STATION

THE FOLLOWING ITEMS ARE RELEASED FOR INSTALLATION OF FIRE BARRIER MATERIAL: Conduit: 1CK003BJ

ATTACH 10
E-218
SH. 147 OF 159

FIRE ZONE C24

BUILDING/ELEVATIONS: CONTROL BLDG EL 115' / 116'

LIMITS/RESTRICTIONS:

APPLICABLE DRAWINGS: EE-347A-3 - EE-347E-3

SPECIAL INSTRUCTIONS: INCLUDED ARE SUPPORTS AND 8" CRITERIA ASSOCIATED WITH THE ABOVE LISTED ROCEMAN (SEE ATTACHMENT A)

CMS ACCOUNT: 710-4650-1876
710-1650-1877

COMPLETION DATE:

| SW DISCIPLINE | CONSTRUCTION SIGNATURE & DATE | ENGINEERING SIGNATURE & DATE | FDC SIGNATURE & DATE |
|---|-------------------------------|------------------------------|----------------------|
| ELECTRICAL conduits cable tray supports cable | _____ | _____ | _____ |
| INSTRUMENTS PIPING STRUCTURAL OTHER | _____ | _____ | _____ |

CONCURRENCE: _____
DES INSULATION ENGINEER DATE

INSULATION COORDINATOR DATE

APPLICABLE CDDP FORMS:

COMMENTS:

THE ABOVE DESCRIBED WORK HAS BEEN COMPLETED

ANCO CONSTRUCTION REP. DATE

ANCO QA/QC REP. DATE

INTEROFFICE MEMORANDUM

DATE

JOB NO 12210
WB NO

SUBJECT

ATTACH. 10
E-218
SH 148 OF 159

DATE

FROM: R. HARDY

TO: R. BEAUDET

CC: PQC
CONSTRUCTION

In order to facilitate Appendix "R" Release EDUY the following will be implemented on a as needed basis. The Appendix "R" conduit 1CK 0038 in the affected Fire Zone areas are supported by the following supports.

- | | | | | |
|----------------------|-----------|-----------|-----------|-----------|
| 1. <u>CU-3C-0297</u> | 7. _____ | 13. _____ | 19. _____ | 25. _____ |
| 2. <u>CU-3C-0296</u> | 8. _____ | 14. _____ | 20. _____ | 26. _____ |
| 3. <u>CU-3C-0294</u> | 9. _____ | 15. _____ | 21. _____ | 27. _____ |
| 4. <u>CU-3C-0298</u> | 10. _____ | 16. _____ | 22. _____ | 28. _____ |
| 5. _____ | 11. _____ | 17. _____ | 23. _____ | 29. _____ |
| 6. _____ | 12. _____ | 18. _____ | 24. _____ | 30. _____ |

All other associated conduit will be inspected for attachment point only based 18" rule criteria. This will not impact the integrity or future raceway inspection. The associated conduit per support is as follows.

- | | | | | |
|---------------------|------------------------|------------------------|------------------|-------|
| 1. <u>1CL920BE</u> | <u>1CL920BB</u> | <u>1.5" Fire PROT.</u> | <u>2" NO ID.</u> | _____ |
| 2. <u>1CL920BE</u> | <u>1CL920BB</u> | <u>1.5" Fire PROT.</u> | <u>2" NO ID.</u> | _____ |
| 3. <u>.75" SEP</u> | <u>1.5" Fire PROT.</u> | <u>2" NO ID.</u> | _____ | _____ |
| 4. <u>2" NO ID.</u> | <u>1.5" Fire PROT.</u> | <u>1CL920BB</u> | _____ | _____ |
| 5. _____ | _____ | _____ | _____ | _____ |
| 6. _____ | _____ | _____ | _____ | _____ |
| 7. _____ | _____ | _____ | _____ | _____ |
| 8. _____ | _____ | _____ | _____ | _____ |
| 9. _____ | _____ | _____ | _____ | _____ |
| 10. _____ | _____ | _____ | _____ | _____ |
| 11. _____ | _____ | _____ | _____ | _____ |
| 12. _____ | _____ | _____ | _____ | _____ |
| 13. _____ | _____ | _____ | _____ | _____ |
| 14. _____ | _____ | _____ | _____ | _____ |
| 15. _____ | _____ | _____ | _____ | _____ |
| 16. _____ | _____ | _____ | _____ | _____ |
| 17. _____ | _____ | _____ | _____ | _____ |
| 18. _____ | _____ | _____ | _____ | _____ |
| 19. _____ | _____ | _____ | _____ | _____ |
| 20. _____ | _____ | _____ | _____ | _____ |

INTEROFFICE MEMORANDUM

10 08 12210
10 08 12210

SUBJECT

ATTACH. 10
E-218
SH 149 OF 159

DATE

FROM: K. BARDY

TO: R. BEAUDET

CC: FQC
CONSTRUCTION

In order to facilitate Appendix "R" Release EDUG the following will be implemented on a as needed basis. The Appendix "R" conduit 1CK 203B in the affected Fire Zone areas are supported by the following supports.

- | | | | | |
|----------------------|-----------|-----------|-----------|-----------|
| 1. <u>CU-3C-0297</u> | 7. _____ | 13. _____ | 19. _____ | 25. _____ |
| 2. <u>CU-3C-0296</u> | 8. _____ | 14. _____ | 20. _____ | 26. _____ |
| 3. <u>CU-3C-0314</u> | 9. _____ | 15. _____ | 21. _____ | 27. _____ |
| 4. <u>CU-3C-0298</u> | 10. _____ | 16. _____ | 22. _____ | 28. _____ |
| 5. _____ | 11. _____ | 17. _____ | 23. _____ | 29. _____ |
| 6. _____ | 12. _____ | 18. _____ | 24. _____ | 30. _____ |

All other associated conduit will be inspected for attachment point only based 18" rule criteria. This will not impact the integrity or future raceway inspection. The associated conduit per support is as follows.

- | | | | | |
|-----------------------|------------------------|------------------------|------------------|-------|
| 1. <u>1CL920BE</u> | <u>1CL920BB</u> | <u>1.5" Fire PROT.</u> | <u>2" NO ID.</u> | _____ |
| 2. <u>1CL920BE</u> | <u>1CL920BB</u> | <u>1.5" Fire PROT.</u> | <u>2" NO ID.</u> | _____ |
| 3. <u>... 75" SEC</u> | <u>1.5" Fire PROT.</u> | <u>2" NO ID.</u> | _____ | _____ |
| 4. <u>2" NO ID.</u> | <u>1.5" Fire PROT.</u> | <u>1CL920BB</u> | _____ | _____ |
| 5. _____ | _____ | _____ | _____ | _____ |
| 6. _____ | _____ | _____ | _____ | _____ |
| 7. _____ | _____ | _____ | _____ | _____ |
| 8. _____ | _____ | _____ | _____ | _____ |
| 9. _____ | _____ | _____ | _____ | _____ |
| 10. _____ | _____ | _____ | _____ | _____ |
| 11. _____ | _____ | _____ | _____ | _____ |
| 12. _____ | _____ | _____ | _____ | _____ |
| 13. _____ | _____ | _____ | _____ | _____ |
| 14. _____ | _____ | _____ | _____ | _____ |
| 15. _____ | _____ | _____ | _____ | _____ |
| 16. _____ | _____ | _____ | _____ | _____ |
| 17. _____ | _____ | _____ | _____ | _____ |
| 18. _____ | _____ | _____ | _____ | _____ |
| 19. _____ | _____ | _____ | _____ | _____ |
| 20. _____ | _____ | _____ | _____ | _____ |

APPENDIX R INSULATION RELEASE NO. E-070

GULF STATES UTILITIES

RIVER BEND STATION

THE FOLLOWING ITEMS ARE RELEASED FOR INSTALLATION OF FIRE BARRIER MATERIAL:

Conduit: ICC 154BN-1/2

ATTACH. 10
E-218
SH. 150 OF 159

FIRE ZONE E-T-1

BUILDINGS/ELEVATIONS: ELECTRIC TUNNEL EL. 66'

LIMITS/RESTRICTIONS:

APPLICABLE DRAWINGS: EE-344A-3 - EE-344E-3

SPECIAL INSTRUCTIONS: INCLUDED ARE SUPPORTS AND 18" CRITERIA ASSOCIATED WITH THE ABOVE LISTED ROCEWAY (S) (SEE ATTACHMENT 6)

CMS ACCOUNT: 391-1680-1876
391-4650-1877

COMPLETION DATE:

| SM DISCIPLINE | CONSTRUCTION SIGNATURE&DATE | ENGINEERING SIGNATURE&DATE | FDC SIGNATURE&DATE |
|---|-----------------------------|----------------------------|--------------------------|
| ELECTRICAL conduits cable tray supports cable | <i>Mass 5/14/85</i> | | <i>W. B. ... 5-14-85</i> |
| INSTRUMENTS PIPING STRUCTURAL OTHER | | | |

CONCURRENCE: _____
BEG INSULATION ENGINEER DATE

INSULATION COORDINATOR DATE

APPLICABLE CCP FORMS:

COMMENTS:

THE ABOVE DESCRIBED WORK HAS BEEN COMPLETED

AND/OR CONSTRUCTION REP. DATE _____
AND/OR QA/QC REP. DATE

INTEROFFICE MEMORANDUM

10 00 12210
00 00

SUBJECT

ATTACH. 10
E-218
SH 151 OF 159

DATE

FROM: K. HARDY

TO: R. BEAUDET

CC: PQC
CONSTRUCTION

In order to facilitate Appendix "R" Release FC70 the following will be implemented on a as needed basis. The Appendix "R" conduit 1CC154BN in the affected Fire Zone areas are supported by the following supports.

- | | | | | |
|----------------------|-----------|-----------|-----------|-----------|
| 1. <u>BV-1A 0719</u> | 7. _____ | 13. _____ | 19. _____ | 25. _____ |
| 2. <u>BV-1F 0648</u> | 8. _____ | 14. _____ | 20. _____ | 26. _____ |
| 3. <u>BV-1A 0717</u> | 9. _____ | 15. _____ | 21. _____ | 27. _____ |
| 4. <u>BV-1A 0720</u> | 10. _____ | 16. _____ | 22. _____ | 28. _____ |
| 5. _____ | 11. _____ | 17. _____ | 23. _____ | 29. _____ |
| 6. _____ | 12. _____ | 18. _____ | 24. _____ | 30. _____ |

All other associated conduit will be inspected for attachment point only based 18" rule criteria. This will not impact the integrity or future raceway inspection. The associated conduit per support is as follows.

- | | | | | |
|--------------------|-------|-------|-------|-------|
| 1. <u>NA</u> | _____ | _____ | _____ | _____ |
| 2. <u>1CC154BL</u> | _____ | _____ | _____ | _____ |
| 3. <u>NA</u> | _____ | _____ | _____ | _____ |
| 4. <u>NA</u> | _____ | _____ | _____ | _____ |
| 5. _____ | _____ | _____ | _____ | _____ |
| 6. _____ | _____ | _____ | _____ | _____ |
| 7. _____ | _____ | _____ | _____ | _____ |
| 8. _____ | _____ | _____ | _____ | _____ |
| 9. _____ | _____ | _____ | _____ | _____ |
| 10. _____ | _____ | _____ | _____ | _____ |
| 11. _____ | _____ | _____ | _____ | _____ |
| 12. _____ | _____ | _____ | _____ | _____ |
| 13. _____ | _____ | _____ | _____ | _____ |
| 14. _____ | _____ | _____ | _____ | _____ |
| 15. _____ | _____ | _____ | _____ | _____ |
| 16. _____ | _____ | _____ | _____ | _____ |
| 17. _____ | _____ | _____ | _____ | _____ |
| 18. _____ | _____ | _____ | _____ | _____ |
| 19. _____ | _____ | _____ | _____ | _____ |
| 20. _____ | _____ | _____ | _____ | _____ |

APPENDIX R INSULATION RELEASE NO. E-071

SW STATES UTILITIES

RIVER BEND STATION

THE FOLLOWING ITEMS ARE RELEASED FOR INSTALLATION OF FIRE BARRIER MATERIAL:

Conduit: ICC15ABA-1 1/2

ATTACH. 10
E-218
SH. 152 OF 159

FIRE ZONE ET-1

BUILDING/ELEVATIONS: ELECTRIC TUNNEL EL 67'

LIMITS/RESTRICTIONS:

APPLICABLE DRAWINGS: EE-347A-3 - EE-347E-3

SPECIAL INSTRUCTIONS:

Details: BB, BA1, AH, BA, BE

CMS ACCOUNT: 391-1650-1876
391-1650-1877

COMPLETION DATE:

| SW DISCIPLINE | CONSTRUCTION SIGNATURE&DATE | ENGINEERING SIGNATURE&DATE | FDC SIGNATURE&DATE |
|---|-----------------------------|----------------------------|--------------------|
| ELECTRICAL conduits cable tray supports cable | _____ | _____ | _____ |
| INSTRUMENTS PIPING STRUCTURAL OTHER | _____ | _____ | _____ |

CONCURRENCE: _____
SES INSULATION ENGINEER DATE

INSULATION COORDINATOR DATE

APPLICABLE CCOF FORMS:

COMMENTS:

THE ABOVE DESCRIBED WORK HAS BEEN COMPLETED

ANCO CONSTRUCTION PER _____ DATE _____

ANCO PER _____ DATE _____

INTEROFFICE MEMORANDUM

68 00 12210

SUBJECT

ATTACH. 10
E-218
SH. 154 OF 159

DATE

FROM: K. BARDY

TO: R. BEAUDET

CC: PQC
CONSTRUCTION

In order to facilitate Appendix "R" Release E072 the following will be implemented on a as needed basis. The Appendix "R" conduit ICC154BN in the affected Fire Zone areas are supported by the following supports.

- | | | | | |
|------------------------|-----------|-----------|-----------|-----------|
| 1. <u>Need Support</u> | 7. _____ | 13. _____ | 19. _____ | 25. _____ |
| 2. <u>ICC 1A 0648</u> | 8. _____ | 14. _____ | 20. _____ | 26. _____ |
| 3. <u>ICC 1A 0648</u> | 9. _____ | 15. _____ | 21. _____ | 27. _____ |
| 4. _____ | 10. _____ | 16. _____ | 22. _____ | 28. _____ |
| 5. _____ | 11. _____ | 17. _____ | 23. _____ | 29. _____ |
| 6. _____ | 12. _____ | 18. _____ | 24. _____ | 30. _____ |

All other associated conduit will be inspected for attachment point only based on 18" rule criteria. This will not impact the integrity or future raceway inspect. The associated conduit per support is as follows.

- | | | | | |
|---------------------|-----------------|-------|-------|-------|
| 1. <u>ICC154BN</u> | _____ | _____ | _____ | _____ |
| 2. <u>ICC 154BL</u> | <u>ICC154BN</u> | _____ | _____ | _____ |
| 3. <u>ICC154BN</u> | _____ | _____ | _____ | _____ |
| 4. _____ | _____ | _____ | _____ | _____ |
| 5. _____ | _____ | _____ | _____ | _____ |
| 6. _____ | _____ | _____ | _____ | _____ |
| 7. _____ | _____ | _____ | _____ | _____ |
| 8. _____ | _____ | _____ | _____ | _____ |
| 9. _____ | _____ | _____ | _____ | _____ |
| 10. _____ | _____ | _____ | _____ | _____ |
| 11. _____ | _____ | _____ | _____ | _____ |
| 12. _____ | _____ | _____ | _____ | _____ |
| 13. _____ | _____ | _____ | _____ | _____ |
| 14. _____ | _____ | _____ | _____ | _____ |
| 15. _____ | _____ | _____ | _____ | _____ |
| 16. _____ | _____ | _____ | _____ | _____ |
| 17. _____ | _____ | _____ | _____ | _____ |
| 18. _____ | _____ | _____ | _____ | _____ |
| 19. _____ | _____ | _____ | _____ | _____ |
| 20. _____ | _____ | _____ | _____ | _____ |

to one pc
check EDC
in spec

APPENDIX R INSULATION RELEASE NO. E-073

ULP STATES UTILITIES

RIVER BEND STATION

THE FOLLOWING ITEMS ARE RELEASED FOR INSTALLATION OF FIRE BARRIER MATERIAL:

CONDUIT: 1CK9090C

ATTACH. 10
E-218
SH. 155 OF 159

FIRE ZONE C-14

Ref E051 SUBJECT

BUILDING/ELEVATIONS: CONTROL BLDG EL 93

LIMITS/RESTRICTIONS:

APPLICABLE DRAWINGS: EE-347A-3 - EE-347E-3

SPECIAL INSTRUCTIONS: INCLUDED ARE SUPPORTS AND 18" CRITERIA ASSOCIATED WITH THE ABOVE LISTED RACEWAY (SEE ATTACHMENT(S))

CMS ACCOUNT: 710-600-1896
710-600-1897

COMPLETION DATE:

| SW DISCIPLINE | CONSTRUCTION SIGNATURE&DATE | ENGINEERING SIGNATURE&DATE | FDC SIGNATURE&DATE |
|---|-----------------------------|----------------------------|--------------------|
| ELECTRICAL conduits cable tray supports cable | _____ | _____ | _____ |
| INSTRUMENTS PIPING STRUCTURAL OTHER | _____ | _____ | _____ |

CONCURRENCE: _____
RES INSULATION ENGINEER DATE

INSULATION COORDINATOR DATE

APPLICABLE CCOF FORMS:

COMMENTS: E & DC R P-22.570A

THE ABOVE DESCRIBED WORK HAS BEEN COMPLETED

ANCO CONSTRUCTION REP. DATE

ANCO QA/QC REP. DATE

INTEROFFICE MEMORANDUM

LS OF 12210

DATE

SUBJECT

ATTACH. 10
E-218
SH. 156 OF 159

DATE

FROM: K. BARDY

TO: R. BRAUDET

CC: PQC
CONSTRUCTION

In order to facilitate Appendix "R" Release E-073 the following will be implemented on a as needed basis. The Appendix "R" conduit 1CR9090C in the affected Fire Zone areas are supported by the following supports.

- | | | | | |
|----------------------|----------------------|-----------|-----------|-----------|
| 1. <u>CR-13DA-1</u> | 7. <u>CR-128A-1</u> | 13. _____ | 19. _____ | 25. _____ |
| 2. <u>CR-119A-1</u> | 8. <u>CR-116AS-1</u> | 14. _____ | 20. _____ | 26. _____ |
| 3. <u>CS-117A-3</u> | 9. <u>CR-113A-1</u> | 15. _____ | 21. _____ | 27. _____ |
| 4. <u>CR-118AS-1</u> | 10. _____ | 16. _____ | 22. _____ | 28. _____ |
| 5. <u>CR-117A-2</u> | 11. _____ | 17. _____ | 23. _____ | 29. _____ |
| 6. <u>CR-117A-1</u> | 12. _____ | 18. _____ | 24. _____ | 30. _____ |

All other associated conduit will be inspected for attachment point only based on 18" rule criteria. This will not impact the integrity or future raceway inspection. The associated conduit per support is as follows.

- | | | | | |
|--------------------|-----------------|------------------|------------------|-----------------|
| 1. <u>1CHD12BA</u> | _____ | _____ | _____ | _____ |
| 2. <u>1CL919NF</u> | <u>1CL046NC</u> | <u>1CX920NX1</u> | <u>1CC920BL1</u> | <u>1CHD12BA</u> |
| 3. <u>1CL919NF</u> | <u>1CL046NC</u> | <u>1CX920NX1</u> | <u>1CC920BL1</u> | <u>1CHD12BA</u> |
| 4. <u>1CL919NF</u> | <u>1CL046NC</u> | <u>1CC920BL1</u> | _____ | _____ |
| 5. <u>NONE</u> | _____ | _____ | _____ | _____ |
| 6. <u>NONE</u> | _____ | _____ | _____ | _____ |
| 7. <u>NONE</u> | _____ | _____ | _____ | _____ |
| 8. <u>NONE</u> | _____ | _____ | _____ | _____ |
| 9. <u>NONE</u> | _____ | _____ | _____ | _____ |
| 10. _____ | _____ | _____ | _____ | _____ |
| 11. _____ | _____ | _____ | _____ | _____ |
| 12. _____ | _____ | _____ | _____ | _____ |
| 13. _____ | _____ | _____ | _____ | _____ |
| 14. _____ | _____ | _____ | _____ | _____ |
| 15. _____ | _____ | _____ | _____ | _____ |
| 16. _____ | _____ | _____ | _____ | _____ |
| 17. _____ | _____ | _____ | _____ | _____ |
| 18. _____ | _____ | _____ | _____ | _____ |
| 19. _____ | _____ | _____ | _____ | _____ |
| 20. _____ | _____ | _____ | _____ | _____ |

APPENDIX R INSULATION RELEASE NO. E-074

GULF STATES UTILITIES

RIVER BEND STATION

THE FOLLOWING ITEMS ARE RELEASED FOR INSTALLATION OF FIRE BARRIER MATERIAL:

Conduits: 1CL920BE-3"
 1CK920BC-3"
 1CL920BB-3"

ATTACH. 10
 E-218
 SH. 157 OF 159

FIRE ZONE C-24

Reference Release M, LB

BUILDING/ELEVATIONS: CONTROL BLDG. EL 116'

LIMITS/RESTRICTIONS:

APPLICABLE DRAWINGS: EE-347A-3 THRU EE-347E-3

SPECIAL INSTRUCTIONS: Included are supports and 18" CRITERIA ASSOCIATION WITH THE ABOVE LISTED RACEWAYS (SEE ATTACHMENT (S))

CMS ACCOUNT: 710-1650-1876
 710-1650-1877

COMPLETION DATE:

| S&W DISCIPLINE - | CONSTRUCTION SIGNATURE & DATE | ENGINEERING SIGNATURE & DATE | FBC SIGNATURE & DATE |
|---|-------------------------------|------------------------------|----------------------|
| ELECTRICAL conduits cable tray supports cable | _____ | _____ | _____ |
| INSTRUMENTS PIPING STRUCTURAL OTHER | _____ | _____ | _____ |

CONCURRENCE: _____
 SEE INSULATION ENGINEER DATE _____

 INSULATION COORDINATOR DATE _____

APPLICABLE CCOF FORMS:

COMMENTS: 2 §DCR P-22,597

THE ABOVE DESCRIBED WORK HAS BEEN COMPLETED

ANCO CONSTRUCTION REP. DATE _____

ANCO SA/PC REP. DATE _____

INTEROFFICE MEMORANDUM

SUBJECT

68 00 12210

ATTACH. 10
E-21B

DATE

FROM: E. BARDY

TO: R. BEAUDET

SH. 15B OF 159

CC: PQC
CONSTRUCTION

In order to facilitate Appendix "R" Release E-074 the following will be implemented on a as needed basis. The Appendix "R" conduit 1CK920BC in the affected Fire Zone areas are supported by the following supports.

- | | | | | |
|----------------------|-----------|-----------|-----------|-----------|
| 1. <u>CL-3C-D166</u> | 7. _____ | 13. _____ | 19. _____ | 25. _____ |
| 2. <u>CL-3C-D038</u> | 8. _____ | 14. _____ | 20. _____ | 26. _____ |
| 3. <u>CL-3C-D032</u> | 9. _____ | 15. _____ | 21. _____ | 27. _____ |
| 4. <u>CL-3C-D031</u> | 10. _____ | 16. _____ | 22. _____ | 28. _____ |
| 5. <u>CL-3C-D029</u> | 11. _____ | 17. _____ | 23. _____ | 29. _____ |
| 6. <u>CU-3C-D167</u> | 12. _____ | 18. _____ | 24. _____ | 30. _____ |

All other associated conduit will be inspected for attachment point only based on 18" rule criteria. This will not impact the integrity or future raceway inspect. The associated conduit per support is as follows.

- | | | | | |
|-----------------------|-------------------------|-------|-------|-------|
| 1. <u>1CL920BE</u> | <u>3-1" RIGID NO 10</u> | _____ | _____ | _____ |
| 2. <u>3-1" NO 10.</u> | <u>1CL920BE</u> | _____ | _____ | _____ |
| 3. <u>NONE</u> | _____ | _____ | _____ | _____ |
| 4. <u>NONE</u> | _____ | _____ | _____ | _____ |
| 5. <u>NONE</u> | _____ | _____ | _____ | _____ |
| 6. <u>1" NO 10.</u> | _____ | _____ | _____ | _____ |
| 7. _____ | _____ | _____ | _____ | _____ |
| 8. _____ | _____ | _____ | _____ | _____ |
| 9. _____ | _____ | _____ | _____ | _____ |
| 10. _____ | _____ | _____ | _____ | _____ |
| 11. _____ | _____ | _____ | _____ | _____ |
| 12. _____ | _____ | _____ | _____ | _____ |
| 13. _____ | _____ | _____ | _____ | _____ |
| 14. _____ | _____ | _____ | _____ | _____ |
| 15. _____ | _____ | _____ | _____ | _____ |
| 16. _____ | _____ | _____ | _____ | _____ |
| 17. _____ | _____ | _____ | _____ | _____ |
| 18. _____ | _____ | _____ | _____ | _____ |
| 19. _____ | _____ | _____ | _____ | _____ |
| 20. _____ | _____ | _____ | _____ | _____ |

SUBJECT

DATE

FROM: E. BARDY

TO: R. BARDY

ATTACH 10
E-218
SM. 159 OF 159

CC: PQC
CONSTRUCTION

In order to facilitate Appendix "R" Release E-074 the following will be implemented on a as needed basis. The Appendix "R" conduit 1CL920BE in the affected Fire Zone areas are supported by the following supports.

- | | | | | |
|-------------------------|-----------|-----------|-----------|-----------|
| 1. <u>CL-3C-0166</u> | 7. _____ | 13. _____ | 19. _____ | 25. _____ |
| 2. <u>CCA-3185</u> | 8. _____ | 14. _____ | 20. _____ | 26. _____ |
| 3. <u>NO 10-E. STWT</u> | 9. _____ | 15. _____ | 21. _____ | 27. _____ |
| 4. <u>CU-3C-0296</u> | 10. _____ | 16. _____ | 22. _____ | 28. _____ |
| 5. <u>CU-3C-0297</u> | 11. _____ | 17. _____ | 23. _____ | 29. _____ |
| 6. _____ | 12. _____ | 18. _____ | 24. _____ | 30. _____ |

All other associated conduit will be inspected for attachment point only based on 18" rule criteria. This will not impact the integrity or future raceway inspection. The associated conduit per support is as follows.

- | | | | | |
|----------------------|-------------------------|-------------------|-------------------|-------|
| 1. <u>1CK920BC</u> | <u>3-1" RIGID NO 10</u> | _____ | _____ | _____ |
| 2. <u>.75" NO 10</u> | _____ | _____ | _____ | _____ |
| 3. <u>NONE</u> | _____ | _____ | _____ | _____ |
| 4. <u>1CK003BJ</u> | <u>1CL920BB</u> | <u>1-2" NO 10</u> | <u>1.5" NO 10</u> | _____ |
| 5. <u>1CK003BJ</u> | <u>1CL920BB</u> | <u>1-2" NO 10</u> | <u>1.5" NO 10</u> | _____ |
| 6. _____ | _____ | _____ | _____ | _____ |
| 7. _____ | _____ | _____ | _____ | _____ |
| 8. _____ | _____ | _____ | _____ | _____ |
| 9. _____ | _____ | _____ | _____ | _____ |
| 10. _____ | _____ | _____ | _____ | _____ |
| 11. _____ | _____ | _____ | _____ | _____ |
| 12. _____ | _____ | _____ | _____ | _____ |
| 13. _____ | _____ | _____ | _____ | _____ |
| 14. _____ | _____ | _____ | _____ | _____ |
| 15. _____ | _____ | _____ | _____ | _____ |
| 16. _____ | _____ | _____ | _____ | _____ |
| 17. _____ | _____ | _____ | _____ | _____ |
| 18. _____ | _____ | _____ | _____ | _____ |
| 19. _____ | _____ | _____ | _____ | _____ |
| 20. _____ | _____ | _____ | _____ | _____ |

STONE & WEBSTER ENGINEERING CORP.

CLIENT: C.S.U. STA: RIVER BEND #1 REF DWGS: EE-67A JO: 12210
 PNL NO: PNLIR18 EQPT NO: ILAR-PNLIR18 MK NO: 139-00 LDC: REACTOR BLDG COL: ELEV: 95'-0"
 SVCE: 20 V: 480 AC PH: 3 NEUT: SN MNS: CKT BRKR: - CONN: TOP
 BRKTS: CKT BRKR, FUSED SW - MTG FL, SURF - NEMA TYPE 1 FOR SIZE
 EQPT NO: ILAR-XLR18 KVA: 15 ADD'L FEATURES:

| NO | SERVICE | LOAD | | AMP | 1 | 2 | AMP | LOAD | | SERVICE | NO |
|----|--------------------|------|-----|-----|----|----|-----|------|------|--------------------------|----|
| | | 1 | 2 | | | | | 1 | 2 | | |
| 1 | RECT EL 114'-0" | 600 | | 20 | 1 | 2 | 20 | 600 | | RECT EL 70'-0" | 6 |
| 2 | DO | | 600 | | 3 | 4 | | | 600 | RECT EL 114'-0" | 3 |
| 3 | DO | 600 | | | 5 | 6 | | 600 | | SPARE | |
| 4 | BATT LTG EL 70'-0" | | 800 | | 7 | 8 | | 800 | | DO | |
| 5 | DO | 800 | | | 9 | 10 | | | 1040 | BATTERY PACKS EL 114'-0" | 19 |
| 6 | DO | | 800 | | 11 | 12 | | | 740 | BATTERY PACKS EL 70'-0" | 11 |
| 7 | DO | 400 | | | 13 | 14 | | 500 | | BATTERY PACKS EL 114'-0" | 5 |
| 8 | DO | | 800 | | 15 | 16 | | | 800 | SPARE | |
| 9 | SPARE | 800 | | | 17 | 18 | | 800 | | DO | |
| 10 | DO | | 800 | | 19 | 20 | | 500 | | DO | |
| 11 | DO | 800 | | | 21 | 22 | | 500 | | DO | |
| 12 | DO | | 800 | | 23 | 24 | | 800 | | DO | |
| 13 | DO | | | | | | | | | BLANK | |

CONN LOAD: 1200 1340
 ULT LOAD: 1100 1500
 TOTAL LOAD: 140
 X2
 1200 1340
 1100 1500
 CALC: E-2/B
 ATTACHMENT NO 11
 Page 1 of 2
 H.O. # 12210
 ILAR-PNLIR18

ISSUE
1

ISSUE
1

ISSUE
3

ISSUE
4

STONE & WEBSTER ENGINEERING CORP.

DATE

| | |
|---|----------------|
| 1 | ORIGINAL ISSUE |
| 2 | |
| 3 | |
| 4 | |

STA RIVER BEAD #1 REF DWGS EE-67A JO 12210
 RCPT NO LAR-2419 MK NO 116-01 CDC BRKR BLBA COL ELEV 95'-0"
 NEUT SAU MNS: [REDACTED], CKT BRKR [REDACTED] - CONN: TOP
 CKT BRKR FUSED SW - MTG FL SURF - NEMA TYPE 1 FDR SIZE [REDACTED]
 RCPT NO LAR-XLR12-NVA 15 ADD'L FEATURES [REDACTED]

| NO | SERVICE | LOAD | | A M P | 1 | 2 | A M P | LOAD | | SERVICE | NO |
|----|----------------|-------|-------|----------|---|---|----------|------|-----|----------------------|----|
| | | 1 | 2 | | | | | 1 | 2 | | |
| 1 | RCPT EL 95'-9" | 600 | | 20 | | | | 600 | | RCPT EL 95'-9" | 4 |
| 2 | DO | | 600 | | | | | | 600 | SPARE | |
| 3 | SPARE | 600 | | | | | | 600 | | DO | |
| 4 | RCPT EL 95'-9" | | 1000 | | | | | | 700 | BAT. PACKS EL 95'-9" | 9 |
| 5 | DO | 1000 | | | | | | 340 | | DO | 5 |
| 6 | DO | | 1300 | | | | | 400 | | DO | |
| 7 | DO | 1300 | | | | | | 450 | | DO | |
| 8 | DO | | 1500 | | | | | 400 | | DO | |
| 9 | DO | 1500 | | | | | | 450 | | DO | |
| 10 | DO | | 1800 | | | | | 450 | | DO | |
| 11 | DO | 1800 | | | | | | 700 | | DO | |
| 12 | DO | | 2000 | | | | | 400 | | DO | |
| 13 | DO | 2000 | | | | | | 400 | | DO | |
| 14 | DO | | 2500 | | | | | 400 | | DO | |
| 15 | DO | 2500 | | | | | | 400 | | DO | |
| 16 | DO | | 2800 | | | | | 400 | | DO | |
| 17 | DO | 2800 | | | | | | 400 | | DO | |
| 18 | DO | | 3000 | | | | | 400 | | DO | |
| 19 | DO | 3000 | | | | | | 400 | | DO | |
| 20 | DO | | 3200 | | | | | 400 | | DO | |
| 21 | DO | 3200 | | | | | | 400 | | DO | |
| 22 | DO | | 3500 | | | | | 400 | | DO | |
| 23 | DO | 3500 | | | | | | 400 | | DO | |
| 24 | DO | | 3800 | | | | | 400 | | DO | |
| 25 | DO | 3800 | | | | | | 400 | | DO | |
| 26 | DO | | 4000 | | | | | 400 | | DO | |
| 27 | DO | 4000 | | | | | | 400 | | DO | |
| 28 | DO | | 4200 | | | | | 400 | | DO | |
| 29 | DO | 4200 | | | | | | 400 | | DO | |
| 30 | DO | | 4500 | | | | | 400 | | DO | |
| 31 | DO | 4500 | | | | | | 400 | | DO | |
| 32 | DO | | 4800 | | | | | 400 | | DO | |
| 33 | DO | 4800 | | | | | | 400 | | DO | |
| 34 | DO | | 5000 | | | | | 400 | | DO | |
| 35 | DO | 5000 | | | | | | 400 | | DO | |
| 36 | DO | | 5200 | | | | | 400 | | DO | |
| 37 | DO | 5200 | | | | | | 400 | | DO | |
| 38 | DO | | 5500 | | | | | 400 | | DO | |
| 39 | DO | 5500 | | | | | | 400 | | DO | |
| 40 | DO | | 5800 | | | | | 400 | | DO | |
| 41 | DO | 5800 | | | | | | 400 | | DO | |
| 42 | DO | | 6000 | | | | | 400 | | DO | |
| 43 | DO | 6000 | | | | | | 400 | | DO | |
| 44 | DO | | 6200 | | | | | 400 | | DO | |
| 45 | DO | 6200 | | | | | | 400 | | DO | |
| 46 | DO | | 6500 | | | | | 400 | | DO | |
| 47 | DO | 6500 | | | | | | 400 | | DO | |
| 48 | DO | | 6800 | | | | | 400 | | DO | |
| 49 | DO | 6800 | | | | | | 400 | | DO | |
| 50 | DO | | 7000 | | | | | 400 | | DO | |
| 51 | DO | 7000 | | | | | | 400 | | DO | |
| 52 | DO | | 7200 | | | | | 400 | | DO | |
| 53 | DO | 7200 | | | | | | 400 | | DO | |
| 54 | DO | | 7500 | | | | | 400 | | DO | |
| 55 | DO | 7500 | | | | | | 400 | | DO | |
| 56 | DO | | 7800 | | | | | 400 | | DO | |
| 57 | DO | 7800 | | | | | | 400 | | DO | |
| 58 | DO | | 8000 | | | | | 400 | | DO | |
| 59 | DO | 8000 | | | | | | 400 | | DO | |
| 60 | DO | | 8200 | | | | | 400 | | DO | |
| 61 | DO | 8200 | | | | | | 400 | | DO | |
| 62 | DO | | 8500 | | | | | 400 | | DO | |
| 63 | DO | 8500 | | | | | | 400 | | DO | |
| 64 | DO | | 8800 | | | | | 400 | | DO | |
| 65 | DO | 8800 | | | | | | 400 | | DO | |
| 66 | DO | | 9000 | | | | | 400 | | DO | |
| 67 | DO | 9000 | | | | | | 400 | | DO | |
| 68 | DO | | 9200 | | | | | 400 | | DO | |
| 69 | DO | 9200 | | | | | | 400 | | DO | |
| 70 | DO | | 9500 | | | | | 400 | | DO | |
| 71 | DO | 9500 | | | | | | 400 | | DO | |
| 72 | DO | | 9800 | | | | | 400 | | DO | |
| 73 | DO | 9800 | | | | | | 400 | | DO | |
| 74 | DO | | 10000 | | | | | 400 | | DO | |
| 75 | DO | 10000 | | | | | | 400 | | DO | |

CONN LOAD: 2740 600 600
 ULT LOAD: 29300 23000 22000
 TOTAL LOAD: 2040
 - 640 - 700
 # 2000 # 2100
 CALD. E-2/B
 ATTACHMENT # 11
 DATE 2/2/22
 H.D. 20.12.22
 10
 LAR-PNLIR12

▲ 5010 86

| CALCULATION IDENTIFICATION NUMBER | | | |
|-----------------------------------|------------------|-----------------|--------------------|
| J.O. OR W.O. NO. | DIVISION & GROUP | CALCULATION NO. | OPTIONAL TASK CODE |
| 12210 | ELECTRICAL | E-218 | NA |

SPECIAL CALCULATION FOR CABLES 1HVKBBL200 = 201
 DBL200 = 201

(NOTE: CALC TO VERIFY AMPACITY OF ONE CABLE AGAINST LOAD. THEN
 DOUBLE AMPACITY FOR 2 CABLES IN PARALLEL)

CABLE - NGP-51 3/C 250 MCM TRX ALUMINUM

FIREWRAPPED RACEWAY - TRAY ITLO12B - 3 HR WRAP - 40°C AMB

FROM/TO - 1EJS * LDC1B BKR 3B / 1HVK * CHL1B

LOAD - 178 KW 460 Vol 3φ, pf = 93% EFF = 91.5% @ 75% LOAD

$$I_{FL} = \frac{178}{(.93)(.915)(.46)(\sqrt{3})} = 263 A$$

$$I_{MAX} = 190 A \neq 263 A \times 1.25 \therefore 1 \text{ CABLE IS INADEQUATE}$$

HOWEVER, 2 CABLES OF EQUAL SIZE ARE GOOD FOR 380 A
 IN PARALLEL.

$$\therefore 2 \times 190 = 380 A \geq 263 \times 1.25 = 329 A \therefore 1HVKBBL200 \parallel 1HVKBBL201 \text{ IS ADEQUATE.}$$

ALSO

1HVKDBL200 || 1HVKDBL201
 IS ADEQUATE.

| REV. NO. | SERVICE | VOLTAJE | LINE (M/F/T) | EST/ACT | DIAM. (IN) | COND. LECTORS | WIRE SIZE | INSTALLATION STATUS | STATUS DATE | LAST TICKET UPDATE ISSUE |
|----------|---------|---------|--------------|---------|------------|---------------|-----------|---------------------|-------------|--------------------------|
| 1 | 1200K | 11000V | 142E/142N | ALM DIA | .55 | 94KX15 | 10 AWG | PAID AND USED | 3/17/04 | 3/28/04 |
| 2 | 1200K | 11000V | 142E/142N | ALM DIA | .55 | 94KX15 | 10 AWG | PAID AND USED | 3/17/04 | 3/28/04 |
| 3 | 1200K | 11000V | 172E/172A | ALM DIA | .60 | 94KX15 | 12 AWG | PAID AND USED | 1/17/04 | 7/24/05 |
| 4 | 1200K | 11000V | 172E/172A | ALM DIA | .60 | 94KX15 | 12 AWG | PAID AND USED | 1/17/04 | 7/24/05 |
| 5 | 1200K | 11000V | 202E/202N | ALM DIA | .71 | 94KX15 | 16 AWG | PAID AND USED | 7/13/03 | 9/27/04 |
| 6 | 1200K | 11000V | 202E/202N | ALM DIA | .71 | 94KX15 | 16 AWG | PAID AND USED | 7/13/03 | 9/27/04 |
| 7 | 1200K | 11000V | 132E/132N | ALM DIA | .61 | 94KX15 | 12 AWG | PAID AND USED | 7/13/03 | 9/27/04 |
| 8 | 1200K | 11000V | 132E/132N | ALM DIA | .61 | 94KX15 | 12 AWG | PAID AND USED | 7/13/03 | 9/27/04 |
| 9 | 1200K | 11000V | 144E/144N | ALM DIA | .61 | 94KX15 | 12 AWG | PAID AND USED | 4/11/04 | 7/31/04 |
| 10 | 1200K | 11000V | 144E/144N | ALM DIA | .61 | 94KX15 | 12 AWG | PAID AND USED | 4/11/04 | 7/31/04 |
| 11 | 1200K | 11000V | 144E/144N | ALM DIA | 1.49 | 94KX15 | 2/0 | PAID AND USED | 4/11/04 | 7/31/04 |
| 12 | 1200K | 11000V | 144E/144N | ALM DIA | 1.49 | 94KX15 | 2/0 | PAID AND USED | 4/11/04 | 7/31/04 |
| 13 | 1200K | 11000V | 144E/144N | ALM DIA | 2.01 | 94KX15 | 250 MCM | PAID AND USED | 4/11/04 | 12/22/05 |
| 14 | 1200K | 11000V | 144E/144N | ALM DIA | 2.01 | 94KX15 | 250 MCM | PAID AND USED | 4/11/04 | 12/22/05 |
| 15 | 1200K | 11000V | 142E/142N | ALM DIA | 2.01 | 94KX15 | 250 MCM | PAID AND USED | 4/11/04 | 12/22/05 |
| 16 | 1200K | 11000V | 142E/142N | ALM DIA | 2.01 | 94KX15 | 250 MCM | PAID AND USED | 4/11/04 | 12/22/05 |
| 17 | 1200K | 11000V | 112E/112N | ALM DIA | .75 | 94KX15 | 16 AWG | PAID AND USED | 1/19/04 | 1/19/04 |
| 18 | 1200K | 11000V | 112E/112N | ALM DIA | .75 | 94KX15 | 16 AWG | PAID AND USED | 1/19/04 | 1/19/04 |
| 19 | 1200K | 11000V | 102E/102N | ALM DIA | .49 | 94KX17 | 12 AWG | PAID AND USED | 3/11/04 | 7/23/05 |
| 20 | 1200K | 11000V | 102E/102N | ALM DIA | .49 | 94KX17 | 12 AWG | PAID AND USED | 3/11/04 | 7/23/05 |
| 21 | 1200K | 11000V | 102E/102N | ALM DIA | .61 | 94KX15 | 12 AWG | PAID AND USED | 4/11/04 | 7/23/05 |
| 22 | 1200K | 11000V | 102E/102N | ALM DIA | .61 | 94KX15 | 12 AWG | PAID AND USED | 4/11/04 | 7/23/05 |

STONE & WEBSTER ENGINEERING CORPORATION
CALCULATION SHEET

▲ 5010 85

| CALCULATION IDENTIFICATION NUMBER | | | | PAGE <u>OF</u> |
|-----------------------------------|------------------|-----------------|--------------------|----------------|
| J.O. OR W.O. NO. | DIVISION & GROUP | CALCULATION NO. | OPTIONAL TASK CODE | |
| 12210 | ELECTRICAL | E-218 | NA | |

ATTACHMENT 12 SK 4 OF 5.

SPECIAL CALCULATION FOR CABLES 1ENSBBH303 & 304

(NOTE: CALC TO VERIFY AMPACITY OF ONE CABLE AGAINST LOAD.
THEN DOUBLE AMPACITY FOR 2 CABLES IN PARALLEL.)

CABLE - NGR-15 3-1/2 500 MCM COPPER

FIRE WRAPPED RACEWAY - CONDUIT 1CHOS2BA - 1HR WRAP - 50°C

FROM/TO - 1ENS*SWG1B - BKR 27 / 1EGE* CAB 01B

LOAD - 3913 KVA 4160 VAC 3φ

$$I_{FL} = \frac{3913}{4.16 (\sqrt{3})} = 543 \text{ A}$$

$$CSA = I_{FL} \times OLF = 543 \times 1.11 = 603 \text{ A}$$

$$I_{MAX} = 473 \text{ A} \times \overset{ADF}{.9} \times \overset{GDF}{.86} \times \overset{APPR}{.927} = 339 \text{ A}$$

339 A \nless 603 A \therefore 1 CABLE IS INADEQUATE

HOWEVER 2 CABLES OF EQUAL SIZE ARE GOOD FOR 678A
IN PARALLEL

$$\therefore 2 \times 339 \geq 603$$

$$678 \text{ A} \geq 603 \text{ A}$$

\therefore 1ENSBBH303 // 1ENSBBH304
IS ADEQUATE.

CABLE SCHEDULE EC-1
 12210.00 04/25/63 ISSUE 118
 STONE AND WEBSTER ENGINEERING CORPORATION - BOSTON
 RIVERSIDE STA UNIT1
 CLIENT ORG CA

| CABLE SCHEDULE | LENGTH(FT) EST/ACT | DIAM. (IN) | CONDUCTORS | WIRE SIZE | INSTALLATION START DATE | START DATE | LAST TEST DATE |
|---|----------------------------|---------------|------------|--------------------|---|------------|-------------------|
| 30E/ 40A -31 ELEM DIAG EE-1L | 30E/ 40A -31 | 1.32 | 1 | 500 MCM | PULLED AND IMP BOTH TERMINATED WERE DIAG X | 12/14/63 | 1/14/64 |
| 447E/ 40A 1TH002B | 447E/ 40A 1TH002B | 1.32 | 3/1 | 500 MCM 1TH002B | PULLED AND IMP BOTH TERMINATED WERE DIAG | 1/1/64 | 4/20/64 |
| 447E/ 40A 1TH002B | 447E/ 40A 1TH002B | 1.32 | 3/1 | 500 MCM 1TH002B | PULLED AND IMP BOTH TERMINATED WERE DIAG | 12/15/63 | 4/23/64 |
| 25E/ 160A -08 ELEM DIAG EE-1L | 25E/ 160A -08 | 1.32 | 3/1 | 500 MCM | PULLED AND IMP BOTH TERMINATED WERE DIAG X | 12/14/63 | 4/20/64 |
| 25E/ 160A -08 ELEM DIAG EE-1L | 25E/ 160A -08 | 1.32 | 3/1 | 500 MCM | PULLED AND IMP BOTH TERMINATED WERE DIAG X | 12/14/63 | 4/20/64 |
| 345E/ 40A -1 ELEM DIAG EE-1L 1TH002B | 345E/ 40A -1 1TH002B | 2.24 | 3 | 470 1TH002B | PULLED AND IMP PT TERMINATED WERE DIAG | 6/21/63 | 10/1/63 |
| 73E/ 40A -44 ELEM DIAG EE-1L 1TH002B | 73E/ 40A -44 1TH002B | 2.24 | 3 | 470 1TH002B | PULLED AND IMP BOTH TERMINATED WERE DIAG | 6/21/63 | 12/1/63 |
| 30E/ 40A -31 ELEM DIAG EE-1L | 30E/ 40A -31 | 1.32 | 1 | 500 MCM | PULLED AND IMP BOTH TERMINATED WERE DIAG X | 12/14/63 | 1/14/64 |
| 35E/ 25A -31 ELEM DIAG EE-1L | 35E/ 25A -31 | 1.32 | 1 | 500 MCM | PULLED AND IMP MAY NEED REWORK WERE DIAG | 6/1/64 | 9/1/64 |
| 152E/ 160A -31 ELEM DIAG EE-1L | 152E/ 160A -31 | .35 | 2 | 16 AWG | PULLED AND IMP BOTH TERMINATED WERE DIAG | 6/1/64 | 1/1/64 |

ATTACHMENT 12
 E-218
 SH. 5 OF 5

June 11, 1985
CEOCA 024 27A
COPY

CHERRY HILL, NEW JERSEY 6-11-85
 FAX 44-2384 TSI INC STL
 THERMAL SCIENCE, INC.
 ATTN: MR. R. FELDMAN
 2200 CASSENS DR.
 ST. LOUIS, MO. 63026
 ?15471.06?

ATTACHMENT 13
 E-218
 SH. 1 OF 4

RBTX-85-393 FILE NO. 214.100
 FIRE PROTECTION - GENERAL
 RIVER BEND STATION UNIT 1
 GULF STATES UTILITIES COMPANY

FURTHER TO OUR TELEPHONE CONVERSATION ON 6/7/85, PLEASE RESPOND TO THE FOLLOWING ITEMS:

1. EXPLAIN THE DIFFERENCE IN TEST RESULTS BETWEEN I.T.L. REPORT #82-5-355 AND #84-3-275A AFTER ADJUSTMENTS TO THE SAME REFERENCE TEMPERATURES - 40 DEGREES C & 90 DEGREES C.
2. ADDRESS THE APPLICABILITY OF THE CONDUIT AND TRAY DERATING FACTORS TO MULTICONDUCTOR CABLE THREE CONDUCTOR JACKETED CONSTRUCTION AND TRIPLEXED CONSTRUCTION.
3. CONFIRM THE VALIDITY OF THE ONE HOUR DERATING FACTORS FOR CONDUIT AND TRAY IDENTIFIED IN REPORT #82-355-F-1 (REV 1) AND TECH. NOTE 111781 (REV. 3).
4. CONFIRM I.T.L. REPORT #84-3-275A REQUIRES CORRECTION ON PAGES 12 & 18 REGARDING ICEA P-54-440, TABLE 7 CABLE DIAMETERS.
5. INCLUDE RADICAL SIGN IN EQUATIONS APPEARING ON PAGES 9 & 10 OF I.T.L. REPORT #84-10-5.
6. ESTIMATE 1 HOUR AND 3 HOUR FIRE WRAP DERATING FACTORS FOR THE FOLLOWING CABLE CONSTRUCTIONS ROUTED IN CONDUIT AND TRAY:
 5000 VOLT, COMPACT ROUND SOFT COPPER STRANDING,
 90 MIL EP INSULATION, 5 MIL COPPER TAPE SHIELD,
 80 MIL HYPALON JACKET.
 (NOTE: MAINTAINED SPACING IN TRAYS 0.25 X O.D. (MIN)).

SHOULD YOU REQUIRE ADDITIONAL INFORMATION ON ITEM 6, PLEASE ADVISE.

PLEASE RESPOND IN WRITING BY 6/17/85.

P.K. GUHA-LEAD ELECTRICAL/CONTROLS ENGR.
 STONE AND WEBSTER ENGR. CORP.
 3 EXECUTIVE CAMPUS PO. BOX 5200
 CHERRY HILL, NEW JERSEY 08034
 TWX 710-892-0148 STNE WBST CHIL
 CMT:PKG

Sent 7915

ENDOR

KKhanna
 JGelston
 PGuha
 JBisti
 EPickett



NOTED JUL 17 1985 L.R. PHEEN

ATTACHMENT B
E-218
SH. 2 OF 4

OFFICE TELEPHONE NO.: (314) 349-1233

TELECOPY NO.: -(314) 349-1207 (Automatic)

July 17, 1985

SENT TO: Mr Earl Pickett at 609-482-3375

COMPANY: Stone & Webster Engineering Corp

FROM: James A. Ridge / Mr. Severy

2 PAGES PLUS COVER SHEET ✓

SPECIAL INSTRUCTIONS: _____

IF YOU DO NOT RECEIVE THIS ENTIRE TELECOPY, PLEASE
CALL THE ABOVE TELEPHONE NUMBER AND ADVISE.

THANK YOU



ATTACHMENT 13

E-218

SH. 3 OF 4

July 5, 1985

Stone & Webster Engineering Corporation
3 Executive Campus
P. O. Box 5200
Cherry Hill, New Jersey 08034

Attention: Mr. P. K. Guha
Lead Electrical/Controls Engineer

RE: Your Telex Dated June 11, 1985

Subject: File No. 214.100
Fire Protection - General
River Bend Station Unit 1
Gulf States Utilities Company

Dear Mr. Guha:

The following is in response to your telex of June 11, 1985.

1. One of the purposes of retesting the assembly for the effect of enclosing the raceway with a three hour rated THERMO-LAG fire barrier was to maintain, as close as possible, the cables, the conductor hot spot, and the ambient temperature exposed to 90°C and 40°C, respectively, thus minimizing or eliminating their dependency of obtained results in the use of the IEC/A correction factor. Still another purpose was to reinspect the assembly to ensure that the inner cable connections were engaged tight, secure, and free of rust or any contaminants. These objectives have been obtained. The results are delineated in I.T.L. Report No. 84-3-275A which supersedes results previously reported.
2. In our opinion, the results obtained from testing the THERMO-LAG 330-1 one and three hour fire barriers over conduit and tray are applicable to multi conductor cables, three conductor jacketed construction and triplex construction.
3. The one hour derating factors for conduit and tray identified in Technical Note 211781, Revision 3, and 82-355-F-1 are valid.
- 4.
5. I.T.L. has been advised of your request to effect the referenced corrections.

Stone & Webster Engineering Corporation
Mr. P. E. Guha

July 5, 1985
Page 2

ATTACHMENT 13
E (2/8)
SH. 4 OF 4

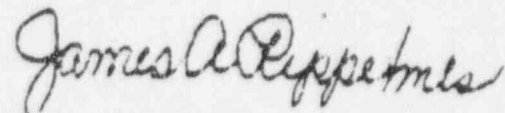
6. The results of the capacity derating reported in the following reports can be used.

I.T.L. No. 82-355-F-1 - One Hour Cable Tray Test
I.T.L. No. 84-3-275A - Three Hour Cable Tray Test
I.N. No. 111781 - One Hour Conduit Test
I.T.L. No. 84-10-5 - Three Hour Conduit Test

I.T.L. reports delineate the following values:

| <u>One Hour Conduit</u> | <u>Three Hour Conduit</u> | <u>One Hour Tray</u> | <u>Three Hour Tray</u> |
|-----------------------------|-------------------------------|--------------------------|----------------------------|
| 7.2% | 9.72% | 12.5% | 20.55% |

Yours truly,



James A. Rippe, Jr.
Vice President

3/25/85